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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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1 UNITED STATES OF AMERICA
2 NUCLEAR REGULATORY COMMISSION

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4 575TH MEETING

5 ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

6 (ACRS)

7 + + + + +

8 FRIDAY

9 SEPTEMBER 10, 2010

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11 ROCKVILLE, MARYLAND

12 + + + + +

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

17 COMMITTEE MEMBERS:

18 SAID ABDEL-KHALIK, Chairman

19 J. SAM ARMIJO, Vice Chairman

20 JOHN W. STETKAR, Member-at-Large

21 SANJOY BANERJEE, Member

22 DENNIS C. BLEY, Member

23 MARIO V. BONACA, Member

24 MICHAEL L. CORRADINI, Member

25 DANA A. POWERS, Member

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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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C-O-N-T-E-N-T-S

Opening remarks by ACRS Chairman 4

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." 5

Conclusion of this section 29

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P-R-O-C-E-E-D-I-N-G-S

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

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

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

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

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

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

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

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

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

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

15 This is naturally a continuation of our
16 effort in revising the guidance. We have submitted a
17 proposed revision to the guidance namely SRP section
18 11.2, BTP 11-6 as well as the supporting aspects on
19 groundwater modeling that is continuing in the SRP
20 section 2.13.

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

25 So on ISG-13, we, NEI submitted 40

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

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

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

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1 considered in developing the source terms for the
2 purpose of Chapter 11.1 of the FSAR as well as Chapter
3 12, because they don't offer much contribution to
4 those which we spare occupational radiation exposure
5 as well as outside releases.

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

15 So that listing on the back of the ISG-13
16 attachment, what do you mean? Applicability of
17 administered tech specs to inside and outside tanks.
18 Here what we are trying to do is also reconsolidate
19 discrepancy or an inconsistency between SRP Section
20 11.2, BTP 11.6 and the initial guidance on that which
21 is contained in NUREG-0133.

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

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

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

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

15 MR. DEHMEL: Regardless of where it is.

16 MEMBER CORRADINI: Okay.

17 MR. DEHMEL: Yes. All right.

18 MEMBER CORRADINI: That's what I was --

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

25 Required level of conservatism: so there

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

5 So we are going to work on that obviously
6 and we are also going to have work on that because
7 there is obviously a correlating effect with Section
8 204.13 and ISG-14 so we are going to have to spend
9 some time working with the two branches in trying to
10 figure out that the level of conservatism, both in the
11 context of developing the source term and the
12 assumptions for the analysis, as well as the
13 corresponding assumptions that are made in a movement
14 of the radioactivity of the groundwater and a
15 definition of the receptor location and so on are all
16 consistent in terms of the level of conservatism.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

25 So we the staff had posed requirements in

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

5 So what we are going to do with that one
6 is we are going to step back and point to reg item
7 1.143 which describes its acceptability as far as
8 design features, point to reg item 4-21, Appendix A1,
9 which describes similar type of engineering design
10 features and in greater length than reg guide 1.143
11 does and leave it to the applicant to actually figure
12 out what kind of design features fit best for that
13 particular design, for the rad waste system for the
14 building where the equipment is located, and use that
15 approach.

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

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

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

8 But we are not going to make it a
9 prerequisite because it is contrary to the regulatory
10 commission in both of these reg guides, 1.143 and 4-
11 21.

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

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

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

24 MEMBER RYAN: Yes. Okay.

25 MR. DEHMEL: So, what we proposed to do

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

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

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

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

20 We are going to also relegate the use of a
21 code in NUREG-0133, it's called RATAFR, which was used
22 for that kind of purpose and present in ISG-13 and
23 11.2, in SRP 11.2 and BTP 11-6, a conceptual approach
24 which kind of mimics what the computer code did and
25 leave it up to the applicant to use a code methodology

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

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

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

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

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1 groundwater body.

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

5 MR. DEHMEL: Correct.

6 MEMBER RYAN: model.

7 MR. DEHMEL: And then from that we will
8 then take it back, because then we get concentration
9 in the water, right. And we will essentially then
10 crank out the dose calculation and confirm whether or
11 not it meets the acceptance criteria of a dose under
12 100 millirem. So that's the way it's going to be done.

13 MEMBER RYAN: Okay.

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

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

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1 you have got to file for a license amendment.

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

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

12 And then we are going to realign the staff
13 review responsible as an interface among SRP 2-413-11-
14 2 BTP 11.6. What I just described with respect to the
15 relationship of the source term development being
16 defined in 11-2. We turn it over to RHEV. They do
17 their thing. Then we retrieve the information from
18 that, the code output, and then we do only the dose
19 calculation confirmation back in Chapter 11.2.

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

22 MEMBER RYAN: Any questions?

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

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1 this ISG-014.

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

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

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

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

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

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

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

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

15 DR. AHN: I will explain that --

16 BBB. Okay. You are going to?

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

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

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

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

9 Then the NEI asked what is the regulatory
10 basis on that? Again, we said that the regulatory
11 basis is Part 20, Appendix B as far as guidance in RG
12 1.113.

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

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

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

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

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

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

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

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

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

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

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

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

17 DR. AHN: Yes.

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

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

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

25 MEMBER BLEY: This is not drinking water.

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

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

8 DR. AHN: Yes.

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

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

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

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

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

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

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

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

16 MEMBER SHACK: Yes.

17 MR. ROACH: Okay. Thank you.

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

25 I am wondering now, it seems to be there

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

3 MR. DEHMEL: Correct.

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

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

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

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

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

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

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

11 CHAIRMAN ABDEL-KHALIK: Okay.

12 MEMBER RYAN: Does that sound like a plan
13 forward?

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

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

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

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

23
24
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UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

Presentation to the 575th 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?



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).