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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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PUBLIC MEETING ON THE IMPLEMENTATION OF NUREG/BR-
0204, REVISION 3, AND UNIFORM WASTE MANIFEST FORMS

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THURSDAY

FEBRUARY 11, 2021

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The public meeting convened via WebEx,
at 1:30 p.m. EST, Priya Yadav, Project Manager,
presiding.

NRC STAFF:

PRIYA YADAV, NMSS/DUWP/LLWPB

CYNTHIA BARR, NMSS/DUWP/RTAB

STEPHEN BELL, R-III/DRS/PSB

KIM CONWAY, NMSS/DUWP

MARLAYNA DOELL, NMSS/DUWP/RDB

RHEX EDWARDS, R-III/DNMS/MCID

STEVEN GARRY, NRR/DRA/ARCB

TRISH HOLAHAN, NMSS/DUWP

IAN IRVIN, OGC

STEPHEN KOENICK, NMSS/DUWP/LLWPB

MIKE KUNOWSKI, R-III/DNMS/MIB

CHRISTEPHER MCKENNEY, NMSS/DUWP/RTAB

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KAREN PINKSTON, NMSS/DUWP/RTAB

AIDA RIVERA-VARONA, NMSS/DUWP

ADAM SCHWARTZMAN, NMSS/DUWP/RTAB

MICHAEL SMITH, NRR/DRA/ARCB

REGULATORS:

PHIL KLEVORICK

JALYNN KNUDSEN

GREGORIO ROSADO

MEMBERS OF INDUSTRY/PUBLIC:

CAMERON PELZER

TOMMY COURTEMANCHE

HEATHER SULLIVAN

THOMAS KALINOWSKI

JEFF GINSBURG

SHERRY FRENETTE

DAVID KANIA

CHRIS SHAW

MICHAEL WISKERCHEN

BRET ROGERS

VERN ROGERS

KERI GONZALEZ

THADDEUS MOUNTAIN

MIKE CECALUPO

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RYAN GRUDZIEN

KURT FOGLEMAN

JAMES LEONARD

JANET SCHLUETER

KAREN KIM-STEVENS

GLEN VICKERS

COLEMAN MILLER

DANIEL SHANNON

AMARYL MORIE

RONNIE OLSON

MARC PAWLOWSKI

AMANDA SPALDING

SANDRA KOSS

MIKE CASEY

DYLAN LONG

GREG HAUGHT

COLT GREER

DIANE D'ARRIGO

MARTIN KARR

VOSHIHIKO HORIKAWA

JANET AREMU-COLE

TIM MARTINSON

KAY CUMBOW

ABHIJIT SENGUPTA

WILLIAM DOOLITTLE

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PROCEEDINGS

(1:30 p.m.)

MS. YADAV: Thank you, everyone for joining us today. Hello and welcome to NRC's public meeting on the implementation of NUREG/BR-0204 and the Uniform Waste Manifest Forms. Next slide please.

Thanks. Let me start with introductions for our NRC panelists. My name is Priya Yadav and I'm the project manager for this effort. Today we have with us Karen Pinkston, who's our technical lead. We have Christopher McKenney, who's the branch chief for the Risk Assessment and Technical Analysis Branch. We have Steve Koenick, who is the branch chief of the Low-Level Waste and Projects Branch. And we have Trish Holahan, who's the director of the Division of Decommissioning, Uranium Recovery, and Waste Programs. We also are joined by Steve Garry from Nuclear Reaction Regulation and Stephen Bell from Region III of NRC.

So, I will kick off with some details about the WebEx platform. I think a lot of us may be used to the WebEx platform given this virtual environment, but I'll just go ahead and run through some of the logistics. Since this is an NRC Category 2 public meeting, first the staff will give a

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presentation. And during that time, all participants will be muted. At the end of the presentation, if you would like to speak -- ask a question or provide a comment, please hover over your name in the attendee list and look for the raise hand icon and raise your hand. And then we will be looking at the attendee list and looking for raised hands and unmute the lines one at a time.

I am noticing there are several attendees that are on the phone only. And so if you are the phone and you would like to make a comment or ask a question, you can dial *3 and that will raise your hand on the WebEx so that we can see that you'd like to make a comment.

The slides are available in NRC's public web-based ADAMS. Hopefully, you can see them on the webinar. But if you cannot, if you're on the phone only and you'd like to download them off the web-based ADAMS, you may do so. And they're also on the public meeting website attached to the meeting notice.

I would ask that everyone that makes a comment or asks a question please try to limit your comments to five minutes until everyone has been given a chance to speak. At the end of that first round of comments, if there's time, we will accept additional

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comments.

I will add that, in order to successfully capture the comments being made today, the meeting is being recorded on the WebEx and being transcribed.

You may also use the chat dialogue box to send a short chat to all panelists. You can select the all panelists option and we will monitor the chat dialogue box as well.

With that, I think I can turn it over to Trish Holahan to make a few opening remarks.

DR. HOLAHAN: Thank you, Priya. And welcome, everyone. I'd like to welcome you today to NRC's staff public meeting on the uniform waste manifest forms and the accompanying guidance. This project started out from comments by many of you during our Part 61 public meetings that revising the uniform waste manifest forms and adding clarifications to the guidance would assist industry in compliance with NRC, Agreement State, and DOT regulations for low-level waste transportation and disposal.

We collected and analyzed your input and issued the final version of NUREG/BR-0204 Rev. 3 and revised forms in June of last year. But then we received additional comments stating that industry needed additional time to meet the implementation

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date. Our last public meeting on this topic was September last year where we announced that we were delaying the implementation date. And so, we wanted to continue the discussion with all of you today and understand the current status of your implementation efforts.

For today, we also want to focus on questions you may have on the guidance in the Final NUREG/BR-0204 Rev. 3. Staff has worked hard to address your concerns and comments in the guidance, considering many different viewpoints. We do not intend to revisit the publication of the NUREG, but we hope to answer your implementation questions today and collect questions we may have to work on and answer later.

I look forward to hearing from you all. I will now turn it over to Ms. Janet Schlueter of NEI, representing the industry, for some brief opening remarks. And after she speaks, we'll turn it over to Priya and Karen for the NRC staff presentation.

Janet?

MS. SCHLUETER: Yes, good afternoon, and thank you. First, I just want to say thanks for holding the public meeting. As you mentioned, we had one back last fall and we gave you some input. And we

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appreciate the fact that you and your staff have continued to reach out to industry to try to work out any glitches in implementation of Version 3. And so, we appreciate that and the fact that we're having continued conversation today. We're aware of those ongoing conversations and we hope that it's informed the path forward. And we can learn more about that, of course, as you step through your slides.

I'd also just like to assure the public that by delaying the other version, the newest version of the forms, there's certainly no safety issues associated with that. We continue to safely manage and dispose of the low-level waste and transport it accordingly.

We also appreciate the fact that you've also allowed some time in the slide presentation and during the meeting today to discuss this related issue of the limited levels of detection for certain hard-to-detect radionuclides. And there's, you know, entries on your slides where we can tee that topic up.

We certainly take responsibility for our compliance with all the related regulations and the guidance seriously. But we certainly are looking for a more risk-informed and practical approach to meeting those expectations and to continuing to manage the waste

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safely.

And so, I think you'll hear from the participants in today's meeting that they'd like to hear your presentation and then give you some feedback on their own difficulties with the LLDs for certain radionuclides and some workarounds. We're looking for a more risk-informed approach in the NRC guidance in this regard.

This isn't a new issue for us in the industry. We've raised it to the NRC's attention in the past. And we're happy to have this opportunity to discuss it further. It's just one example of an area that we think that we can probably move collectively forward together to risk-informed different aspects of the NRC's low-level waste regulatory program. And we have some ideas on how to do that.

So, we're looking forward to a productive exchange of information today. And thanks for the opportunity again. That's it.

MS. YADAV: Okay, great. Thank you, Trish and Janet, for those opening remarks. We are looking for an open dialogue today and we appreciate your openness in sharing that with us. Next slide, please.

So, this is the outline for our agenda today for our meeting presentation. First, I will --

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those are our opening remarks. So, next, I will go through a little bit of background and just a summary of the changes between Revision 2 and Revision 3. And then Karen will go into some details and examples of implementing the guidance in the NUREG. Steve will talk about the next steps. And then we'll have the time for hearing from all of you about your experiences and your input and feedback on the kinds of things that Janet just mentioned. And then we'll have some closing remarks to wrap up the meeting. Next slide.

Okay, so, this is the purpose of today's meeting. First, like we mentioned, we want to get input from you on where you're at with implementation of the forms, the changes to the forms. We'll summarize the changes and clarifications made between Revision 2 to Revision 3. We'll try to provide examples and answer any questions. And then anything that gets very detailed, questions that we can't answer today, we hope to collect that and post answers on our NRC website. Next slide please.

Okay, so, just some background of how did we get here today? Why did we revise the instructions to begin with, since this dates back already nine years ago? So, in 2012, we started the public

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meetings associated with the Part 61 rulemaking effort. And we noticed there were a significant amount of comments, specifically on the NUREG and on the hard-to-detect isotopes and reporting them on the waste manifest. So, we kind of carved out this issue and we had two public workshops in March and June just on this topic. And we started collecting comments in 2013. And then, in 2015, we issued the regulatory issues summary that starts talking about the option to use indirect methods to report the activity of some of these hard-to-detects. Next slide.

So, here's the timeline of our revision. We collected comments beginning in 2013 and then we issued a draft in 2018, in October. We received your comments for 90 days. And then we analyzed and responded to the comments in this publicly available file. And then, in June of last year, we issued the final version of the NUREG and its associated Revision 3 forms. Next slide, please.

Then, as you know, we received several comments and requests for an extension to implement the forms. And so, in September, we announced the delay. And, informally, we've had discussions with several of you where you were asking questions about how to implement the guidance and certain details in

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the guidance. And so that is also why we wanted to have this public forum to try to hear those questions and answer those questions. So, although we're not specifically making any revisions to the guidance, we do want to continue this open dialogue and work through these questions. Next slide, please.

So, just at a high level, what the changes are to the forms, kind of the biggest changes. On the Form 540, we did revise the certification statement in response to several comments that the certification statement should be revised to account for shipments that are sent to processors, rather than directly to a disposal facility. So, the certification statement is different.

We deleted one of the columns on the Form 540 because it was essentially a duplicate request for information that was found in Column 11. So, specifically, the LSA/SCO class, that column has been removed. On the Form 541, we added a column for waste weight in response to public comments that this additional column would be useful and make the form more usable to shippers and the disposal facility, or receiving facility. And then we made minor formatting changes to all the forms. Next slide, please.

Then we just wanted to answer some

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questions that we've heard on the different versions of the forms. Do I need to use the NRC version of the waste manifest forms? Our answer to that is, absolutely, users may use the NRC forms as they appear in the Forms Library on our website. However, we recommend if you are shipping to a disposal or processing facility that is located in an Agreement State, such as Texas, Utah, Washington, or South Carolina, we recommend checking with that receiving facility and their Agreement State regulator to get their Agreement State regulator-approved forms. They may be the NRC version of the forms or they may be using a slightly modified equivalent version of the NRC forms. Next slide, please.

So, the Agreement States maintain a program that is compatible with the NRC program. They adopt Part 20, Appendix G, but they have some flexibility with their own versions, equivalent versions of the NRC forms. So, they might have slightly modified equivalent versions of our forms. They have some flexibility there. Next slide, please.

So, agreement state forms should be equivalent to the NRC forms in respect to content, clarity, size, and location of information. And they should not expressly be labeled "NRC Form 540."

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Rather, they can say "Form 540" or have some other label that doesn't expressly say NRC because of NRC's requirements with the Paperwork Reduction Act. We'll go on to that on the next slide.

So, NRC as a federal agency must comply with the Paperwork Reduction Act, which means that these forms, we have to renew their clearance with the Office of Management and Budget every three years. We have to obtain a clearance number that basically authorizes us asking for information from industry. And so, all NRC versions of the forms must demonstrate these Paperwork Reduction Act elements. So, shippers may use the NRC forms as they appear on the NRC website, but reproductions of the NRC versions should contain these Paperwork Reduction Act requirements, which are located on the next slide.

So, on all NRC versions of the forms we must show the OMB clearance number at the top and the expiration date. There is a Paperwork Reduction Act statement. There is a little bit of a paragraph basically at the top. And then the NRC form number and the date should appear. Next slide, please.

Okay, so that was a lot about the forms. And then here, just at a high level, I wanted to touch on changes to the guidance itself. The instructions

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for completing the forms. So, staff's focus here was on making a clear, more usable document for waste shippers. And so, we wanted to make the requested clarifications that we heard from the commenting periods, the multiple commenting periods, and that entailed making changes to correspond with the revisions to forms I just mentioned.

Also updating references to DOT regulations, updating the intent of the certification statement, and improving the clarity. And then also aligning the document with other NRC guidance documents like the concentration averaging branch technical position, the regulatory issue summary I just mentioned. And then also forward-fitting sort of for Part 61, the ongoing Part 61 rulemaking. So, the document also has additional discussion on the reporting of inventories based on the LLD values and the use of indirect methods.

So, with that, I will turn it over to Karen to give more detailed examples of what is in the implementing guidance.

DR. PINKSTON: Okay. So, to start again, as Priya mentioned, my name is Karen Pinkston and I am a technical reviewer who worked on this. And as Priya also mentioned on the previous slide, the guidance in

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Revision 3 of NUREG/BR-0204 contains some new guidance on the marking of activities that are developed for inventory less than an LLD value. So, for example, the activity that's reported is based on an LLD value times the amount of waste for the marking of activities, or inventory that's based on the use of an indirect method.

So, in Revision 2 of the guidance, our previous version of the guidance, it suggested that values that were derived based on an LLD value should be marked with parentheses. And that values that are based on actual measurements should be written without marking. So that's consistent with the top two rows of this table. And this table comes from Revision 3 of the guidance.

So, our guidance on the markings for those have not changed. But Revision 3 of our guidance also adds some guidance on how inventory that is derived based on the use of indirect methods could be marked.

And we had suggested perhaps that could be marked with a pound sign. We also have some examples of suggestions for how inventory that's based on a combination of different methods could be marked. So next slide please.

So, this slide just shows an example of

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our Form 541 and shows how the new guidance for marking the inventory could be used. So, in this case, we're assuming our inventory is based on an indirect method and is therefore marked with a pound sign. Next slide, please.

So, we had included the guidance on the marking of the inventories in the draft NUREG/BR-0204, Revision 3 that we had out for public comment, but we didn't receive any comments on that particular part of it. But subsequently as people have been looking at how to implement the guidance, we've received some questions on whether or not the use of these markings is required. So, in answer to that, the use of the data flags is in guidance and is not required by regulation. The NRC staff had added these particular flags and the guidance on them in an attempt to respond to public comments that it would be useful to reduce the uncertainty in the total number -- the assumed inventories that are present in the reporting of the hard-to-detect radionuclides.

We also believed that the flagging of the data could increase transparency and provide the disposal facilities with better information to support their development of inventory estimates. And so in conclusion as to whether or not you're required to use

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this, we would say that you should check with the recipient disposal facility and their associated agreement state regulator to see what the requirements are for flagging the data and how they want you to report this. So next slide please.

So, this slide addresses the question of what is the benefit of using the flags? What is the purpose of them? Why should I use them? So, as I mentioned, the goal of the data flags is to assist the disposal facility and to help reduce their uncertainty in what inventory they have and in what their compliance dose estimates are. And reducing this uncertainty could in some cases increase the disposal capacity they have if, for example, their disposal capacity was being limited by a calculated dose based on the reporting of radionuclides that may or may not be there at those activities.

So, one of the key parameters in the estimation of the dose at a disposal facility is the total inventory that they have. And it's very challenging to figure out how to evaluate any less than values that are reported on the manifest. So, NRC's perspective is that it's generally not acceptable to assume a value of zero for any radionuclide that's present a value less than the LLD

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without a technical basis for that.

But we also recognize that assuming that the radionuclide is present at the LLD could overestimate the dose. And this can have consequences with things like managing the waste in a way that's commensurate with its risk. And also, could have effects on disposal capacity. And we have additional guidance on how disposal facilities can manage the development of their inventory, including reported less than values in our NUREG-2175, which is our draft guidance for conducting technical analyses for 10 CFR Part 61. And the ADAMS accession number is on the slide there.

So, in summary to the questions about the data markings, we developed these suggested data markings as a mechanism for helping to ensure that the disposal facilities have enough information and the right information to support their inventory developments in the performance assessment. And we wanted them to have enough information to be able to justify a more realistic inventory, rather than an inventory that's based just on less than values or LLD values because that could end up being overly conservative and affect their capacity.

And so, in general, the goal of this is to

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support the data needs of the disposal facilities. And so therefore, shippers should check with the disposal facility and their regulator to find out how they want you to mark the data and report it. And to follow their direction on that. Next slide, please.

So, some other questions we've gotten is what is the status of the use of generic scaling factors? So, the NRC has not endorsed the use of any specific generic scaling factors. However, we have said in our guidance and also in our regulation that shippers can use indirect methods including scaling factors if there is reasonable assurance that the indirect methods can be correlated with actual measurements. And that's in the regulation in 10 CFR 61.55. And as part of this, licensees are free to use either generic or site-specific scaling factors. We have some further guidance on this in our RIS 2015-02. Next slide, please.

So, another question we've gotten related to the status of generic scaling factors is related to EPRI Report entitled, "Development of Generic Scaling Factors for Tc-99 and Iodine-129 in Low and Intermediate Level Waste." So EPRI submitted this report to the NRC to review approximately two years ago. In March of 2019, the NRC sent an RAI to EPRI on

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the report. Following that, EPRI has requested for the NRC to suspend its review. And the NRC review will therefore remain suspended unless EPRI requests for us to continue our review and provides us with a response to our RAI.

But as is true for any generic scaling factors or any indirect method, licensees could use the information in the EPRI report as long as they can demonstrate that there's the reasonable assurance that the calculated values can be correlated to measured values. So, as part of this, we would expect for people to evaluate whether the generic information in any generic scaling factors report is applicable to their specific waste streams. And then, to periodically consider "do these generic scaling factors remain appropriate or have we had some change in our plant or our system that would cause us to need to reevaluate this?" Next slide, please.

So, another question we received is related to significant radionuclides. And whether significant radionuclides -- whether they need to be reported and whether they need to be included in the waste class calculation. So, per our regulations, our waste shippers must list the identity and quantities of radionuclides in the waste. Our definition of

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significant radionuclides comes from guidance in the 1983 BTP on waste classification. And based on this guidance, a radionuclide is significant if the radionuclide concentration is greater than 0.01 times either the Table 1 or Table 2 concentrations in 10 CFR 61.55.

In the most recent version of NUREG/BR-0204, we also added this third sub-bullet here that the radionuclide is significant if it exceeds 0.01 times the receiving disposal facility's waste acceptance criteria (WAC), if applicable. And we added this third bullet as a mechanism for being compatible if Part 61 gets changed and site-specific waste acceptance criteria are included.

So this third bullet may or may not be applicable, but we wanted to have in the case that sites have a site-specific WAC and to have some consistency between what's significant for them and what has historically been significant given that the table values in 61.55 are essentially a generic waste acceptance criteria. So the 1983 guidance and also our Rev. 3 of 0204 also gives the criteria that if a radionuclide is not listed in either of the two 10 CFR 61.55 tables or in a land disposal facility's WAC and is present and the waste and the concentration is

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greater than 0.26 megabecquerel per cubic centimeter, the radionuclide would also be significant. So next slide please.

So, a related question is does a significant radionuclide that is reported as a less than on the manifest have to be included in the calculation of waste class? And before I get into this, I wanted to clarify terminology a little bit. What is meant by LLD or less than LLD has different meanings to different people. So, we've heard a number of -- We've heard it referred -- any value that's a less than on the manifest referred to as a less than LLD. In some cases, it really is a less than LLD. And in some cases, it's a less than value that is a scaled-up value based on a scaling factor that had included an LLD. So that's one thing to be mindful of as we discuss this.

So, going back to our 1983 guidance. The 1983 guidance on waste classification suggests that the LLDs for radionuclides should be at a minimum 0.01 times the Table 1 value or the Table 2 value in 10 CFR 61.55. And the 1983 guidance also defines the threshold for when a radionuclide is significant for the purpose of waste classification as being the same as those LLD thresholds. So, we believe that

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radionuclides that are significant for the purpose of waste classification should be included in the waste classification calculations. Next slide, please.

So, based on this, if the less than value or LLD values exceed the 1983 guidance levels on how low the LLD should be, then the radionuclide may be significant for waste class. So, in this case, there are a few options that the licensee has. One of them is to just assume that the radionuclide is present at its less than value and included in the waste classification calculation. The licensee can also improve the analysis capability to meet the suggested LLD values in the 1983 guidance. Or licensees can justify using an indirect method that quantifies the radionuclide concentration to a more realistic value and include that calculated value in the waste classification calculation. So next slide please.

So, for radionuclide concentrations that are below the threshold suggested in the 1983 BTP guidance, for the radionuclides in Table 2 of 61.55, the threshold for what the LLD should be and the threshold for what is significant is equal to 1 percent of the Class A limit. So even if multiple radionuclides were present at that LLD value, it would be unlikely to change the waste classification because

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each of them independently would be at most 1 percent of the class limit. So, in theory, the situation is different for the Table 1 radionuclides. So, the threshold recommended for the Table 1 radionuclides is equal to 1 percent of the Class C concentration or 10 percent of the Class A concentration.

And so in theory, if there were multiple radionuclides all present just under that suggested threshold for what the LLD should be -- For example, they're all present at 9 percent of the Class A limit, in theory if multiple radionuclides are in that position, it could have an impact on what the projected waste class is. However, practically we don't expect that, that would ever come up in reality because of the source of the radionuclides. We wouldn't expect for all the Table 1 values to be present exactly at 9 percent practically in a real-world waste stream. Next slide, please.

So, one example of a scenario that could lead to a reported less than value being above the threshold for what is a significant radionuclide is when a scaling factor that is developed based on an LLD value is used. And so, for many of these radionuclides that are hard to detect, we understand that they are very infrequently measured in waste

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samples. And so often, scaling factors are calculated based on the LLD value.

But it's important to be aware that including these LLD values in the scaling factor, it can lead to some uncertainty in whether the radionuclide is present in significant amounts. And in some cases, additional analyses might be needed to evaluate if the radionuclide is present in amounts that could change its waste class.

So, in order to comply with the regulation on adequately characterizing and classifying the waste, the waste needs to be characterized well enough to understand the waste class. And if including or excluding less than values could change the calculated waste class, then additional characterization or evaluation may be warranted. And the generator who fills out the manifest is responsible for ensuring that the information on the manifest about what class the waste is correct. Next slide, please.

So, the next few slides are an example calculation of the waste class that walks through how the situation that I just mentioned the use of a projected LLD -- a projected value from an LLD could result in uncertainty in what the waste class is. So, in this example, I have a hypothetical measured

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concentration of a hypothetical sample. And these measurements would be for example in a waste sample that is sent out for its Part 61 analysis and is analyzed for a wider suite of radionuclides.

So, in this Part 61 sample, we find that it is not a very hot sample. It has cesium-137 present at 0.02 microcuries per cubic centimeter. And it has no -- iodine is not present at a concentration above the LLD. In the case of cesium-137, the measured concentration is higher than the LLD suggested in the 1983 guidance. And the LLD used for iodine in this measurement is also consistent with the suggested LLD in the 1983 guidance. For this sample, it's not very hot. So, calculating the sum of fractions for each of these radionuclides based on the Class A limit, the sum of fractions are low. They're much less than one. And therefore, this calculation demonstrates that the waste is Class A waste.

Now suppose a scaling factor was calculated based on this hypothetical sample and that the scaling factor is calculated assuming that iodine-129 is present at its LLD value. So, this calculation would result in a scaling factor of iodine per amount of cesium of 0.008 divided by 0.02 or a value of a 0.04. Next slide, please.

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So now suppose we have another hypothetical sample that's much hotter than the first sample. The sample is not sent out for the full Part 61 analysis and only cesium-137 is measured. Iodine is not directly measured but is calculated based on the scaling factor estimated on the previous slide and the cesium-137 concentration. So based on this hypothetical evaluation, we end up with a projected concentration of iodine of less than 0.02. And this less than 0.02 is significantly above the LLD suggested in the 1983 BTP.

It's also above the threshold for what is a significant radionuclide. And so, if we calculate out a sum of fractions for this, assuming the iodine is there at 0.02, we now end up with a sum of fractions of 2.5. So based on this calculation, we would say maybe this waste is not Class A, maybe it's Class C. But we know that the iodine-129 is likely to not be there at that high of an amount. And this 0.02 number is probably an over-estimate of what is there.

So that leaves us with some uncertainty about how we manage this waste. We don't have the data to show that it's Class A, but we also think this iodine is probably not there and it's difficult to know how we manage this waste in a sensible risk-

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informed way. Next slide, please.

So, as I mentioned, given that the waste classification calculation indicates that the waste is Class C, though we also know that iodine is probably not there, now what do we do? So, from a strictly safety point of view and omitting the regulations point of view, the shipper could just go ahead and say we'll just be conservative and ship the waste as Class C. But that has some big disadvantages from a cost effectiveness and risk management point of view. And so, shippers might find that's not really a desirable option.

So, what other options could the waste shipper have? So, the waste shipper could analyze a sample of this much hotter waste stream for iodine-129 and use that result to generate a more realistic calculation of the waste class. The shipper could also develop a more accurate scaling factor for their waste stream that does not overestimate the amount of iodine by as much. And the waste shipper could also use a different indirect method to better estimate the iodine-129 concentration. Next slide, please.

So, in conclusion, to avoid or to minimize this type of problem arising in waste classification calculations, waste shippers should be careful when

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they develop scaling factors from samples that are based on LLD values. And we would suggest that two things could be done to mitigate the situation. One of them is to possibly analyze samples that are not very hot for longer counter times to achieve a lower LLD and therefore a scaling factor that is not as overly conservative.

It also is important for waste shippers to be strategic about what samples they're sending out for their Part 61 analyses. And if it's practical, the waste shippers could use hotter samples as their basis for developing their scaling factors. And this is of course with the caveat of if its practical. We don't want there to be an unacceptable worker dose generated by someone getting hotter samples. But if it's practical, it would be better to send a hotter sample out, rather than a really low activity sample.

And so, in conclusion again, waste needs to be characterized well enough to have a good understanding of its waste class in order for the risk from the waste to be managed appropriately and consistently with what the actual risk is. So, with that, I will now turn the talk over to Steve Koenick who is the branch chief of the Low-Level Waste Branch.

And next slide please.

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MR. KOENICK: Excellent. So, good afternoon. As Karen had mentioned, my name is Steve Koenick. I am the branch chief for the Low-Level Waste and Projects Branch.

I would like to thank Priya and Karen for their very informative presentation. As they mentioned, this activity has been ongoing for a period of 9-plus years, so there are many people involved in this effort to help us get us to where we are today. So, a special thanks to them. And I hope you found their presentation to be very informative.

What I'm going to do is talk about the next steps before we open it up to comments and questions. So, the first thing is the frequently asked questions. So, you just heard several of the frequently asked questions examples as presented by Karen. And what we plan to do is post them to our website so they will be available. This will be a living set of frequently asked questions. And we look forward to hearing from you to see what additional frequently asked questions we should put on this list.

So, we provided the link to our low-level waste disposal page for the uniform waste manifest.

The next item, Priya had mentioned, is the OMB clearance process. As she mentioned, we have a

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renewal of our information collection every three years. That happened previously. And then what we did was we had to get a non-substantive change approved to go forward with the forms associated with Rev. 3 that we are currently implementing. Then we actually had to go to OMB to do a non-substantive change to go back to Rev. 2. We did that in September. So now we would just go forward when we get to the implementation timeframe to get that non-substantive change approved again. And that way, we have one approved set of forms on our NRC website.

We tentatively are targeting this June 1st timeframe. And we'd like to have a 90-day implementation period pretty similar to last year, although hopefully we're at a better place to get started this year. So, what we would do, just like last year is we would issue a Federal Register Notice that would announce that the forms are available on our website and it would identify this 90-day implementation period.

So how does that transition look? Well the transition, once we post the forms on our website, then they will be the official forms of record. However, we acknowledge the need for this implementation timeframe. What I would recommend

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though is that generators really need to consult with their specific receiving facility for their actual disposal requirements in that specific form. So that's kind of an outline of the flow of the next steps. Next slide, please.

Okay, so this is where we really want public input. The first thing would be hey, we think June 1st seems like a good date for us, but we really need to hear from you. We'd like to hear from all the parties involved, which we've heard from. We've talked a little bit during the last several months. We also want to talk to our agreement state partners.

Does this work for you? And then the next thing to do is this area of the frequently asked questions.

So, I know at the outset of the meeting, Janet had mentioned the need and looking forward to this discussion. Hopefully, the presentation was informative. We did present some discussion example of what to do with those LLD values when using scaling factors. But I'm sure we're going to have several questions from you on that matter, as well as on this implementation. So, with that, I would say next slide.

And I think this is where we're going to open it to Q&A's. So, I think Marlayna, you're going

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to run the show for the Q&A's.

MS. DOELL: Yes, I think that's correct. Thank you. Good afternoon, everybody. My name is Marlayna Doell. I'm the WebEx host for today's meeting. As we mentioned earlier in the meeting, if you'd like to speak at this time, probably the easiest way is to raise your hand through WebEx. That can either be done by following the instructions on this slide or pressing *3 if you've called in via the phone. We're also monitoring the chat window in WebEx. I would note that if you're going to send a question via that method, please make sure that you have all panelists selected when you ask your question or make your comment just so that everybody from the NRC can see it and not just myself.

So, I am going to go ahead and get started. I see a couple of hands raised. Unfortunately, this person, I'm not sure what your name is as it shows up as a call-in user. But I am going to go ahead and unmute you. So, whoever is at - - let me see if I can find your phone number -- at 805-545 -- if that's the start of your phone number, I'm going to unmute your line now. Go ahead. You should be able to speak.

MR. MILLER: Yes. This is Coleman Miller.

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Can you hear me?

MS. DOELL: Yes, Coleman. We can.

MR. MILLER: Yes. Thank you. I have three comments. I know I'm supposed to keep it in five minutes. But on the first question, the June 1 implementation date of the new forms, I would suggest pushing that out to like September 1. The software programs are just now being issued by the vendors. It can take a month to three months for a plant to do the V&Vs to verify those programs and get them functional. And we are now running into refueling outage season. So, you know, just please give us the summer after the spring outages are over. And I believe we can implement them before the fall outages begin on September 1. That's the first comment.

The second comment is on to the Tc and iodine LLD issue. The original public comments that were submitted, I believe it's Comment B1 that had a couple submittals, one of which was mine that the commercial radiological laboratories just cannot -- they don't have the technology to detect technetium and iodine in the trace levels that exist in low-level waste. The R&D effort that was done in the early 90s with EPRI at the Pacific Northwest Laboratories, that data can -- that analysis method can find these trace

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Tc and iodine levels at reactors that don't have large fuel issues, fuel defects, fuel failure issues. And those numbers are not like E to the minus 8, E to the minus 9 mics per cc.

The commercial laboratories even to this date -- you know, if you don't have a fuel defect -- and I work at a plant where our one unit has gone 36 years and never had a fuel defect. The other units only had four minor defects. And in that unit, the worst defect of that unit, those samples were sent out as part of the EPRI one-time evaluation of industry data. If you sent out anything today to a lab, they'll still give you the same number of E minus 4, E minus 5. So, there's no way to really sample our way out of this situation, this conundrum. There's no way to do extra analysis. So, they're suggesting getting a high activity sample, get a larger sample, calling it longer.

The commercial laboratories do not have the technology and the technology that can find the accurate number is an R&D machine that's not built for routine commercial use. So, there's nowhere to even verify now that if we're allowed to use lower accurate data, you can't routinely go back and verify anything because you're more than two orders of magnitude, the

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LLDs in commercial labs, above what the actual values are. So, you can't be within that factor of ten that's required.

So that's the conundrum that we're under.

And, about the classification issues, if NRC ever revises the classification tables in 10 CFR 61 to match current science, the limits for Tc and iodine will be going down, not up. So, it will be even more of a conundrum should that happen out in the future. So, you know, what can be done? Because even if you have scaling factors, they still often depend --- in control-use LLD values, you know, their office was mentioned in this presentation.

So, there is a dataset of the trace quantities in low level waste at the U.S. It's not a large dataset. It's real numbers, not fake numbers. And that's -- I understand the NRC is not -- has many concerns about the scaling factors that are derived from that. Just for context though, know that France uses that data. They believe it's good enough. What does good enough mean? Well for many years, France disposed of its data where? In the Champagne Valley.

You think the French are doing anything to harm their wine or champagne? I don't believe so. And they recognize that there's no way to get, you know, newer

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technology to do this analysis.

So, the major thing is if you don't have the fuel defects, that data should be seen as good enough. Now if scaling factors aren't valid, maybe would NRC would be receptive to us looking at that dataset of actual numbers and calling out those potential defects and those datapoints were from plants that didn't have a fuel defect and drawing a line above that and say, you know, this is a level. Not an LLD, but this is the Pacific Northwest Laboratory level at which we didn't find anything above that and use that number. And allow the plants and shippers to not have to re-certify with some new sample because again, the commercial labs can't get anything within a factor of ten of what's actually there. So that concludes that point.

The last item is comments that were made on bulk volumes to shipments. And that's a narrow instance where we've not been able to ship waste to bulk disposal facilities. And there were comments -- I made some as to the requirement to put the volume -- a bulk shipping volume in the 541 Disposal Form. That bulk volume is an estimate because we know the mass, but we don't know the volume. The volume in a bulk amount -- we threw bags of trash in sea vans and

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intermodal containers that could reduce the time of shipment. And what actually happens in the burial ground is it gets compacted with road graders and gets to be a much higher density or there is a lower volume in the disposal cell.

The response to that comment was that you have to put the number in for volume. The regulations don't allow anything different. I would offer that rather than putting in the estimate of a bulk shipping volume, you put in best estimate of what the volume is in the disposal trench. It's typically one third for trash of what the bulk volume is and use that volume for your waste classification. And that way you can - - you are being conservative and ensuring that when the trash smashed into that cell, it hasn't gone up in waste class.

And lastly, the (audio interference) disposal sites, but on the 541 Form, we are often now required to put in shipping container on the 541 Form, but there is no disposal -- in disposal container. So, we can be cited for a false material statement on the 541 Form and say there's a waste container, when we should, I believe in truthful, comply with our certification statement. Say that it's your bulk -- it's bulk unpackaged shipment, which is an option on

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the manifest. So that concludes my three comments. Thank you for your time.

MR. KOENICK: Yeah, I think we might answer some of your question and take some of that back with us. I did want to first talk about the expectation with this implementation. Yes, the plan is that we would issue the NRC forms around the June timeframe. But then we would in our Federal Register Notice include this 90-day implementation window which would get you to that September timeframe to actually implement the new forms. So, if a facility has to do receipt of the new software and do a V&V, that could occur during those summer months. So, we do -- we are sensitive to that. If you recall, originally when people were asking to defer implementation of the UWM, they were saying in the springtime. And then during our interactions, we received additional requests to say hey no, push that out further so that they could have the summer to do that implementation.

And then the next question, you had talked about the scaling factors and the ability to -- with the challenges with sampling. And this is a really -- this is a problematic area. And I think the whole premise of the forms is that the generator can characterize the waste and justify what they used for

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those values. So, if you had that dataset and you justified that hey, the value should be such and such, then that is what the generator would be using as their justification.

So, I'm going to defer to see if anyone else on the team wants to chime in. And I'm not sure I would be able to add anything about the container weight.

MR. MCKENNEY: This is Chris McKenney. I had to start my video, sorry. One is especially the question about what is justified, what are different options? Obviously, that is something that's probably going to have to be developed -- a good frequently asked question or a subset of a position in a way as that may take a little bit more conversation than what we can have at this meeting.

And I think that was also alluded to in Janet's opening remarks herself that this is an issue of practicalities and looking at things. And how can -- what are these alternatives and we raised some pretty conceptual high-level approaches obviously. And you raised technical challenges to those. So, I think that that can't be solved at this meeting right here. But that's one reason why we want to have the frequently asked questions be a living document and a

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source of that. And then potentially that leads to other generic communications.

And you know, while I understand where you're coming from for the bulk waste, the regulations state right now that -- they state just volume of waste, not with assumptions of -- what will happen to it after receipt by the next facility. But we can discuss at other times and we'll take your comments and work on those. Thank you.

MS. DOELL: All right. Thank you, Chris.

I think at this time, we're going to go to Glen Vickers from Exelon. Glen, go ahead. You should be unmuted.

MR. VICKERS: Can you hear me now?

MS. DOELL: Yep, loud and clear.

MR. VICKERS: Okay. Yes, my name's Glen Vickers with Exelon. And you know, thanks for this dialogue. So, as we previously noted, there were some suggestions about -- well first of all, the implementation period. I think much like Clint said, I think if the industry had say, 90 days after software providers had their software available for review, that's probably reasonable.

So, regarding the material at hand, so we mentioned that licensees can create methodologies to

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scale. And I don't think that's where we want to be.

I think we have an opportunity here with the Battelle data that Clint talked about. Now yes, when you look at that data, that scatter in that data is more than a factor of ten that we would usually say is okay by the reasonable assurance clauses in Part 61. However, that's the best available data. And what that is, is that's a methodology that licensees can follow. My utility used to follow that process in the early 90s.

And then we were asked those questions about the degree of scatter and reasonable assurance and we went back to LLD values.

Also, Karen mentioned some of the other things in the presentation about little technical issues where the licensee may do additional evaluation. The licensee isn't a qualified person to be, you might say, adjusting these LLD numbers, et cetera. I think the best case for compliance for everyone would be to have the licensees follow a consistent methodology, rather than have us try to do it as individual efforts.

It was noted that LLD values are typically less than 1 percent of the Part 61 tables. However, when we have to apply them with software, the degree of dispersion and variance can increase by a factor of

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ten or 100. So, I hear this phrase that LLDs are always less than 1 percent, they can't be significant.

When applied with software, that variance does increase. And that's really one of the adverse outcomes I think that are worth, you know, further discussion. But once again, that's where having a methodology such as the Battelle methodology to let us scale a value instead of being impacted by a highly varied LLD value that the licensee really cannot control.

You know, I've provided data in the past.

So periodically primarily Table 1 values for Tc and iodine, they may calculate a value in excess of the Class A limit. So currently additional evaluation is done by the receiver, but ultimately the waste is processed as Class A. And so, in this case, it will become say a Class C waste. And from a cost perspective, that increases my cost for a single container by about a factor of ten. So, my entire annual waste budget could be adversely affected by an LLD value beyond my control. I always make sure I meet my LLD values and follow the industry processes, but these are these variances that occur with the software.

So, as we work together, I really do think

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the best thing we can do is come up with a common methodology that we can all follow to minimize unforeseen impacts and help us be consistent with compliance. That's all I have for today. Thank you for your time.

MR. MCKENNEY: Thank you, Glen. I think the majority of that is just that it's for more discussions on how to do that. How do you justify? I think some of the previous stated you have shown with several samples, and for some of the LLDs and stuff, you showed that it wasn't actually a linear -- (audio interference). Sorry, I hit my mute button. It wasn't a linear relationship with concentration. It was pretty flat across a long range of concentrations. And so that type of data also gives a way to reinterpret if you use the scaling factor.

And then it came out with a -- because the multiplier comes out as a larger fraction than you thought, then someone could look back at that data and say well, it's actually flat over a wide range of this. So that's definitely something we can talk about as we work on trying to get more specificity on how to do it practically.

MS. DOELL: Alright. Thank you, Chris. This is Marlayna again. I think next, we're going to

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go to Karen Kim-Stevens from EPRI. And then after that, I think the staff's going to run through a couple of comments and questions we've been getting in the chat window. So, Karen, your line should be open.

MS. KIM-STEVENSON: Alright. Thank you very much, Marlayna. Can you hear me?

MS. DOELL: Yes, I can.

MS. KIM-STEVENSON: Alright, excellent. Hello, everybody. This is Karen Kim-Stevens from EPRI. Thank you very much for including the information about the EPRI report. I just wanted to take a moment to, you know, acknowledge and confirm that, that is the status of, you know, where we left the NRC review of the EPRI Tc-99 and Iodine-129 report back in 2019.

So, based on the, you know, discussion that we have today here at this public meeting and also any additional discussions that the industry has regarding the technical needs, then we may reach back out to the NRC to continue the process of that review.

And that would of course include EPRI then answering the request for additional information that the NRC provided us back in 2019. So, I just wanted to take a chance to confirm that that is the status currently still. And that we may be reaching out to you very

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soon. Thank you.

MS. DOELL: Thank you, Karen. Alright, I think at this time, we're just going to run through some of the questions that we've been getting through the chat. I think the first one that we are looking at refers to Slide 17, which let me go back to that really fast just so we know what we're looking at. Seventeen, alright. And the question has to do with whether or not the 0.0008# should be entered in block one of Form 541 or in block sixteen.

Apparently, the Rev 3 guidance requests that it be in block sixteen, but Table 1 section states that if any portion of the reported activity was determined based on LLD values or indirect methods, you should mark the reported activity with an asterisk and provide additional information. So, does someone from the NRC team want to address that question?

DR. PINKSTON: Yes, so I believe the guidance suggests that it should be reported in both places if there's scaling factors or other another indirect method used. But again, I'd like to reiterate that talk with your disposal facility and see what format they want and that should drive how you mark the data. So that's all I have on that.

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MS. YADAV: And I believe a follow-up question was if we could post examples on the NRC FAQ web page of how to mark the data on the forms. And I think we can do that.

MS. DOELL: Great. Okay, I think the next question that I see has to do with -- is the NRC intent to keep the same manifest format that was issued with Revision 3?

MS. YADAV: And yes, the answer to that is we do not plan to make any changes from what was issued last June 2020.

MS. DOELL: Okay.

MS. YADAV: So, we would just -- We would just be going through our process with OMB, but we're not making any changes.

MS. DOELL: Okay. And then there's another nuts and bolts kind of question, which is did we mean for the uniform waste manifest to be 8.5 x 11 letter size or can folks still use the legal-size document or was is just an example when we were putting the NUREG together?

DR. PINKSTON: So as far as what paper size, I don't think we intended to change the size. That was an artifact of how it got printed out. As far as whether -- what paper size is okay, I think

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either one is okay provided that the items that Priya described during her talk are met, that the forms are equivalent. As long as they're equivalent in terms of other -- for other reasons or they're equivalent with the agreement state forms, it's okay to use either paper size.

MS. DOELL: Alright. Thank you, Karen. Alright at this time, I don't see any more questions in the chat window, and I don't see anyone else with their hand raised that would like to speak. So, I'm not sure -- we can give everyone a few more minutes in case they have any other comments or questions they'd like to ask. Otherwise, I will probably turn it back over to Priya to close out the meeting.

Wait, we have another hand raised. Tommy, your line is unmuted.

MR. COURTEMANCHE: Thank you. My name is Tommy Courtemanche from WMG. We provide some of the software that a lot of the participants use for characterization and shipping.

I'm going to kind of follow up on what Coleman and Glen had spoken about as far as Tc and iodine. I'll add in that carbon is another issue that I see quite often that affects NRC class. Basically, what I'm looking at is that if we are going to use a

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mixture of let's say for instance dose a curie (phonetic) and then mixing in generic scaling factors as we are allowed to do in this scenario. We're effectively data shopping for what provides us the best answer. Is that the intent here?

MR. MCKENNEY: This is Chris McKenney. It's not really that you're shopping. You know, what you do is -- we know that there's multiple methods in which you could try to understand both the uncertainty and what is actually in your waste. You have process knowledge, you have past studies -- you know, past samples of your waste. So, bringing all those to bear can be -- especially, potentially a way to address and sharpen the pencil on some things.

Where, you know, like a generic scaling factor may work most of the time for most of the waste streams on a site. However, they want to have a waste stream specific one for a specific waste. You know, it's how much does a waste generator want to balance conservatism and ease of use versus extra samples or where that results, of course, obviously from one of the number one reasons would be where does that make their waste result in for cost?

And those are considerations of we want a relatively accurate depiction of what is in the waste

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so that the -- which is the purpose of the waste manifest to allow the disposal sites to get an accurate tracking -- as accurate as they need to track their inventory to meet their performance objectives.

MR. COURTEMANCHE: I agree with you on that, but a lot of it is going to be what is defensible. In the case of dry active waste, we would say oh well, it's dry, therefore tritium is not going to be present in any significant quantity. That's relatively defensible, though most sites won't be making that revision on their own.

MR. MCKENNEY: Right.

MR. COURTEMANCHE: As far as some of these other nuclides; the Tc, iodine, and carbon, they may not have the basis to put together a defensible position on why they are changing the as-characterized value based on whether that be dose to curie or some other characterization method. They don't have enough information to put together a defensible position on why they are changing. Whether its concentrations or total activity, they don't have enough information to defend that position.

MR. MCKENNEY: And I think that's where we need to explore it through some thoughtful discussions between possibly a small group. You know, when we

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issued the BTP for concentration averaging the capsulation, we had some post-meetings after it went where it was out and effective. And we dealt with that through the frequently asked questions method. And I think that this is definitely a topic where to try to get to that practical -- to get to what is reasonable assurance and practical justifications for addressing these issues. I think would be probably a good topic and approach to try to do that. So that people can see that.

We can go through a -- you know, have some views of all sides to see how we would do that. Because I mean, there were other applications. Like way in the past, there was computer codes through our staff and other ones that tried to calculate what was the waste generation rate within the reactor to try to give upper bounding sometimes. So those are things that we could go down. But yeah, I understand where most people would feel that they didn't have the -- without something like that, that people might feel that they can't justify something else.

MR. COURTEMANCHE: I think a position paper from the NRC would go a long way to at least making folks feel a little bit more comfortable making that decision on their own.

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My other question is for Karen as far as the data flagging. The slides said that data flagging is not going to be required as it's considered guidance. However, my question would be that technically all characterizations would be indirect regardless of what characterization method you're using. So, is the guidance then to use the slash notation to put in the as-measured activity from the lab with the remainder of the activity attributable by scaling, so we'd use the pound notation?

DR. PINKSTON: Okay. So, I'm not sure I totally understood the question. You were asking for the hypothetical where there's multiple sources of information?

MR. COURTEMANCHE: Well the only direct measurement we would have would be from what we get from the lab.

DR. PINKSTON: Right.

MR. COURTEMANCHE: The rest of the characterization is indirect, so it would be some form of scaling. So, are we to put in the lab measured value as the first piece of information, then a slash, then the remainder of the activity because that's attributable to scaling?

DR. PINKSTON: Okay. So, like if you had

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a shipment and you measured -- you measured it in one barrel, and you have another 40 barrels. Is that the question?

MR. COURTEMANCHE: Well there's no real measurement done on site at the, you know, commercial power plants.

DR. PINKSTON: Right.

MR. COURTEMANCHE: The only direct measurement they would have would be from the Part 61 labs. So that's the only measured activity that they would have. So, the rest would be some form of scaling through characterization process. So, then the lab result for that nuclide is the only measure and then you put in a slash, and then the balance of the activity that as characterized goes into the slash notation with the pound?

DR. PINKSTON: Okay, so I guess I'm still not totally understanding the question. So, are you talking about the radionuclides that -- so you have a waste stream and you take a sample, right? And it's from that waste stream or it's from a different Part 61 sample another time?

MR. COURTEMANCHE: From that waste stream.

DR. PINKSTON: Okay.

MR. COURTEMANCHE: So, the only

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measurement that you have would be from your lab. That's the only direct measurement that you've got.

DR. PINKSTON: Okay.

MR. COURTEMANCHE: When you characterize the drum or container, we're going to use some form of scaling to come up with the total activity. But the only directly measured value is what we received from the lab.

DR. PINKSTON: Right. So, if the waste stream's homogeneous and you measure one drum out of however many and it's based on that, then I would say it's a measured value. Otherwise, I would say it's probably -- the balance of it would be like you said that it's a scaled-up value. But I would also again defer to the disposal facilities on what's their data need and what do they want?

MR. COURTEMANCHE: Okay. Thank you for your time.

DR. PINKSTON: Okay.

MS. DOELL: Alright, thank you. At this time, I'm not showing any more hands up. We do have an additional question in the chat, which is related to whether or not the NRC is open to providing revised guidance on technetium-99 and iodine-129 quantities as part of the waste classification versus the

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manifesting guidance? I don't know if anyone on the NRC staff would like to tackle that question.

MR. MCKENNEY: I'm sorry. I think you got that directly, didn't you? Because I don't see it in chat for me. So, this was additional guidance for a Part 61 facility and the classification of iodine and technetium versus the use in a -- I'm sorry, can you read that again? Let's do it that way.

MS. DOELL: Sure. The question was is the NRC open to providing revised guidance on technetium-99 and iodine-129 quantities as part of waste classification?

MR. MCKENNEY: I think we'd have to drill into exactly what's that envisioning versus -- because there's unfortunately two aspects for technetium and iodine overall. One is of course the onsite intruder concentrations, which is onsite intruder protection for 61.42, which is what the table values assimilate.

However, the reason that carbon-14, tritium, iodine, and technetium are called out as described in 61.7 is that they are a -- they tend to be much more mobile than the rest of the constituents. And so, at some sites they compose the leading edge of any groundwater contamination over time and are important for the 61.41 calculation or the long-term performance

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objective for the general public.

As such, their importance and how waste classification goes into stuff is very site specific.

And I mean as we brought up, there is some discussion in NUREG-2175 on how a Part 61 site should consider it in their safety case analysis and performance assessment. But I'm not -- yeah, I think this one would -- this would be -- a little bit more context on this question would help us to say where we think that would go.

MR. GARRY: Yeah. This is Steve Garry. Is Clint's issue that there's actually so little Tc and iodine that a scaling factor doesn't show up -- I mean predicts too high a value and he's looking for a method of getting a more accurate scaling factor? Is that really the issue with Clint?

MS. DOELL: You know, I think to make it easier, Clint, I might just unmute your line if that's alright if you just want to answer directly. I'm going to do that now. And if you don't want me to, just put yourself back on mute. Okay. Clint, you should be unmuted.

MR. MILLER: Yes, thank you. Sorry for the confusion. Again, this is Clint Miller from PG&E. The question that I put forward is you folks at NRC

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said that you're not going to change the guidance that's been issued for this Rev 3. Okay, we got that.

But we've had this discussion about, you know, how there's obviously, hopefully more data to be had on this Tc and iodine. So, with this guidance on how the manifest is being done, is the next venue to hopefully drill down on Tc and iodine and get a better result for industry, and the public. Can that be handled in some manner, shape, or guidance on waste classification guidance? Is that the next vehicle where we go to?

MR. MCKENNEY: Okay. No, go ahead yourself. Sorry.

MR. MILLER: And then for Steve's -- I think to Steve Garry's question if, my point is that if we cannot use the actual accurate data from the Battelle lab on Tc and iodine from the industry that's done at E to minus 9, if we're not allowed to use that and use these LLD values from commercial labs because all they can give us, yeah we do have adverse impacts. That's the problem. And you know, the data we know that's down there at E to minus 7 or E to minus 8 or 9.

We can't get a sample today from a commercial lab and say oh yeah, if we use those old

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numbers, you know, we're not within -- we're way, two or three magnitude above commercial LLD. So, we can't say that yeah, we have data today that says that's still good. We have to -- in my opinion, we have to accept that that data, for a plant that doesn't have a major fuel defect, that's what the data is. Because that's the only technology that can find it and the commercial labs don't have that technology. Thank you.

MR. MCKENNEY: To answer your -- we have an echo here, I think. I hope that's not coming across. Yes, Clint, for the question on how do we -- how do we move forward on this on LLDs and, especially on Tc and iodine and what are alternatives and everything else, I think that -- Yeah, it might start out as a discussion with like trying to develop at least a fact. But it may develop into, you know, some sort of joint development of a white paper and its own, its own guidance in the future. Which as I said in my previous response, that might lead to some vehicle in the general communication -- generic communications line at least in the short-term.

But we wouldn't be holding up this NUREG Rev 3 implementation to solve that problem. I think that we would be working on that as a separate item to

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work on that. So, as EPRI came on and said that maybe it will part of the review for the generic scaling factors, that would also be -- possibly could be something that could be also part of the discussion.

So, the overall view is that this would not be for a near term revision of BR-0204. But to work out the issue and then make it into a guidance vehicle. And that is some level robust obviously, not just a white paper, and work out those practical solutions.

MS. DOELL: Alright. Thank you, Chris. I think the next question we have in the chat is whether or not the NRC would consider reconvening a second meeting on the LLD issue prior to the effective date for Version 3 of the waste manifest forms? Trish, did you want to address that one?

DR. HOLAHAN: Well again, I go with what Chris said. We'd like to get the NUREG finalized and issued and we can work on the LLD issue separately with industry. But we don't want to hold up the NUREG because we think that will be a longer-term effort. So anyways, we want to keep moving on the current NUREG and separately we'll commit to working with you all on the LLD issues.

MS. DOELL: Alright. Thank you, Trish.

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Alright, the next question has to do whether or not the NRC accepts the use of statistics to provide confidence in any analysis of data and development of the scaling factors as is typically done in other sites and engineering pursuits?

DR. PINKSTON: So, I would say that yes, we would accept that. And the person asking the question is right that this is an approach that's often used out there in science and engineering. And the use of statistics, if there's enough data to support it would be a great way of defending scaling factors. So, thank you for that question.

MS. DOELL: Alright. Thank you, Karen. And then the last question that I'm seeing also has to do somewhat with scaling factors, so Karen you might be back on the hook here. But the question is whether or not the NRC could provide generic scaling factor guidance for the four reportable nuclides based on 1.21 waste category? This would give generators the flexibility of using standard characterization methodologies. Or in the case where LLD activities become significant contributors to waste class, they would have an NRC approved fallback to utilize -- to better quantify the hazard. Does anyone want to respond to that one?

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MR. KOENICK: I think that goes along with what -- with what Chris and Trish were talking about that it's really starting this dialogue of how do we get there? And at that point in time, we could decide what the best tool would be to communicate. So, the answer is it could work out that way.

DR. HOLAHAN: And we could maybe start by putting it in the FAQs and you know, going from there.

MS. DOELL: Alright. Thank you, Trish and Steve. At this time, I show no more hands raised and no more questions in the chat that we haven't addressed. Again, to remind everybody on the meeting today, there will be a summary of this meeting provided that will --

MR. KOENICK: So Marlayna, I'm going to do a reverse question. I'm going to have a question for the participants and see if one or two of them want to weigh in. We, as Trish and Chris mentioned, want to implement NUREG Rev 3 and forms associated with them.

And we keep coming back to the LLDs and the scaling factors. From either the vendor perspective or the generator perspective, is that -- from your perspective, is the resolution of that issue inherent to having the software updated and ready for V&V? Or is it something that can be -- the software can be

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ready and available and then it's really the generator when they're filling out the forms and using the scaling factors and the LLDs.

So, I want to flip the question around and just get the insights from either a vendor's perspective or a generator's perspective.

MS. DOELL: Alright. It looks like a couple folks have raised their hand. Thomas Kalinowski. I apologize if I'm butchering your name.

I'm going to unmute your line now. You should be able to speak.

MR. KALINOWSKI: That was close enough. I've heard it butchered way worse. I'm Tom Kalinowski with DW James Consulting. We're one of the ones that make some of the software. And in answer to your question, no. The LLD issue is irrelevant compared to the software implementation that can be dealt with. The real problem with LLDs and in particular, the four phantoms, is just making the decisions for whether or not a scaling factor is appropriate for them and then how you would defend it.

MS. DOELL: Alright. Thank you, Thomas. And Tommy, I'm going to unmute your line. Your line should be open as well.

MR. COURTEMANCHE: Thank you. From my

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side, I think getting a resolution on how we handle the scaling factors, whether through generic scaling factors or some other methodology does have a significant impact on the software. The software is all rules based, so we need to know what the rules are. If we don't know what the rules are, then it's all fuzzy. And I can't put together an application that's going to provide documentation to defend a position when I don't know what that position is myself.

So, to me, I think I need to have some kind of concrete resolution on how we're going to implement generic scaling factors for the four reportables in LLD form. And that seems to be the big sticking point here is folks need to know how to handle situations like in Karen's example where you have relatively low activities for your detectables. So, for instance, a cobalt. But a high MDA or LLD value for one of your reportables. That's going to put you in that weird situation where your LLD value is going to be a waste class driver when we all know that, that's not necessarily the case in reality.

So, having some kind of guidance on how we can solve that problem is going to be what I put into the software. And if I don't know what those rules

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are, I can't build something to produce documentation and characterization results that I would be confident in.

MS. DOELL: Alright. Thank you very much.

Would anyone else like to provide any feedback to Steve's question about this? I think that was some great discussion. Alright, I'm pretty sure this is Clint again. Your line should be open.

MR. MILLER: Yes, thank you. My opinion as a shipper is that I don't think the reg guide manifesting needs to be held up. I appreciate the further dialogue going forward on Tc and iodine.

As far as the software goes, it seems to me that instead of using commercial lab LLDs, the options are to use a scaling factor that would predict a more accurate number such as what EPRI sent in to the NRC for review. Either use a scaling factor or to come back and say we're just going to use a constant concentration for Tc and iodine. Like that could be 1 either minus 7 and/or iodine would be 1 either minus 8. If we could use a constant concentration that's in the ballpark of what the actual data is from Battelle or use a scaling factor, I think those are the two possible options. And I know the software program we use, we use Tom's software, either of those methods

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could be done with the software. Thank you very much.

MS. DOELL: Alright. Thank you so much. That's everybody that I have with hands raised or that has made any comments in the chat window. So, with that, I think I'm going to turn it back over to Steve to provide any other follow-up comments and start to close out the meeting. I'll still monitor both the chat window and the hands raised if anybody has any last-minute comments they'd like to make. And again, just a reminder that this meeting will be summarized, and that summary placed in ADAMS and made available, you know, as a publicly available document. So, thank you again and back to you, Steve.

MR. KOENICK: Okay. Thank you, Marlayna.

It was a very useful Q&A session. Marlayna, you want to go to that contact slide? Okay, so here are -- here are Priya and Karen's emails. And you see there that Priya is the project manager and Karen is the technical lead in this area.

We would be very interested in figuring out the best way to advance the concepts and the characterization of the LLDs. So, we just have to figure out the best vehicle to do that. We heard a little mixture in my question, whether it's the vendor issue versus -- software versus generator and whether

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we can go forward. So, we might reach out to some of those commenters after the meeting.

It seems like the June timeframe seems manageable for the -- for the vendors or for us to go forward with Rev 3 with this (audio interference) implementation that would get to -- that would get us to September implementation. And we didn't hear from any of our agreement state partners. We will be obviously reaching out to them just to make sure that they're in alignment with our approach.

So, I would like to thank Priya and Karen for putting this together and Marlayna and Sarah and everybody who contributed to the meeting, so thank you. I think it's been very productive. Tentatively we're considering the June timeframe, followed by that September implementation. I think Trish wanted to have some concluding remarks, so I'll pass it over to her.

DR. HOLAHAN: Thanks, Steve. And thanks Karen and Priya and Marlayna for running this meeting.

And thank you everybody for participating. It was a good discussion. I've heard that EPRI might want to re-submit their report and address the RAIs with NRC.

So, we'll wait for that. And then we'll work with NEI and industry on how to address the LLD issue. And

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as I said, we may not get it -- Well, we won't get it done for this version of the NUREG. But we can certainly start with the FAQs and then proceed on from there and issue it at a later time. Anyways, we've heard a lot of good thoughts. And I appreciate everybody's attendance and participation. And I'll turn it back to Marlayna.

MS. DOELL: Alright. Thank you, Trish. I think with that, we'll go ahead and close out the meeting. As I mentioned, we will be recording the chat transcripts, as well as the transcript for this meeting. The transcript will be available publicly once we get the meeting summary put together. Priya's contact information, as well as Karen's are still on the screen. I think they're the primary technical contacts to reach out to. And if anyone has any questions about the WebEx at large, feel free to reach out to me.

Thank you all again for joining us today. I think this was a useful and productive discussion. So, with that, I'm going to go ahead and disconnect the WebEx and thank you all again.

(Whereupon, the above-entitled matter went off the record at 3:17 p.m.)

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