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UNITED STATES NUCLEAR REGULATORY COMMISSION'S
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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575TH MEETING

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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FRIDAY

SEPTEMBER 10, 2010

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ROCKVILLE, MARYLAND

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The Committee met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B1, 11545 Rockville Pike, at 8:30 a.m., Said Abdel-Khalik, Chairman, presiding.

COMMITTEE MEMBERS:

SAID ABDEL-KHALIK, Chairman

J. SAM ARMIJO, Vice Chairman

JOHN W. STETKAR, Member-at-Large

SANJOY BANERJEE, Member

DENNIS C. BLEY, Member

MARIO V. BONACA, Member

MICHAEL L. CORRADINI, Member

DANA A. POWERS, Member

COMMITTEE MEMBERS: (CONT.)

HAROLD B. RAY, Member

MICHAEL T. RYAN, Member

WILLIAM J. SHACK, Member

ACRS STAFF PRESENT:

DEREK WIDMAYER, Designated Federal Official

HOSUNG AHN

JEAN-CLAUDE DEHMEL

RICHARD RAIONE

ED ROACH

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8:29 a.m.

CHAIRMAN ABDEL-KHALIK: The meeting will now come to order. This is the second day of the 575th meeting of the Advisory Committee on Reactor Safeguards. During today's meeting, the Committee will consider the following.

1. Proposed Interim Staff Guidance DC/COL-ISG-13, "Assessing the Consequences of an Accidental Release of Radioactive Materials from Liquid Waste Tanks," and Proposed DC/COL-ISG-14, "Assessing Groundwater Flow and Transport of Accidental Radionuclide Releases."

2. Future ACRS Initiatives and Report of the Planning and Procedures Subcommittee.

3. Reconciliation of ACRS Comments and Recommendations.

4. Assessment of the Quality of Selected NRC Research Projects.

5. Preparation of ACRS Reports.

This meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act.

Mr. Derek Widmayer is the designated federal official for the initial portion of the

meeting. We have received no written comments or requests for time to make oral statements from members of the public regarding today's sessions.

There will be a phone bridge line. To preclude interruption of the meeting, the phone will be placed in a listen-in mode during the presentations and committee discussion.

A transcript of portions of the meeting is being kept and it is requested that the speakers use one of the microphones, identify themselves and speak with sufficient clarity and volume so that they can be readily heard.

At this time we will proceed to the first time on today's agenda, which is Proposed Interim Staff Guidance ISG-13 and ISG-14 and Dr. Ryan will lead us through that discussion. Dr. Ryan.

MEMBER RYAN: Thank you, Mr. Chairman. As you mentioned, ISG-13 and 14 are in front of us today and we are going to have I think some good briefings from the staff.

Let me make a comment and say this is a distinct matter from the groundwater initiative program that is going on, looking at long-term, small quantity leakage issues that have occurred at various power plants.

This is really an update to some interim staff guidance as we will learn, I believe, on new licensing efforts to assess some kinds of accidents at new plants.

So, we are going to hear about the groundwater issues I think later in some separate briefings perhaps later in the year, but for the moment we are going to be hearing about ISG-13 and 14 and with that, I guess I'll turn it over to Dr. Dehmel. Welcome and thank you for coming.

MR. DEHMEL: Thank you. Again, my name is Jean-Claude Dehmel and I am with the NRO DCIP, the health physics group. I am going to over ISG-13. We gave you a couple of briefings before.

This is naturally a continuation of our effort in revising the guidance. We have submitted a proposed revision to the guidance namely SRP section 11.2, BTP 11-6 as well as the supporting aspects on groundwater modeling that is continuing in the SRP section 2.13.

And this is the result, this presentation represents in essence the initial distillation of NEI comments we have obtained from the Federal Register Notice.

So on ISG-13, we, NEI submitted 40

comments, 28 of which were substantive comments, 12 were editorial, and as you can imagine, because there was a parallel Federal Register Notice on ISG-14, there were eight correlating comments on ISG-14 that we are going to have to tackle and address in ISG-13.

Basically what we have done for the purpose of this presentation, broken down the substantive comments into both categories involving source term development, applicability of the tech specs, tank inventories, the kind of and the level of conservatism that may be applied for this analysis, the options in applying different types of mitigative design features, acceptance criteria, meaning once you do an assessment, when do you know that the results were acceptable or not, receptor location and applicability of the revised guidance and the implementation in the light of new reactor licensing.

So I am going to take these things one by one and go briefly over them. Source term development: there was an issue as to whether or not the listing of radionuclide we had added in Appendix A or Attachment A to ISG-13 was comprehensive or mostly -- well, in this particular case, the concern was 23 radionuclides that were cited and they are namely Tc-99 and I-129, the concern was those radionuclides are typically not

considered in developing the source terms for the purpose of Chapter 11.1 of the FSAR as well as Chapter 12, because they don't offer much contribution to those which we spare occupational radiation exposure as well as outside releases.

So the thought that we would include those -- the process that we are thinking about is retaining those radionuclides and essentially putting the onus on the applicant to confirm to us whether or not those radionuclides are there or not there, and then make a case if they are excluded for whatever reason and we will look at that justification and make a determination whether or not that reasoning is applicable and justifiable.

So that listing on the back of the ISG-13 attachment, what do you mean? Applicability of administered tech specs to inside and outside tanks. Here what we are trying to do is also reconsolidate discrepancy or an inconsistency between SRP Section 11.2, BTP 11.6 and the initial guidance on that which is contained in NUREG-0133.

The thought was that the tech spec requirement would require only on outdoor tanks but the way it is described in NUREG-0133 is that one does the analysis for both inside and outside tanks and

then even for the inside tanks you determine that you may or may not meet the acceptance criteria, and we are going to go over that later on, then therefore an inside tank should also be considered in the analysis.

So the industry's thought was that the tech spec only applies to outdoor tanks and tanks that are out there for more than three months, so we are going to change the guidance to make sure that it's clear that this applies to any tanks, regardless of the duration of the -- for temporary tanks that is -- duration of the temporary storage or use of a tank outside.

MEMBER CORRADINI: So just so I understand, the key is a temporary tank regardless of where it is?

MR. DEHMEL: Regardless of where it is.

MEMBER CORRADINI: Okay.

MR. DEHMEL: Yes. All right.

MEMBER CORRADINI: That's what I was --

MR. DEHMEL: So we are going to -- what we are going to do is import and modify the information out of NUREG-0133, put that in the ISG-13, in essence make it clear that the previous guidance that is cited in NUREG-0133 is now superseded by this new information.

Required level of conservatism: so there

was -- we are probably at fault, the staff is probably at fault on this one because we tried to provide more information, but apparently our effort in trying to clarify was just not enough.

So we are going to work on that obviously and we are also going to have work on that because there is obviously a correlating effect with Section 204.13 and ISG-14 so we are going to have to spend some time working with the two branches in trying to figure out that the level of conservatism, both in the context of developing the source term and the assumptions for the analysis, as well as the corresponding assumptions that are made in a movement of the radioactivity of the groundwater and a definition of the receptor location and so on are all consistent in terms of the level of conservatism.

So the focus will be redefining and probably more guidance and obviously presenting an approach that relies on a screening model so to speak, or a simpler model to a more sophisticated model depending on the outcome of each analysis.

So if you were to use a very simple screening model and it failed, and the question, well maybe you should reconsider the assumptions that were made that were perhaps overly conservative and then

you would go and ratchet essentially the analysis to the point where in the end, you may have to use a very sophisticated model.

So this offers two options. One is it simplifies the analysis. You could use a simple screening model and the results show that you are in compliance with the acceptance criteria and be done with it.

MEMBER RYAN: It seems to me, Jean-Claude, that allows for a range of approaches based on the specifics for a given plant versus another. Some might be very simple and straightforward and others might need to go to the more complicated model. Is that a fair view?

MR. DEHMEL: Right. Right. Receptor location. Again, we are trying to clarify that and apparently we were just not clear enough, so we are going to expand that with respect to what is meant by the receptor location or the point of views.

So the thought was initially we are going to -- we are thinking about the point of use meaning the point of use of where you would draw the water for consumption, either for drinking water or you draw the water from the watering livestock or your gating pastures or crops.

And so now we are going to change it to where the material first enters surface water body or groundwater, outside of the site boundary so to speak.

Acceptance criteria: again there, we tried to clarify what we meant or what was meant by the initial guidance and so as you may recall, the initial focus was in compliance with the effluent concentration limits that were planning to be Part 20 Table 2.

And the bottom line with that was it posed the problem because the assumption was the end use is always drinking water, so if this was the case, the application of ECLs was straightforward and simple.

But buried in the prior guidance was that when -- that in addition to drinking water, there was a consideration with respect to the indirect use of water, meaning watering livestock and using the water for irrigation.

So the ECL concentration as an acceptance criteria just don't lend themselves very well to that and the thought was we would have essentially a dual-step system where, if you had simply drinking water complying with the ECL was fine and you were done with it, and then if you had no drinking water, then you would have to go to dose calculations, something a

little bit more complicated with respect to having to figure out how is the water used, what are the reconcentration issues that are radionuclides and whether or not you are dealing with crops or pastures and so on.

So then we thought, well, for that pathway we would apply 100 millirem. Then we had an inconsistency because ECLs are based on 50 millirem per year and in those calculations for this indirect use would be based on 100 millirems, so again another discrepancy, another inconsistency.

So now we are going to streamline everything to 100 millirem, period. And that makes that criteria essentially parallel with the one that is used for a similar accident for the old gas system, meaning the failure of a gas system delay tank or charcoal delay bed.

So there is a limit to 100 millirem there for systems that are not seismically qualified or systems that are not designed to withstand internal explosive gas mixtures.

So at least for the common accidents of failure analysis, for liquid effluences or gaseous effluence, there will be a common acceptance criteria of 100 millirem, so we are going to normalize that.

Mitigative design features: again there was some confusion there with respect to what the guidance say and also looking back with respect to what has been acceptable in the past and by the way I don't know why there's a different highlight here. There is no importance here.

The thought was that we would essentially not allow the use of coatings, even those that would meet the specific reg guide's compliance with the coatings because it's not passive and it's not durable -- it's passive but it's not durable, let's put it this way.

And the thought was that we would essentially focus on liners because liners was an excellent way of containing the entire content of a tank that might have ruptured within a cubicle or within a room.

But then we looked further in the guidance in the reg guide 1.143 addressing acceptable design features for rad waste building and cubicles containing rad waste processing equipment is that basically it had enough of a concrete structure with sumps and walls that were designed to contain liquid, that that would be acceptable.

So we the staff had posed requirements in

essence that were above and beyond the reg guide addressing these kinds of design features for the purpose of assessing the consequence of a postulated failure of a rad waste tank.

So what we are going to do with that one is we are going to step back and point to reg item 1.143 which describes its acceptability as far as design features, point to reg item 4-21, Appendix A1, which describes similar type of engineering design features and in greater length than reg guide 1.143 does and leave it to the applicant to actually figure out what kind of design features fit best for that particular design, for the rad waste system for the building where the equipment is located, and use that approach.

As far as I can tell, the introduction of liners started with the ABWR design certification where GE committed to installing steel liners in the rad waste building where their liquid waste management system components were located and that GE then went ahead and followed through with the ESBWR design.

And we followed through as well, because we thought it was a good feature and it is a good feature. But it should be, at this point, the thought was, is it should be an option that the applicant

should make a determination whether or not it's a preferred design feature. We are not going to discourage it. Obviously we are going to highlight it as one acceptable feature. We will cite the two precedents, namely the ABWR DCD and the ESBWR DCD as a case example where the staff has found that kind of a design feature acceptable.

But we are not going to make it a prerequisite because it is contrary to the regulatory commission in both of these reg guides, 1.143 and 4-21.

MEMBER BLEY: And I take it after consideration you felt there wasn't a strong enough case to revise the reg guide or is just too much work?

MEMBER RYAN: Jean-Claude, I recall the EPR had some compartmentalization about areas with tanks with the idea of controlling overflow. I am not sure if I am remembering that right, but --

MR. DEHMEL: Yes. Yes. The same right. But they are -- essentially you see the EPR is stepping away from liner, the ABWR is stepping away from steel liners. They have both considered it and then they stepped back.

MEMBER RYAN: Yes. Okay.

MR. DEHMEL: So, what we proposed to do

with ISG-13? So basically, we are going to address and resolve the NEI comments identified earlier and we are going to have a meeting at the end of the month with NEI. We are going to go over this -- essentially the same presentation with NEI.

We are going to restructure the ISG-13 for further clarification, including interface with ISG-14. We are going to keep the system design's engineering valuation ISG-13 because that makes sense. It's tied to chapter 11.2, where the analysis of and evaluation of the designs are.

We are going to clarify the guidance on the application of mitigative design feature. Again, what I just discussed was steel liner and making emphasis on reg guide 1.143 and 4-21.

We are going to relocate the source term modeling guidance on NUREG-0133 to ISG-13. Right now it's kind of split and so we are essentially supersede that section of NUREG-0133 and bring it forward.

We are going to also relegate the use of a code in NUREG-0133, it's called RATAFR, which was used for that kind of purpose and present in ISG-13 and 11.2, in SRP 11.2 and BTP 11-6, a conceptual approach which kind of mimics what the computer code did and leave it up to the applicant to use a code methodology

similar to what was cited in NUREG-0133 or use something better.

The problem with the code is it's outdated and secondly, it does the calculation but built into the code are all the old effluent concentration limits of the old Part 20 which doesn't work anymore obviously. So that's one issue.

And then we are going to expand the guidance on source term bases and development. We are going to clarify the guidance on grading a screening approach in assessing the impacts. We are going to redefine the acceptance criteria, 100 millirem for direct, indirect exposure pathways at the point of entry, in ground or surface water body.

We are going to relocate the dose assessment and verification of compliance with ISG-14. Yes, I need to expand on this a little bit. What we are going to do now is that ISG-13 and BTP 11-6 will present the methodology for the source term development, the assessment of the engineering capability of the systems and the room where the equipment is located, and then the folks in RHEV will take that source term, plug it into the groundwater model, and come up with concentration at a point of use, which is either a surface water body or

groundwater body.

MEMBER RYAN: That sounds kind of a sharp line if you are generating a source term and ISG-14 will take it into transport and --

MR. DEHMEL: Correct.

MEMBER RYAN: model.

MR. DEHMEL: And then from that we will then take it back, because then we get concentration in the water, right. And we will essentially then crank out the dose calculation and confirm whether or not it meets the acceptance criteria of a dose under 100 millirem. So that's the way it's going to be done.

MEMBER RYAN: Okay.

MR. DEHMEL: And then we are going to relocate the administered tech specs requirement on some inventories from NUREG-0133 to ISG-13, so again, that's going to be somewhat different, because all of that text that is now in NUREG-0133 is going to be imported, slip into ISG-13 and elaborated upon.

And also we are going to requalify the administered tech specs as being one of the elements in operational program because every time we said tech specs, the industry kind of, is somewhat worried because they think about tech specs in a traditional content where every time you change your tech specs,

you have got to file for a license amendment.

This is purely in the context of the administrative programs that are described in a tech spec in Chapter 16 in Section 5. But having to do where those elements of the tech specs are into the offsite dose calculation manual, which is not required to be submitted every time you make a change to the offsite dose calculation manual, the same way you did a traditional tech spec.

So that required classification, because every time we say tech specs, the industry panics.

And then we are going to realign the staff review responsible as an interface among SRP 2-413-11-2 BTP 11.6. What I just described with respect to the relationship of the source term development being defined in 11-2. We turn it over to RHEV. They do their thing. Then we retrieve the information from that, the code output, and then we do only the dose calculation confirmation back in Chapter 11.2.

Are we taking questions no, or we can do it later?

MEMBER RYAN: Any questions?

DR. AHN: Good morning. My name is Hosung Ahn. I am in the hydrogeologic engineering branch of NRO and I was involved in revising other -- developing

this ISG-014.

Basically, ISG-014 is supplemental guidance for existing SRP section 2, 4, 12 and 13. That addressed the radiological consequence of a release in groundwater as well as surface water.

If that included how we develop the conceptual site model and how we characterized onsite hydrogeology, then how we analyzed the transport analysis in groundwater as well as surface water.

So once we published this ISG-014, NEI provided a consolidated industry comment to us and we reviewed that and other than the interfacing issue between ISG-013 and 014, I think their comment is quite favorable and especially with mention on ISG-014 that if they need mitigation measure in future, then we said the applicant may waive consequence analysis but still they need to characterize onsite hydrogeology.

Then they said, well, that -- giving the credit for mitigation measure in future will be favorable to the industry. That's what they commented. And the other comment is that this ISG provides specific guidance on how we establish onsite hydrogeology and how we do the onsite hydrogeologic measurement. We provided some of them and they said

that's very good. So that's the general comment on there.

And I will explain the specific over there comment by section by section of ISG-014. We got totally over 41 comments and reviewed that and we decided that 24 comments are relevant to revise either just the small text changes or the changes on ISG-014 so we are going to revise that.

Then remaining 13 comments, that's more like a clarification issue. So on our response to NEI comment, we will address that but we will not use that on --

BBB. Can you clarify that NEI comment about this mitigation measures, credit --

DR. AHN: I will explain that --

BBB. Okay. You are going to?

DR. AHN: Yes. I am going to. Yes. So I will explain their major concerns on section by section on ISG-014. The first on the background section over the ISG-014, we describe what's the background of the baseline on the NRC system.

We proposed that when we analyze radionuclidic transport in groundwater or surface water, what kind of base hydrogeologic condition applicants should use? Most of the case, they

estimated conservative assumption record, very low stream flow or high gradient of groundwater and they estimate the transport analysis and consequence analysis.

But our regulations said we should rely on the average annual hydrogeologic condition and that's consistent with RG 1.113. So we clarified that issue on there.

Then the NEI asked what is the regulatory basis on that? Again, we said that the regulatory basis is Part 20, Appendix B as far as guidance in RG 1.113.

So we will clarify that in our ISGs. That's the background issue. And on onsite hydrogeologic characterization section, they made two comments. First one is does ISG-014 introduce a new requirement for annual average dose limit? Second question is items E of this section appear to introduce a new criteria for hydrogeologic condition as well as onsite testing.

Our answer is no, we don't introduce a new regulation or guidance, but we just clarify on that issue. That's our response to the NEI comment.

MEMBER RYAN: And you are not requiring any in situ testing?

DR. AHN: That was already on Part 120 but we clarified that issue.

MEMBER RYAN: Okay. It's not something separate in this --

DR. AHN: No, it's not. Then, I will explain a receptor point issue. We described how we select the receptor point, actually what are the definition of receptor point and how we select the receptor point. Sometimes some site, that's a little bit issue.

So we tried to clarify that and the NEI said need more clear definition of a receptor point and how we applied that. So we are going to revise our text to clarify that issue.

Then how we analyze direct release to groundwater section and how we developed the conceptual site model or numerical model. On that, we have four major comments. First, clarify main objection of groundwater modeling. That's what NEI asked. And we addressed that issue on ISG but we will reinforce that so that may be more clear on the background and actual guidance of the attachment.

And next one is when a high consequence analysis is used, we addressed that issue already on ISG-014 but we are going to clarify that more clearly

so that they can understand the reality of the situation in support of higher authority.

Then, next one is the -- on our ISG-014, we mentioned that when they do the radiological consequence analysis, especially for tritium, EPA drinking water standard is more conservative so when we do the environmental intake analysis we also used that criteria, but on safety accidental use analysis, we put that across on proposed ISG but NEI said it should not be there and we also discussed this issue with or OGC and they said it's not appropriate to include this. So our revision will remove that specific item.

MEMBER RYAN: So you are reverting back to what comparison and you're back to the dose standards that are in --

DR. AHN: Yes.

MR. DEHMEL: Yes, the 100 millirem, that's what we are going to apply there, yes.

DR. AHN: Maybe it is a little bit consistent too with your position.

MEMBER RYAN: In my own view, that's an appropriate change because the EPA drinking water standard basis is a completely different structure.

MEMBER BLEY: This is not drinking water.

DR. AHN: They also asked that provide a regulatory basis of waiving the consequence analysis and Jean-Claude already addressed that issue. And finally, applicability. They commented and we will revise that. So that's pretty much --

MEMBER SHACK: Wait, you are going to accept that? On the applicability?

DR. AHN: Yes.

MEMBER SHACK: I mean, since there's no new requirements here, you are only clarifying what the actual requirements are, why isn't that applicable to any application that hasn't been already finalized and accepted?

MR. DEHMEL: That's a licensing issue, I guess.

MR. ROACH: This is Ed Roach with New Reactors Office, Health Physics. When ISGs are published, they restate and the applicant can use those for clarification on their application. What these incorporate are the lessons learned from the applications we have reviewed so far. We haven't stated that regulations or guidance does not apply. We were trying to clarify that.

So I think Dr. Ahn's point and our point is that when we publish the ISG final, those

applications that are already in the door don't have to go back and redo everything in accordance with these ISGs. We have already applied the appropriate --

MEMBER SHACK: Okay, you have reviewed them essentially to this kind of standard.

MR. ROACH: Yes, and what we have identified, and I guess that would be the point I would make, is that through the course of the first series of DCs and applications we have received, these are essentially lessons learned where we had guidance that was probably confusing, unclear, and we resolved them through your RAIs or -- inconsistent.

And so the purpose here is to get this out and then get it reincorporated into a revision to the SRP. Does that answer your question sir?

MEMBER SHACK: Yes.

MR. ROACH: Okay. Thank you.

MEMBER RYAN: Thank you Dr. Ahn. Any questions? Going once, going twice. My own view is I think these clarifications are excellent clarifications that are built upon the input that you have got from industry in our previous meeting. At some point we will be ready to hopefully write a letter and recommend implementation as amended.

I am wondering now, it seems to be there

is going to be a number of significant changes to the actual documents from this point moving forward.

MR. DEHMEL: Correct.

MEMBER RYAN: So I am guessing, Mr. Chairman, that we are probably not in a position to say issue the guidance because they haven't really finalized it yet.

But I think that, based on what we have heard today and all those things being equal, I think it might be appropriate for us to just take this up with a question that they are going to get implemented as described today, so that is where we can probably issue the letter concurring with implementing these revised guides. So do you have any idea on schedule, Ed or when that might be, or --?

MR. ROACH: We were discussing that this past week and looking at the items on our plate, this first quarter of FY11 will be a challenge for us because of our support for the rulemaking for Part 20 and 50, Appendix I.

So we anticipate probably the first quarter of the New Year, actual calendar 2011, getting it out.

MEMBER RYAN: Well, and of course, I would hate to say everything would be just like you

described it today, because who knows what might come up in the intervening time.

So I think the subcommittee recommendation would be to table this and hold just a final check as opposed to a detailed review, to make sure that what you have described today is how things work out and then we would say, based on those things being accomplished, that we would recommend to the full committee that they write a letter advising them, implementing the guidance.

CHAIRMAN ABDEL-KHALIK: Okay.

MEMBER RYAN: Does that sound like a plan forward?

CHAIRMAN ABDEL-KHALIK: That's fine. Okay. Thank you.

MEMBER RYAN: So with that, Mr. Chairman, I will turn it back to you. Thank you.

CHAIRMAN ABDEL-KHALIK: Thank you. We are well ahead of schedule, but at this time, we will go off the record.

(Whereupon the above-entitled matter went off the record at 9:04 a.m.)

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Presentation to the 575rh ACRS Meeting

ISG-013
"Assessing the Consequences of an Accidental Release of Radiological Materials from Liquid Waste Tanks"

September 10, 2010

Jean-Claude Dehmel
Edward Roach, BC
(NRO/DCIP/CHPB)

Overview of NEI Comments

- NEI presented 40 comments on ISG-013:

  - 28 substantive comments
  - 12 editorial comments
  - 8 correlated comments cited in ISG-014

- For substantive comments, the issues address:

  - Source term development
  - Applicability of TS limits on tank inventories
  - Applied level of conservatism
  - Mitigative design features
  - Acceptance criteria
  - Receptor location
  - Applicability and implementation

Response to NEI Comments

Source Term Development

Issue: Addressing radionuclides not in ANSI/ANS 18.1 but could be important based on half-life and transport characteristics

Action: Include H-3, C-14, Tc-99, and I-129 in the ISG-013 because of half-lives and increased environmental mobility. The ISG will request applicants to present technical justification for omitting radionuclide listed in ISG-013.

Application of Administrative TS to Inside and Outside Tanks

Issue: ISG-013 considers inside and outside tanks as having possible TS limits. The inclusion of inside tanks is inconsistent with standard technical specification documents.

Action: NUREG-0133 specifies that inside tanks can have TS limits based on the consequence analysis. Staff will address inconsistency between NURG-0133 and Standard TS and develop a revised position in ISG-013.

Response to NEI Comments

Required Level of Conservatism

Issue: Confusion on level of conservatism required for the consequence analysis. This confusion stems from seemingly different approaches described in ISG-013 and ISG-014, and acceptance criteria based on Part 20 ECLs and dose limits.

Action: Staff prefers a screening approach to the consequence analysis. The ISG will clarify that the applicant should first use a simple worst-case screening analysis. If this worst-case analysis demonstrates acceptability, then no further action is required. If the worst-case cannot demonstrate acceptability, then applicant needs to provide a more refined analysis and justification the approach.

Receptor Location

Issue: Stakeholders not clear as to where they should calculate consequences and apply acceptance criteria.

Action: Further clarification needed. Staff prefers location outside the site boundary, where materials first enter a surface water body used for drinking or indirect uses. For ground water, staff prefers selecting a location where releases impact drinking water outside the site boundary.

Response to NEI Comments

Acceptance Criteria

Issue: Several comments noted on acceptance criteria. One issue pertains to the inconsistent use of the Part 20 ECLs for direct water use (based on 50 mrem/yr) and annual dose limit of 100 mrem/yr for indirect pathways. Another issue pertains to the fact that the acceptance criteria should refer to the dose associated with a tank failure event. This needs clarification recognizing that releases to surface water produce dose rather quickly, while releases to groundwater produce protracted exposures and doses. Another issue pertains to the need to combine the consequences from direct drinking water use with indirect water use.

Action: Acceptance criteria require clarification and include appropriate acceptance criteria for different situations. Staff is mindful not to create a complicated set of acceptance criteria.

Response to NEI Comments

Mitigative Design Features

Issue: If allowed to take credit for mitigative design features, how should applicants address the requirements in ISG-014 that pertain to the adequacy of site hydro-geologic properties?

Action: Further clarification needed as ISG-013 and -014 address different aspects. While both ISGs address protection against unintended releases, ISG-013 addresses the adequacy of the LWMS design and ISG-014 addresses inherently protective site features.

Applicability

Issue: Stakeholders unsure as to when ISG-013 takes effect and if current applications need to incorporate the new guidance.

Action: Staff to clarify issue. Presently, the staff will not apply ISG-013 to current applications. Staff will apply new ISGs to any application received 6 months after the issuance of both final ISGs, with ISGs subsequently incorporated in the SRP.

Staff Proposed Action 1/2

In revising and reissuing ISG-013 (SRP 11.2 and BTP 11-6), staff will:

- Address and resolve NEI comments identified earlier
- Restructure ISG-013 for further clarification and interface with ISG-014
- Keep systems design engineering evaluation in ISG-013
- Clarify guidance on the application of mitigative design features
- Relocate source term modeling guidance from NUREG-0133 to ISG-013
- Expand guidance on source term basis and development in ISG-013

Staff Proposed Action 2/2

In revising and reissuing ISG-013 (SRP 11.2 and BTP 11-6), staff will:

- Clarify guidance on a graded /screening approach in assessing impacts
- Redefine acceptance criteria as 100 mrem for direct and indirect exposure pathways at the point of entry in a ground aquifer or surface water body
- Relocate dose assessment and verification of compliance in ISG-014
- Relocate administrative TS requirement on tank inventories from NUREG-0133 to ISG-013
- Expand guidance on administrative TS as one element in operational programs
- Realign staff review responsibilities and interfaces among SRP Sections 2.4.13 and 11.2, and BTP 11-6

Staff Proposed Action

Any questions?

U.S.NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

Presentation to the 575th ACRS Meeting

ISG-014: "Assessing Groundwater Flow and Transport of Accidental Radiological Releases"

September 10, 2010

Hosung Ahn (NRO/DSER/RHEB)

Response to NEI Comments

Summary of Revision

- 24 comments were used to revise the ISG-014 text, while 17 comments were addressed in the response without any text changes.

Background Section:

- Clarify the regulatory basis of proposing 'annual average hydrologic occurrence.' (Comments #10 & 21).

On-site Hydrogeologic Characterization Section:

- Does ISG-014 introduce a new requirement for annual average dose limits? (#22).
- Item (e) of this section appears to introduce new criteria for areal hydrological conditions and requirement for in-situ testing (#23).

Response to NEI Comments

Receptor Location Section:

- Clarify the description of receptor points (#27).

Direct Release to Groundwater Section:

- Clarify the main objective of groundwater modeling (#6).
- Clarify when a hierarchical consequence analysis is used (#7 & 11).
- Remove the requirement of meeting the EPA drinking water standard for FSAR 2.4.13 consequence analysis (#35).
- Provide the regulatory basis of waiving FSAR 2.4.13 consequence analysis (#36).

Applicability:

- Applicability should be for initial applications received after final ISG is approved (#1).