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**NUCLEAR REGULATORY COMMISSION**

Title: NRC and Stakeholders Meeting to Discuss  
the Structure and Content of the  
Standard Review Plan, Chapter 3, (ISA)

[Agenda](#)

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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NRC AND STAKEHOLDERS,  
To Discuss The Structure  
and Content of the Standard  
Review Plan, Chapter 3, (ISA)

HEARING

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THURSDAY

FEBRUARY 8, 2001  
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ROCKVILLE, MARYLAND  
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The Public Meeting was met at the Nuclear Regulatory Commission, Two White Flint North, Room 16B4, 11545 Rockville Pike, at 1:30 p.m., Tom Cox, FCSS, presiding.

PRESENT:

DAVID AYRES, NRC/R-II/FFB  
FARIS BADWAN, LANL  
REGIS BOYLE, NRC/NMSS  
DAVID D. BROWN, NRC/NMSS  
JOHN CONNELLY, DOE/EH-51  
CLIFTON FARRELL, NEI

PRESENT: (Cont.)

ROBERT FREEMAN, FRAMATOME-ANP  
ED FLACK, NRC/FCSS  
DENNIS GALVING, NRC/NMSS  
JOSEPH GITTER, NRC/FCSS  
CHARLES HAUGHNEY, Consultant  
FELIX M. KILLARM NEI  
LAWRENCE KOKAJKO, NRC/RIG  
MIKE LAMASTRA, NRC/NMSS  
JIM LIEBERMAN, NRC/OGC  
CALVIN MANNING, FRAMATOME-ANP  
MICHAEL MARKLEY, NRC/ACRS-ACNW  
JULIE OLIVIER, NRC/FCSS  
ANDREW PERSINKO, NRC/FCSS  
ROBERT PIERSON, NRC/FCSS  
LIDIA A. ROCHE, NRC/FCSS  
S.W. SCHILTHELM, BWXT  
STEVE SINGAL, DOE/EH-51  
WILKINS SMITH, NRC/NMSS  
RICHARD STARK, DOE  
SHARON STEELE, NRC/FCSS  
PHILIP TING, NRC/NMSS  
CHARLIE VAUGHAN  
ERIC WIESER, NUCLEAR WASTE NEWS

A-G-E-N-D-A

<u>AGENDA ITEM</u>	<u>PAGE</u>
· <a href="#">Opening Remarks by NRC</a> .....	4
· <a href="#">Opening Remarks by NEI, other stakeholders</a> .....	10
· <a href="#">Presentation by Dennis Damon, explanation of NRC's SRP Chapter 3, Appendix A</a> .....	13
· <a href="#">Questions and Discussion regarding presentation</a>	67
· <a href="#">NRC comment on NEI's November 16th, 2000 letter on Chapter 3</a> .....	87

- [NEI's "Industrial Guidance on Preparation of an ISA Summary."](#)..... 135
- [ISA Summary material submitted by NRC prior to rule issuance, and NRC's review of it.....](#) 136
- [Adjournment](#)

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

(1:50 p.m.)

MR. COX: This is the afternoon session. We are now going to spend a couple of hours talking about the structure and content of the Standard Review Plan. I would like -- the Standard Review Plan, Chapter 3. I'm sorry.

I would just like to mention at the offset that we have a new item here in your blue folders. Those of you sitting here have a blue folder, and they have something called the NRC Public Meeting Feedback document.

This is something that we are using now to enhance the quality of our coordination and our communications with the stakeholders, and in fact internal members of the NRC.

It is a form that we ask you to fill out, and in this case we ask you to return this at the end of the day, although I can give you an address to mail it if you want to mail it.

And the address would be Lidia Roché, and I will spell that for you; L-I-D-I-A R-O-C-H-E, Mail Stop T-8A33, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-001. Any questions on that?

(No audible response.)

MR. COX: Okay. I think you all know, those of you who are sitting here, where the restrooms are. They are right out there around the corner. You also have a planned agenda in your folder. It is called, "Meeting Agenda," and has a date on the top of it.

And we are now into the first item of that, and that is some remarks by the NRC, Cox and Pierson. I am making some remarks right now. I would like to introduce the NRC people here first, and if Bob wants to say a few words, and we will have, and then we will get into the NEI and other stakeholders introductions and remarks.

So I am Tom Cox, and Fuel Cycle Licensing Branch, and I have primarily been responsible for heading the work done on the standard review plan for fuel cycle plants.

I would just like to start over here on the left and have the NRC people introduce themselves first.

MS. OLIVIA: Hi, I'm Julie Olivia, and I am one of the fuel cycle environmental engineers.

MR. BROWN: I'm Dave Brown, and I am health physicist in field cycle, safety and safeguards.

MR. KOKAJKO: Lawrence Kokajko, Section Chief, RTG.

MS. STEELE: Sharon Steele, Fire Protection Engineer, FCSS.

MR. BOYLE: Regis Boyle, NMSS.

MR. LIEBERMAN: Jim Lieberman, Office of General Counsel.

MR. HAUGHNEY: Charlie Haughney, United States Citizen.

(Laughter.)

MR. STARK: Richard Stark, Department of Energy.

MR. MARKLEY: Mike Markley, ACRS-ACNW staff.

MR. LAMASTRA: Mike Lamastra, and I am with the Fuel Cycle Licensing Branch.

MR. GALVING: Dennis Galving, Division of Waste Management.

MR. WIESER: Eric Wieser, Business Publishers.

MR. ROCHE: Lidia Roche, Chief, Licensing Section.

MR. PIERSON: Bob Pierson, Fuel Cycle Safety and Safeguards Division Deputy.

MR. KING: Phil King, and I am the branch chief of the Fuel Cycle Licensing Branch.

MR. DAMON: I am Dennis Damon, and I am in the Risk Task Group, NMSS Risk Task Group, and I am doing this work because I was a major contributor to Chapter 3 of the Standard Review Plan.

MR. SCHILTHELM: Steve Schilthelm, with BWXT, in Lynchburg, Virginia.

MR. KILLAR: Felix Killar, with the Nuclear Energy Institute.

MR. FARRELL: And I am Clifton Farrell with NEI as well.

MR. COX: Okay. And let me remind everybody, please, to sign this attendance sheet. I don't know where it is right at the moment, but if you can make sure that you sign that before you leave the room for the last time today.

Just a brief history here. As you all know, Part 70 was issued last September. It was effective on October 18th, the revised Part 70. We had our last meeting of this group on December 20th last, where we talked about Chapter 11.

That was subsequently revised based on some of the comments that came out, and it was accepted by all parties, and Chapter 11 is now a completed item.

Chapter 3 is the remaining matter at issue to get through the final issue of a complete standard review plan for the fuel cycle plant. This is NUREG-1520 now in draft.

The last issue of Chapter 3, which is today's topic, was on September 29th of last year. This has been available on the website, and it is the document that you all know about today.

That doesn't mean that we haven't worked on it, and made some changes to it subsequent to that date, but that will show in the next version.

This is the 12th meeting to discuss the standard review plan matters since December of '98. I think I mentioned that we have a website where all these documents pertinent to this activity are.

I mean drafts, final issues, comment documents, all the transcripts that we are taking today, and I will just tell you that in case somebody doesn't realize where this is, it is at HPTT:\\, and then it is Tech Conference. It is T-E-C-H C-O-N-F.LLNL.GOV.

Are there any other stakeholders here besides NEI? I think we had a member of the press here.

MR. WIESER: Business Publishers.

MR. COX: Business Publishers. Okay. And I think we had a DOE representative, or two DOE representatives, and Richard Stark. Okay. And then the next item on our agenda is some remarks by NEI, or rather remarks by Bob Pierson, if you would like to say anything.

MR. PIERSON: I just want to say thanks for coming, and what we plan to do in this meeting is to work our way through this process similar to what we did on Chapter 11.

If we have got issues, let's bring them to the table and discuss them, and hopefully we can come to some sort of amicable resolution. The other thing that I wanted to point out is two of our principal players in this process are going to be leaving soon.

Tom has put in his retirement, and he is going to be retiring March 2nd, and leaving the government service after I don't know how many years, but probably --

MR. KILLAR: I was under the impression that he couldn't retire until this was done. (Laughter.)

MR. PIERSON: Well, we tried that and got overruled. I mean, some things don't work the way that you would hope they might. The other person that is leaving is Phil Ting. Phil is leaving at the end of March, or early April. Well, the end of March.

And so at least in the next couple of months there will be a bit of a transition, and you will be able to deal with Lidia. As you can see that's why she has got so many of her staff and interested stakeholders here.

She is trying to make sure that she has plenty of continuity as Tom steps out the door, and some of these other folks step into the breach. So it is an interesting challenge, and we are looking forward to working with you, and with that, we will take off.

MR. COX: Do we have anything that NEI would like to offer?

MR. KILLAR: I just want to kind of reiterate where we stand on Chapter 3 from the industry perspective. What we see with Chapter 3 is there is three different aspects that need to be reflected in Chapter 3. The first aspect is the ISA program itself.

This is the commitment to have an ISA program, and what type of training requirements team you will put together, and things along that line, and that would be the commitments that you put in your actual license itself.

The second aspect of it is the carrying out of the ISA, to do the ISA at the plant, and to carry through and do your accident analysis, and whatever it takes to complete your ISA.

And then the third aspect of it is what is to be submitted to the NRC in the ISA summary. And the biggest problem that we have had with Chapter 3 up to this point is that they have not been able -- you have not -- it is not easy to distinguish between those three different pieces from the way we view it.

Maybe you can allude to help us, you know, and certainly you can leave some of that in there, but sometimes you wonder whether they are referring to the ISA or are they referring to the ISA summary, or are they referring to the ISA programmatic requirements.

And so maybe as we go through here today we can get a little bit more clearer entity of it, but I think if you look at some of our comments, and the way we had suggested our redrafting of Chapter 3, that was the philosophy behind our comments in our suggested redraft.

MR. COX: Okay. Any other stakeholders want to offer any comments?

(No audible response.)

MR. COX: All right. Then let's go to the next item on the agenda, which is essentially an explanation of NRC's Chapter 3, Appendix A, an explanation which I think has been needed for some time.

If I remember correctly, it was several years ago that I made a brief statement about what we were expecting out of Appendix A, and we have come a long ways since then.

Dennis Damon has been the chief architect of that, and we think this is a critical thing to understand, because it is the essence of what NRC and requesting be submitted to the agency as the licensee's ISA summary.

The heart of the matter is in the content of Appendix A, and we think there may be some misunderstanding as to just what it is that we are trying to say here is necessary in the way of information items, and for us to make a reasonable assurance finding that the rule requirements have been met.

So I would like to turn this over to Dennis now, who will walk through Appendix A with whatever comments he wants to offer on it on the side and explain this to us. You all have the handout containing the material that Dennis is going to go over.

MR. DAMON: My name is Dennis Damon, and the handout looks like this. It is a bunch of presentation slides printed out four to a page, and it has got handwritten numbers on it.

Tom Cox asked me to make this presentation to explain the method that is in Appendix A of Chapter 3, and so I am going to try and do that.

I am not -- this presentation is not primarily to discuss all the issues that come up out of that method, although at the end I am summarizing what characteristics the method has and that will tend to lead into issues.

But what I am going to start the presentation with is the slide that is number two, and it shows where in the rule -- what it is in the rule that appendix is addressing.

The requirement is in 70.66, "Additional Requirements. For Approval of a license application." And it says, "An application will be approved if, among other things, the performance requirements of 70.61(b), (c), and (d) are satisfied."

And if you look at 70.61(b), (c), and (d), which is on the next slide, slide three, this is the section of the rule that talks -- that is summarized on this slide, and it talks about High Consequence Events: Must be highly unlikely. And the Intermediate Consequence Events must be unlikely.

So the point is that the rule says an application will be approved if these requirements are met. So the question or the point is, is that the ISA summary is in fact the document that is submitted to the NRC that is available to the staff to review to make a finding that this license application should be approved because there is reasonable assurance the performance requirements have been met as it says in the rule.

So that is what this Appendix A is about, is that it is the aspect of an ISA, and an ISA summary, that is reviewed to make a finding regarding meeting the performance requirements.

There are other aspects. The Regulation, Part 70, says a lot of things that have to be done; a safety program established, and an ISA performed, and the results of the ISA used in various ways, reporting requirements, all kinds of things.

But there is this one particular thing is what Appendix A was trying to address, is what do you do about these likelihood requirements. How does a staff member review an ISA summary and say based on this, it appears reasonable that all high consequence events are highly unlikely, and all intermediate consequence events are unlikely.

And I am just going to march through or march into Appendix A, and try to summarize what the method that is used in there, and then give an example.

And the objective here is to show -- Appendix A was intended as an example of how to present information that comes out of an ISA or in an ISA summary, and what type of analysis would be done that would make this connection, and that would show that accidents are highly unlikely.

So it is intended as an example method. It was not really intended to be used as such, because I recognized at the time that I did it that a staff person could not develop qualitative criteria that would cover all the cases that would arise in a real plant.

That it was something that I expected the licensees would do. They would devise a structure for doing a likelihood evaluation that had the same characteristics, but wasn't identical to this one.

In other words, it wasn't intended that someone would use Appendix A and just follow it as if that was a real methodology, but rather that one develop something of that nature.

And so what are the characteristics of this Appendix A method that I was hoping that would meet or I was hoping would be something that the staff could then look at, and then say, yes, all accidents are highly unlikely.

Well, for one thing, the first thing on slide five, it says that this method that is shown in Appendix A shows all the accident sequences with high or intermediate consequences. That is a characteristic that it has.

It doesn't leave any of them out. They are all listed there. So that facilitates the staff review in determining whether all of them have been identified.

If they are not all listed there, then the question becomes how does the staff reviewer, or why would the staff reviewer believe that all of them had been identified if he doesn't know what they are.

MR. KILLAR: Can I ask you a question about that, Dennis? One of the concerns that we have when you have words such as "all accident sequences with high or intermediate consequences," is that you can go through and identify a whole series of accident sequences, and characterize them as high or intermediate consequences.

But then you can go and come up with subsets of those. Do you have to list all the subsets, or just because you have now identified this accident sequence that may have multiple initiators?

But the results are that you end up with the same thing and the same protective measures, regardless of what the initiator is, and you put that in one group.

But are you expecting to have this initiator, and this initiator, following this initiator, and then that initiator follows that initiator?

And when I am talking about initiators, they may be initiators such as natural phenomena. You know, one may be a severe rain, and another one may be a hurricane, and another one may be a lighting strike.

But they all are natural phenomena, and so are you grouping that natural phenomena as an issue here? And the reviewer looks and says, okay, I want to see all accident sequences.

Now, this initiator may be lighting, and he didn't include severe rain. And when you say all, it really concerns us as to what you are looking for.

MR. DAMON: Well, there are definitely situations where proliferation of different ways that something can happen the reviewer does not need to know about them.

And then there are other cases where it would be better if he did. An example of where he does -- and there is guidance in the body of Chapter 3 about what the criteria are that would lead you to group things together in one group, and that grouping would be adequate.

And one of the criteria is the need that you have -- and it actually comes under, it is number two on Slide 5. The goal here is to show how the items relied on for safety are adequate to protect against all accidents.

That's really what you are after. You are after -- the ultimate goal here is to have a list of items to rely on for safety, and all the rest of the ISA summary is a story about why that list is adequate. Why is that a complete set.

And so once you have identified that there is a challenge to an item relied on for safety of a given class, it may not be necessary to -- for example, a flooding phenomenon of some kind, if you have some protection that provides protection against flooding, no matter what the source or the reason why that flooding occurred, then you don't need to explain and look for all the different ways that flooding might happen.

You might want to do some of that perhaps to convince yourself or to get a feel for how likely that thing is to happen. But there is no point in laying that out as a separate accident sequence.

There is no information added to the format of the presentation, and so that should be one line item. But a case that is different is a case where you might have the same -- well, for example, the example that I picked is of this character.

I might as well tell you what the example is. It is the one that was in the ACR's presentation the other day, with a double line containing a toxic chemical.

So you have a line containing a toxic chemical in an aqueous solution, and then you have an outer containment line, which is normally dry inside, but to prevent leak, or to minimize the likelihood of leaks.

As was pointed out in that meeting, the obvious failure or accident sequence that you are looking at is that those lines do leak. The inner one leaks, and then the outer one leaks.

So you have got a two separate leaks situation, leaks to a leak, and some the material gets out. But as was pointed out -- and, of course, that is very, very unlikely because it does require two failures of reliable things.

But the other scenario that was mentioned was somebody driving a forklift through the darn line, and it breaks both of them at once. So you don't -- the likelihood of the two leaks being there simultaneously is very, very low.

But the likelihood of that forklift going through there -- well, it depends, and what it turns out to be is that if you put down as an item relied on for safety that that line -- or as a feature of -- well, there is different ways of listing items relied on for safety.

You could say the line itself is the item relied on for safety, and then you could say it is a double-line. Then you could list its features. It has to be a double line. It has to have glued joints or welded joints.

Then it has to be routed where a forklift is going to drive through it, or you can list those three things as three separate items, whatever way you want to list it.

But what I am saying is that the important thing is that characteristic or feature that the thing is routed where a forklift will not drive through it is very important to making that sufficiently reliable, because if it is just at the height where a forklift is going to hit it when the fork is up, and it is on a forklift route, then some day it is going to happen.

MR. KILLAR: I think that is part of the issue that we have, is that line may be located on the second floor where no forklifts or forktrucks can even physically get. So why do we even need to think about things like that, or if it is rotted through the ceiling --

MR. PIERSON: If there were no forklifts as a reason --

MR. DAMON: Right. There are cases where it would be obvious why it wasn't an issue, and you wouldn't list it, but if it was --

MR. KILLAR: Or we don't allow forktrucks in that building, and there is not a forktruck in that building, then --

MR. DAMON: Well, that is an item relied on for safety; a prohibition against having a forklift truck in the building.

MR. PIERSON: Well, it could also be a physical barrier, and you couldn't physically get a forklift in there, and that --

MR. COX: But he didn't say it that way. He said we don't allow it.

MR. KILLAR: Let me back up. The point is that we may not tell you that because it is intuitive to us that we don't have forktrucks in that building. So we don't list that in our description.

MR. PIERSON: Well, I would submit that what you do is that you are going to be identifying your accidents, and if somebody says, well, what about the forklifts, and you say, well, they can't get in the building, and that should be enough.

There is no way you can put them in the building, and they can't physically fit in. We are not asking you to go back and design against elephants walking through your facility.

MR. KILLAR: No, what I am saying, Bob, is that the question won't come up from our perspective when we are doing the analysis about forktrucks coming in the building because we know that forktrucks aren't -- you know, we don't use forktrucks in that building.

And when it shows up at the NRC's desk, you know, because we didn't include it, we may that question of do you have forklifts in your building, and this is --

MR. PIERSON: Then here is an answer to that. If it is something like I said, that it is physically impossible to get the forklift in there, just say we didn't include because there is no way a forklift can get in there, and that should be satisfactory to the staff.

If on the other hand there is some sort of a passage way and you can take vehicles through there, and there is a sign at the door that says forklifts not allowed, then I think the staff's question would be legitimate and you would have to explain why you can't take a forklift in there.

MR. SCHILTHELM: I think our problem is more the question that he was asked in the first place, and that is when the answer is so obvious, or could be so obvious, and I don't know how to address that --

MR. PIERSON: Well, we can't address all those situations. If we have a situation like that, just give the answer, and I think the staff -- they are reasonable people, and they would say okay.

MR. KILLAR: And I don't want to lecture, but I do need to go back and talk a little bit about basics here, and what our concern is that if you look at Part 70, and what Part 70 was intended up until this last revision, the process of Part 70 was a possession license, and that we were not able to go critical in designs and what have you.

And so our licenses were based on a series of programs, safety programs; safety program for criticality, and a safety program for radiation protection, and a safety program for chemicals, and safety program for fires, and things along that line.

Up until this revision the only reason we had for providing you information about how we actually operated facilities was for you to understand how we implemented those safety programs.

It wasn't to evaluate whether those programs or that piece of equipment was safe. It was whether we were properly applying our safety program which then said that program or that equipment was being operated safely.

What you have introduced, and unfortunately we allowed you to introduce kicking and screaming, this ISA and submittal of this ISA, and approval of this ISA summary, you have now moved and you have gone beyond reviewing our safety program and how we operate these programs, to how we operate our processes and the safety of those processes.

And this is causing a lot of additional questions and a lot of detail, which up until now we have not had to provide this on a regulatory basis. So this is the interchange that we are going to continue to have.

It is questions about things that are totally obvious to us, because we have run these programs, and we continue to run these programs safely, but now we are getting second-guessed.

It actually goes back to something that you talked about earlier in the earlier discussion about the inspectors. That you hire competent inspectors, and you train those competent inspectors to go out and look at the proper things.

We hire competent people, and we train those people. We run our programs safely. Why do we need to now start going into this intimate detail about forklifts and things along that line in our facilities. We are losing the perspective of Part 70. Now, I'm sorry I had to lecture, but I had to.

MR. COX: We are losing the perspective of the previous Part 70. We are beginning to address the perspective of the new Part 70, which in part was developed by the Commission because of perceived shortcomings of the previous Part 70.

MR. PIERSON: But to get back, I would hope we can approach this as reasonable people. I mean, if there is something that is obvious to you, it should equally be obvious to us. If it is something that is obvious to you, and it is not obvious to us, let's discuss it.

And if it is something that is obvious to you and we can't understand it, then let's discuss it on a different plane. But I would hope that these things like -- that these hypotheticals, like can a forklift break something on the second floor, I would hope that we can work our way through those.

And if it is a situation where -- and we are not expecting you to write down every conceivable hypothetical issue that could ever happen under any circumstance.

We are asking you to look at your processes and identify those things within the spirit of your influence and the spirit of your facility that could affect or undermine the safety of the process and identify those.

And then provide to us what you are using to rely on for safety to prevent those processes from being subject to some shortcoming, or undergoing some sort of an upset which would cause a potential accident or release. That's all we are asking.

MR. KILLAR: I realize that is all that you are asking for, but what is happening is that we are getting pulled more down into writing and what have you.

And we are spending more time on documentation and on the paperwork than on the actual assurances and safety of the facilities, and we are losing the idea of the judgment and the responsiveness of the individuals for the process. And that is what I am trying to caution against.

MR. PIERSON: I appreciate what you are saying. I hope that we can improve that process.

MR. TING: I suggest that -- let's let us go through these examples, and the --

MR. KILLAR: When they have words like all in there, that is what bothers me. What does all mean, you know? Where do you stop.

MR. DAMON: One thing about the Part 70 regulation and the ISA process that is in the other direction is that it does establish quantitative consequence values that are of concern, and those values are pretty high.

They are basically verging on fatal type events. So we are not talking about trivial events in general. In general, most of the accidents we are talking about -- and occasionally we are, but I would hope that the ISAs would be done, and that would be kept foremost in the minds of the people who are doing ISA analysis, is that the NRC is not looking for elaborate analysis, or any analysis, of events that don't reach these consequence levels.

And so what we are looking for are strictly things that are definitely fatal. And I have seen some things in the ISA summaries and things that I have looked at where it was clear that the analysis was going on and there was no way that this event could produce the consequences that are in the rule.

And it is unfortunate that analysts get wrapped up in this process, and so for one thing the analysts should be sure to keep that focus, and really just looking for things that trip the consequence levels in the rule, and therefore are serious accidents.

And there may be reasons why it can be very clear both to the analyst and to a reviewer, an NRC reviewer, why the process is adequately safe. And if you can imagine a way of summarizing what the safety design of that process is and that provides that confidence, then by all means present it that way.

Don't have people spend a lot of time. We are not looking for every subtly different way that something could happen. But rather the point is to make sure that one has identified all the features or items relied on for safety that need to be maintained by the plant.

And another way of saying the same thing is that I worked in an engineering design organization, and engineering design organizations work on specifications.

So if you come to them and tell them that I want to design something to do a function, they will ask you for the specifications. What do you want it to do.

Well, one subset of that are safety specifications. So what I look at is that an ISA is a way to make sure that your set of safety specifications is a complete set. That they will be adequate. That the resulting design you have will be adequate.

And the virtue of having a complete set of safety specifications shows up when the processes get changed. And if you don't have a good set of safety specifications or a good safety analysis process, when somebody goes to change a process maybe 10 years down the line, a different guy is assigned to do that. A different team of people at the plant.

And if they don't have an analysis method that has a systematic structure to it, or if they don't have a good set of safety specifications of the old process, the danger is that something gets overlooked.

And so like, for example, the routing of the line to miss the forklift truck thing, the guys who put that in originally, they may have thought of that. They said, oh, gee, we had better put this line out of the way.

I remember one time when somebody ran through the line. So maybe we had better route this so that it isn't in the way. And they say, well, we don't need to document that. So it is not in the documentation anywhere.

It is not in the safety analysis anywhere, and it is not in the safety specifications. So years down the road, they are reconfiguring a process, and they run a line right across where the forklift comes

And that is the essence of what I am getting at, is all it takes -- the amount of work and effort it takes is to write that spec down someplace. Now, the list of items relied on for safety that come out of an ISA summary, I personally don't expect them to be like safety specifications, because safety specifications are very specific.

I expect them to be at a higher level than that, but they have to capture everything that you need to think about. So they will talk about things in a generic level without getting too specific.

But it will identify the function that all the items relied on for safety has to have to perform. So that when in the future, if that process is changed, the people will go back and look at that list, and they say, oh, yes, we have to design against this challenge.

So that is also the same logic by which you decide which accidents you need to include, because you want to make sure that you include everything where they may need to do something in the design to accommodate that particular accident.

So again if your concern is leaking of a toxic chemical, then you have to sort of think of all of the different ways that that could come about, and make sure that they all get addressed.

I will continue with slide five here, the characteristics of the Appendix A method. One of them is this listing of all accident sequences. And by all is meant at this categorical level, and it is not absolutely every permeation, but rather a sufficient set of sequences so that all the items relied on for safety are identified, and the functions they perform is clear.

Another feature is to show where the items relied on for safety are. What events or what are these features, as opposed to simply listing events that happened.

For example, one could say a leak happened, without telling them what the thing is that is leaking, the double line. One has to actually mention that it is a double line.

Then there is evaluating the degree of effect of the item relied on for safety on likelihood. And this means -- the essence of this idea is that listing the items relied on for safety, the rule requires that the actions to be highly unlikely.

And there needs to be some way of connecting the list of items relied on for safety to the idea that the accident is highly unlikely. So whatever methodology is used, it needs to evaluate the degree of the importance of the item or items relied on for safety, because different things will have different effects, and there are differing degrees of importance.

And the other characteristic of the method is that this degree of effect is going to be based on information that is available, and maybe that is qualitative or quantitative, but it is more or less objective characteristics, or assessed characteristics of the items relied on for safety.

And the fifth thing there is that it considers all the basic factors affecting likelihood, and what I mean by that is that likelihood is a quantitative thing.

It refers to things like probability of an event happening in a year, or the number of times it happens. So a likelihood -- the meaning of the terms highly unlikely in the rule is a thing that is basically -- it is a kind of a thing that refers to a quantitative concept.

One way of saying that is that the accident has a frequency of occurrence and if you model a system, you can produce an equation for the frequency of that accident.

And that is one way of identifying for yourself what are all the things that can actually influence that accident frequency, which is ultimately what the rule is asking us to do, is to make accidents highly unlikely.

So the method of Appendix A was based on deriving -- of evaluating things based on the system failure rate equation.

Now, slide six says that this Appendix A method is just one example of a method for doing this kind of a thing, of displaying accident sequences. It makes use of a table, and the tables are included in the back of your packet, and they look like this.

And this is the primary table. Table A-1 is the first one, and that is the method of Appendix A as far as presentation of results. If the results are in that methodology or presented in a tabular form, one accident on a roll of the table.

So this represents an accident, and columns represent events. There is an initiating event, and then some number of subsequent events, and the table that is in Appendix A allows or shows an example table left room for three events, but one could have varying numbers.

That is the format of the method, and there are other methods that are acceptable. There are other methods that might be seen to be better. Fault trees and event trees have birches to them for certain situations.

My own preference is to use both or all of them, but all I am saying is that Appendix A is just one method. It is not intended to be the only method.

The method uses integer indices to evaluate the degree of importance of the factors that affect the frequency of the accident. These indices, these come from these subsequent tables, Tables 3, 4, and 5.

Table 3 deals with frequencies, which are quantities that have events per unit time, because some factors that come into play, like these initiating events, are something that can be estimated by experience or some other reason to occur with a certain frequency, which is therefore events per unit time.

So that table is used for that, and another thing that is often presented in frequency format is a thing called failure rates, which are a property that reliability engineers use in assessing hardware reliability.

And they talk about failure rates. That a given type of hardware fail so many times per hour. Usually the number that you are talking about are 10 to the minus 6 per hour. And another way of saying that is once in a million hours.

So failure rates are a thing that also has this dimension of events per unit time, and the second table, Table A-4, that is for failure probabilities.

Some things are better expressed in that form, human error probabilities, and the likelihood of somebody making a mistake in a given situation is a unitless number that is a probability.

And other things that have that unit are probability of failure on demand, and that is another thing from the liability engineering. They will give you failure probabilities per demand.

Certain types of hardware are better, and their performance is better characterized in that form than it is as a continuous failure rate. And lastly on Table A-5 is a table called failure duration, and I will explain what this is about in a few minutes.

But duration of failure is an important concept in understanding how likely it is that something will be in a failed state. If you look at a piece of hardware that has to be continuously available -- for example, the double leaking line example.

If you look that over a very long period of time, a thing which has to be continuously available oscillates between being in a failed state and being in a success state, or being what they call up and down.

So much of the time it is up. It is not leaking. Then it becomes in a leaking state. So it is leaking for some time. Then that leak is detected and is corrected, and it is back up again. It is in a non-leaking state.

So over a long period of time hardware is envisioned by engineers as oscillating between being in an up state and a down state, and the point is that if you suddenly come in and demand that that item be in a -- that you need it, and that you place a demand on it.

You pass the toxic fluid through the line, and that is a demand. The question is what is the likelihood that the thing is in a leaking state.

Well, the likelihood will depend on what fraction -- will in fact be what fraction of the time it is in that up state, and so it is what fraction of the time.

So there are certain things that come in here, such as the duration of time that something remains in a failed state has units of time. So this third table, Table A-5, is simply a table where things that have the units of time, of years, of hours, or minutes, that those things are an example of tabulating that, and using these indices on the same scale as the other ones to assist you in evaluating the situation.

The method is basically the same, has the same architecture as the method suggested in the NEI ISA guidance document. It has tables with criterion in the tables for assigning index values, or scores to events, or to characteristics of the safety design.

You add the numbers up and the total score gives a figure of merit for evaluating the thing. The difference is the method in Appendix A, we suggest in the way that it is presented that an explicit effort be made to correlate those scores with real frequencies, to the degree that one can do that.

So that is the difference, and the reason for doing that is to keep everything on a level playing field when you are comparing things, the relative value of different features or items relied on for safety.

If we don't have some anchoring point for these things that is on the same scale, then we may be misleading ourselves as to the value of something.

It is not an effort to force a purely quantitative evaluation. But it is an effort to relate it as best as we can to a quantitative evaluation. And the rest of this is this example, the same one that I have been talking about.

MR. SCHILTHELM: Dennis, before you go on, can I make a comment about that?

MR. DAMON: Okay.

MR. SCHILTHELM: Originally during the execution of ISA, we had these probability values to correlate the indices numbers to. And our experience was that our engineers stopped using good judgment, and started relying heavily on these indices values.

And we were getting results that as management we did not find acceptable. So there is a danger in skirting along the fringe of a probabilistic approach.

And that this indices method makes no claim to be probabilistic. It is qualitative, I believe. When we used it, we made no claim to be probabilistic. It was purely qualitative.

MR. PIERSON: It is correct. You are not applying any sort of a frequency diagram or some sort of probabilistic assessment, in terms of which component.

MR. SCHILTHELM: You are correct. You are relying on this implication that there is some probabilistic validity to it. And our experience was that it caused problems for our engineers in applying it. So just comment.

MR. DAMON: Well, I can understand how that happens. I have seen or spent much of my career doing PRAs or developing methods for doing them, and there is a danger associated with quantifying probabilities and producing system models and quantifying them, and that you do lose -- that you can lose sight of what really is causing the thing to have the high reliability or safety characteristics.

You may overlook the failure mode that is really important, and you are all wound up trying to quantify the one that is not important. And another way it can mislead you is if you have a guidance, and a certain type of component can be relied on to have a certain reliability, if you have a table and it says that is what you can rely on, there is a temptation to use that.

As opposed to stopping and asking yourself some hard questions, like how does a thing like this fail. Why does it, and what have we experienced here at our facility with this type of thing.

An example would be this process line. If you look -- and I have in fact looked at these things. There are tabulations of generic failure rates for piping and stuff. But a piece of piping or tubing and stuff isn't generic, and they have very specific reasons why they might develop a leak.

And the guy who is doing the evaluation really needs to understand why, and the simple example is that plastic piping that is used for certain chemicals.

If you use screw joints, and you wrap them with Teflon, and you screw them together, they are going to leak. If you glue them together, or essentially weld them together, they are not going to leak.

And some generic failure rate in a table is just going to mislead you as to what it is that you want to do with that thing. What you need to do is identify the quality that you want that thing to have, and make sure that is down in the documentation.

So I agree with you that there is that danger. On the other hand, from the point of view of the NRC staff, the NRC staff needs some kind of guidance as to what constitutes an adequate safety design.

And that is what Appendix A was trying to do, was trying to show what architecture that thing had. It did not -- it was not trying to say that the qualities that were being put in those tables are exactly the ones that someone should use. That's what I said up front.

What I would hope for rather is that, for example, on this idea of process lines and stuff, and leaking, one could get as specific as that.

You would have an entry in the table that says a line that is used as high quality, and then list the things that it had to have -- you know, high quality thick tubing, and it has glued or welded joints, gets a two, and some other kind of tubing gets a zero, you know.

And it is a qualitative thing, but in doing that there has been some thought put into it as to the real relative frequency with which you might expect such a thing to leak.

So that you don't -- the reason for doing that, and the reason I keep saying that is because of this idea of trying to keep everything on an even comparable basis.

If we don't do that, then there is really no firm basis for giving one thing a two, and then over here you will have some other component, and you give it a two also.

But in fact the two things are really quite different, and one is much more reliable than the other. So you want really -- I think there is a real value in trying to keep things even.

But again the focus isn't just on quantifying the -- sticking a number on the thing. It is identifying -- the first and more important thing is identifying all the ways that the thing can go wrong.

That really is far more important than this whole thing. I said that in ACRS and I say it here; that it is more important to identify all the ways it can go wrong, and all the items relied on for safety, than it is to give it the right scoring.

MR. SCHILTHELM: But don't you think that Table A-4 would be equally robust in the absence of a column that says probability of failure on demand? I personally think that column adds no value to Table A-4.

MR. COX: You have no idea what the index number means unless you have a second

--

MR. SCHILTHELM: Yes, based on type of control, you have a pretty good description; an exceptionally robust passive engineered control or an inherently safe process. That tells me a lot more than 10 to the minus 4, or 10 to the minus 6.

MR. COX: Well, it doesn't tell anybody anything that I know of in terms of the events per year, and actual failure frequency.

MR. SCHILTHELM: I think it does.

MR. DAMON: You're right. Once you have got the table, you don't need that column. What it really is, is that it is used when you construct what goes over here is what I am trying to say.

Is that when you put something in this box that is opposite this minus 4 or minus 5 --

MR. COX: I don't know what this means. What table are you talking about?

MR. DAMON: Well, if you look at Table A-4, the first row, or the second row on Table A-4 says on the left-hand side, it says minus 4 or minus 5. And then in the third column, it talks about exceptionally robust passive engineered control.

When one would construct a table like this, the things that would go in that box where it says exceptionally robust passive engineered control, and all that other stuff, you might have other things in there.

And that might be one thing, and there might be something else that would be put in there, or other conditions put on that. But I am saying that in developing those criteria, I think it is very useful for the people who develop the criteria to keep in mind what level of probability or failure on demand they really are thinking of this meaning.

MR. SCHILTHELM: I think that's where we would disagree. I think the table stands alone without the probability column. The probability column only lends confusion and gives the false impression that you are doing a probabilistic assessment of safety, rather than a qualitative assessment of safety. I think we have a fundamental disagreement in that area.

MR. PIERSON: We have a situation where our staff at some point -- let's go back to your example as to the minus 4 and to the minus 5. They need to be able to come to some judgment -- and not necessarily independent of your judgment, but at least complimentary to your judgment, that they can agree to the same standard that you have got.

And one of the things that we have been kicking about, and we have spoken to NEI about this, is coming up with some sort of a -- I guess you would call it a rosetta stone or a template that assigns some value numbers, or values, to certain components or certain controls that you have got in the system.

So that you have got a series or a sequence of these components and controls for a particular system, and you can come out with essentially an estimated failure probability on demand, which might be 10 to the minus 4, or 10 to the minus 5.

So this plays into that, and really all we are trying to do is provide a situation that our staff can develop some consistency in terms of how they review and assess these different ISAs.

Now, in terms of an individual ISA. For instance, if you wanted to come in and you have got some basis for how you would assign a robust passive engineered control, and you don't want to assign any kind of 10 to the minus 4 or to the minus 5, we can deal with that. I am not saying that you need to do that.

MR. SCHILTHELM: So let's take the example that 95 percent of the ISA identifies criticality safety controls. We all know that, and that is the outcome, okay?

There is a whole chapter of our license application that puts criteria around the acceptability of controls; malfunction detection, et cetera.

There is a whole chapter on criticality safety controls, and which describes what is necessary for a control to be robust. When you create these tables, you are not trying to revolutionize criticality safety. You are still trying to apply double contingency.

You take that chapter and that chapter tells you what a robust control is. It tells you the ranking of controls from engineer, down to administrative, and --

MR. PIERSON: What you are saying then is that if you follow through that chapter you would come to the conclusion that you have a high degree of confidence that those controls would be functional.

MR. SCHILTHELM: That's correct.

MR. PIERSON: Which would be essentially this 10 to the minus 4 or 10 to the minus 5 if somebody came and got them in a different approach is what I think I hear you saying.

MR. SCHILTHELM: Yes.

MR. PIERSON: What I am trying to say is that we understand that, and we hope there could be sufficient flexibility to allow that latitude in whatever is submitted.

But remember what we are trying to do here is that we are trying to develop something that our staff can use as a guide. We are not trying to say that everybody needs to go back and assign a probable failure on demand for each of their sequences. And if you wanted to do that, that's fine.

MR. SCHILTHELM: I won't jump ahead, but in the letter that we just got, you called our methods defective because we didn't put these probability numbers in there.

MR. PIERSON: Well, if we can understand how you develop the process, then we don't need the probability demands if we can understand the process.

Now, we need to be able to go through the process and come to the same conclusion that you did, and all I am saying is that this probability of failure on demand numbers make it more systematic and consistent for our staff to be able to come to the same conclusion that you have.

But it is not something that has to be done. But the staff, by the same token, if that is not provided, needs to be able to work through whatever justification you provided and come to the same conclusion, in terms of the robust of it.

I mean, I don't think we ever talk in terms of 3.2 times 7 minus 4. We are not saying that. But at least come within the ballpark, because we need to be able to make a judgment on our part, independent of or complimentary to your judgment, that when we do an evaluation that we can make the same distinction that you did and conclude that it is a highly unlikely, which we have arbitrarily said is about a 10 to the minus 6, to the minus 5.

So what all the number does is provide you a common base of comparison.

MR. SCHILTHELM: And arbitrary. There is an inconsistency with the arbitrary assignment of highly unlikely, to 10 to the minus 6, and 10 to the minus 5, to the statement that double contingency equals will achieve highly unlikely.

MR. PIERSON: Double-contingency is 10 to the minus 4; is that what you are saying?

MR. SCHILTHELM: The ANSI standards don't attempt to put probability to a double-contingency. There is no attempt to do that in the ANCI standards.

MR. PIERSON: So I think there is an inconsistency there.

MR. DAMON: There is. The ANSI standard, regardless of what some people think, but the literal statement of the ANSI 8.1 of the double contingency principle, does not say that you are doubly contingent, you are acceptable, or that you are highly unlikely.

What it says is that they recommend that you design your processes so that they are doubly contingent. They recommend that. They don't say that is sufficient.

The sufficiency statement in there is the statement that all credible, normal, abnormal conditions be subcritical. So double -- being doubly contingent has various qualities to it that are of benefit to you other than just the fact that it make something -- that it has the potential for making things highly unlikely.

MR. SCHILTHELM: You say in your standard review plan though that double contingency does achieve the highly unlikely standard.

MR. COX: I don't think it says that.

MR. SCHILTHELM: Yes, it does.

MR. DAMON: With a lot of qualifications. I mean, all that is saying is that -- you see, double contingency, once again, you haven't avoided this whole argument about qualification, because the double contingency standard says two unlikely events.

And it says two unlikely independent. If first you convince me that they are independent, and then you convince me or tell me what you mean by unlikely, I might very well agree that the double contingency is adequate.

But if you don't tell me what unlikely is, then I am going to have to say, well, gee, it could be something inadequate.

MR. PIERSON: At least in terms of how we have conducted our reviews in the past, right or wrong, we have always assumed implicitly that an unlikely event is 10 to the minus 2 or 10 to the minus 3, somewhere in there.

MR. SCHILTHELM: I've never heard that.

MR. PIERSON: I said implicitly, and I think that if you would contend that you are using a double contingent control that says it is a 1 in 10 probability of occurring, I would say you are not meeting the unlikely consequence.

And I would say that if you are somewhere around between 1 in a hundred and one in a thousand, you are probably somewhere in the ball park.

So just taking that and extrapolating from that, you end up to something with two unlikely independent events, you are somewhere between 10 to the minus 4 and 10 to the minus 6.

MR. SCHILTHELM: I don't think I would agree on that logic, and I don't think that the ANSI standard or the community of items relied on for safety would agree with that.

MR. PIERSON: Well, what would they suggest then? I mean, how in your mind do you decide something is unlikely then? What do you do?

MR. SCHILTHELM: I have an entire chapter in my licensing application that describes how we do that, and not once does it use a probabilistic term.

MR. PIERSON: Well, I don't think that a 10 to the minus 2, or 10 to the minus 3, or 10 to the minus 4, is really necessary as probabilistic. I think essentially it is giving you a range of likelihood of occurrence.

I don't think we are talking about using some sort of a standard deviation, frequency probability, for a failure for something like that. So I think maybe there is not an explicit one to one correlation between what you are saying and what we are saying.

But I think that it is probably a lot closer than what I think you are afraid that it isn't.

MR. SCHILTHELM: I am afraid of the creep.

MR. PIERSON: Well, that's a concern, and that's why we all have to work together to prevent.

MR. SCHILTHELM: And what I see once we begin using probabilistic terminology -- and to me this is probabilistic terminology, is that I see a creep towards probabilistic risk assessment as simply not what we set out to do, and --

MR. PIERSON: We are not trying to imply that you want probabilistic risk assessment. We are not even telling you that you need to use numbers.

MR. SCHILTHELM: But then I think we ought to take it on ourselves to intentionally avoid the use of that terminology, because there are others out there who would like to imply that we use probabilistic risk assessment techniques.

And every time we step into that territory, we run the risk of giving that credibility.

MR. PIERSON: Well, I guess that's true, but the other point of that is that I think that if you don't have some way to somehow factor in some comparison factor between these different outcomes and these different components, you run the risk of essentially, one, either not be able to justify what your conclusion is, or two, creating a situation where people demand some sort of comparability that would push you into that direction anyway.

MR. SCHILTHELM: We are not going to solve this here. We need to work on it.

MR. PIERSON: No, I agree. No question about that.

MR. DAMON: I don't see that -- I mean, you keeping saying that it is not a problem. I understand the problem of trying to avoid this terminology conceptual structure, because you are afraid that we will get dragged into PRA.

But unfortunately that conceptual structure is what the world is used to. I mean, the criticality safety committee is a very narrow community, and most of the major industries that design hi-tech gear use this language, this language of the liability engineering.

They call it liability engineering, and it is used in all the major technical fields; airplane manufacturing, spacecraft launch vehicles, military hardware.

MR. SCHILTHELM: So are we trying to change what criticality safety does? Because remember that the ISA is 95 percent criticality safety.

MR. DAMON: Yes.

MR. SCHILTHELM: So the NRC is trying to change what criticality safety is?

MR. DAMON: Yes, I am.

MR. SCHILTHELM: You guys have never said that.

MR. PIERSON: I would be reluctant to say it quite in those stark terms. I would say that what we are trying to do is we are trying to provide a defensible basis that is consistent, and that works in more than in just the criticality arena.

MR. SCHILTHELM: Don't you need to get involved the standards committee in that activity?

MR. PIERSON: We might at some point, yes.

MR. SCHILTHELM: I would suggest that that needs to be done prior to. I mean, the NRC has to follow standards.

MR. PIERSON: I don't think so.

MR. SCHILTHELM: That's why we had the Standards Committees here talking about consistency when they are talking about --

MR. DAMON: Well, there is a standards committee at ANS that has been proposed, and is to be set up on probabilistic risk assessment for non-reactor facilities.

MR. PIERSON: We are arguing that that does not need to be done.

MR. DAMON: What I am trying to say here is that this conceptual structure that is used in PRA and reliability engineering is not -- well, it is not like it has no validity, or it is not of practical use, or whatever, or that it will cause you to make big mistakes and stuff, because these other major industries, with vast numbers of people designing all kinds of stuff, use it.

But you have to be trained to use it properly. The problem that you run into with it in the context that we use it in nuclear is that occasionally you run into people who don't know how to use this stuff right.

And they abuse it, and it causes problems. But all I am saying is that there is no way for -- if you get into the thing that you are only going to have qualitative characteristics, I think it is very misleading.

Because even if you look at what was done and is suggested in the NEI document, it used a scoring method, and a scoring method where the first thing was frequency of cause. That is a quantitative thing. It is a quantitative idea; frequency of cause.

MR. SCHILTHELM: But it was written in terms similar to, I believe, what your Table A-3 and in the center column of A-4, didn't have 10 to the minus this, and 10 to the minus that, as a frequency.

MR. PIERSON: Are you saying like no failures in 30 years, and no failures in 10 years, and no failures in a hundred years?

MR. DAMON: Well, first, whether failures are expected in a given time frame, and it has that language, and it is the same thing. I mean, if you read that, it is events per unit of time, and it is a frequency.

And the same thing with the second thing, which is effectiveness of protection. There was a score and more credit was given for a higher score. If you had a high score on that one, and a low score on the other, they could combine and give you a satisfactory situation.

So I said, hey, it is the same thing, despite the fact that you are saying that it doesn't relate to probabilities of failure, it is a quantitative scheme. It is using a score to arrive at a conclusion.

And what I am saying is that a more explicitly scheme like that, and that is more explicitly related to real reliability engineering concepts and real equations that model a system, is more likely to lead you to a correct conclusion about what combination of qualities the thing has to have.

MR. PIERSON: I wouldn't say a correct conclusion. I would say a consistent --

MR. DAMON: A reasonable one.

MR. PIERSON: A reasonable and consistent one. The thing that I would like for you to appreciate that we are faced with at the staff is the aspect of consistency.

We want to be able to be fair to all of the licensees, and we want to be consistent therefore in our application of how this ISA process of licensing.

So we are not in one sense establishing a safety outcome and a licensee that is in the order of magnitude of two orders of magnitude greater than for another licensee. So they could both be right, but we want to be consistent in terms of that application. That is what we are trying to achieve here.

MS. ROCHE: And when he was talking about Rosetta Stone, this is something that is a reference point, which would be used by you and by us. We can come up with the first draft, but we will work with you.

MR. SCHILTHELM: I hear your words and I believe your words, but it is written as a probability, and five years from how your predecessor is going to say, hey, you have to be 10 to the minus 6, and show me why you aren't.

MR. PIERSON: And we will have to work to make sure that that clearly is.

MR. KILLAR: One of the other concerns that we have is that if you look at Chapter 5, the criticality safety chapter as Steve alluded to, and we have this criteria for establishing a criticality program.

The criticality engineer goes through and does his work, and does his write-up and what have you, and it is part of the ISA, and under a normal quick review and your normal critical reviewer will look at that, and say, yes, it is a good evaluation, and it is acceptable.

However, if you have your ISA person who is reviewing this against a Chapter 3, he starts plugging in these numbers and says this isn't adequate.

Yet, you have a criticality guy, and who have been reviewed by a criticality guy, who says fine, and you have your ISA guy who says it is not adequate because the numbers don't add up.

MR. PIERSON: No, I don't think that is going to be the case. It is our challenge to make sure that our reviewers understand that, and understand the application well enough so that we don't run into that situation.

MR. COX: Just as it would be your challenge to have your engineers pick the right numbers if it is numbers, and they can do it.

MR. PIERSON: I would hope that if we could progress to the point where we can come to a common consensus on what I talked about, and what Lidia mentioned, this concept of the rosetta stone, or the template where we establish some guiding principles for both your staff and our staff to assign to these components of these safety systems, I would hope that if we can achieve that, we should come out with the same answer.

Now, maybe you would come out with, let's say, 10 to the minus 6, and we would come out with something on 10 to the minus 4, or 10 to the minus 5.

Well, okay. What I am really looking for is not some bright line that says above is acceptable and below it's not. What I am looking for is essentially a perspective that it represents something that makes a reasonable attempt to show that it is highly unlikely, or likely, or unlikely.

And that the consequences of that are effectively bounded by the safety systems and safety components that are applied to it. That's all we are trying to achieve here.

MR. KILLAR: But we have been doing that for years with criticality safety. We have demonstrated double contingency, and therefore we have demonstrated that it is highly unlikely to have criticality.

MR. PIERSON: We are taking that knowledge and we are moving to a new plane here, where we are trying to establish sort of the same thought processes to other parts of the facility to sort of capture that in what we call this integrated safety analysis so that we can justify that the facilities are safe in our minds, your minds, and in the public's mind.

MR. SCHILTHELM: I think our concern is, Bob, with that we are done with our ISAs, and we have been doing them for four years, and they were ordered from the NRC.

So we are done with the ISAs, and we structured it and set it up to be entirely consistent with the double contingency principle.

MR. PIERSON: And I think it is probably going to be acceptable. I don't think that you are going to have to do anything. Maybe nothing. I don't know. I am not familiar with it.

But I think that you are assuming a situation that I don't or hope won't occur, because the --

MR. SCHILTHELM: I got a letter that says that my likelihood methodology is defective. You used the word defective.

MR. PIERSON: Well, we may need to look at that.

MS. ROCHE: We may sit down and talk to you as to that.

MR. PIERSON: Because I think it is not so much defective as we need to clarify it. Defective is probably a bad word.

MS. ROCHE: Don't forget that ISA, the concept of ISA is not new. We have borrowed the methods from the chemical industry. We have been using it for years.

MR. SCHILTHELM: And they don't assign probabilities.

MR. PIERSON: That's true, they don't assign probabilities, but they do assign failure likelihoods.

MR. SCHILTHELM: Don't say they don't assign, because sometimes they do.

MR. PIERSON: They are moving in that direction, and they have some new standards out and new procedures and things.

MS. ROCHE: If we work on this concept, where we have a common reference point, it will be better to communicate.

MR. SCHILTHELM: I am concerned that if we have a common reference point, the bar is going to be higher than it has been previously.

MR. PIERSON: Well, we are not going to do that. We are going to ask all of us, all the stakeholders involved, to be involved in this process. So we are not going to sit down and write it out on a piece of paper.

We are going to have meetings like this, and we are going to sit down and try to craft this process. And it is incumbent upon all of us to sit there and try to come up with reasonable perimeters.

MS. ROCHE: For the very reason you mentioned, and that is the type of dialogue that we need to have.

MR. DAMON: One of the things is that when you work for one facility, a lot of the inconsistencies that arise get worked out. So you agree within your own scheme of things as to what is adequate and what isn't adequate.

What the staff sees is that they see all the licenses, and they see exactly the same situation dealt with differently. Now they say, well, which one is good enough, and that's why I say that the staff is in this dilemma, and despite the fact that the good safety committee is involved with the double contingency standard, it's really not a standard for achieving sufficient unlikeliness.

What it really is -- and this is my view of it, but it is a reliability engineering technique. When you don't have a good feel for what these numbers are, what these probability of failure or failure rates are, you don't really know how good a control is, it is unwise to rely on just one.

If you have two and they are independent from one another, and you meet concurrent failure, then if you are wrong about one of them and it is not as reliable, and it is not as unlikely as you thought it was, and it happens to you, then your corrective action program picks it up, and fixes it, and you didn't have the accident.

So to me double contingency is a qualitative safety design that allow you to have reliability growth, and to get you to where you want to be without having accidents.

So that is what I see it as, but it is not just having two things and not telling me what unlikely is, I don't really know how unlikely the thing is.

But if I think they are both adequately unlikely, and yet one of them happens, and I didn't really expect it to happen, and I thought it wouldn't happen, then it wasn't as unlikely as I thought it was, and it allows you to fix that and make it unlikely.

And I am just saying that a scheme that is more directly related to qualitative things also allows you to make that judgment better about when something does happen, and whether it is something that needs to be improved.

Because as you may know from the 9101 reports, some of the facilities, they are reporting things that happen, and they happen all the time, very frequently, and the question is should something be fixed.

Is that an unsafe design, and this thing is happening all the time, and when these things are a violation of simple administrative controls -- you know, maybe a waste drum was not in the circle that it was supposed to be, if we have a proper understanding of how that influences the likelihood of an accident, I think you would agree that it is not sufficiently significant that maybe once in a hundred, or once every couple of years that somebody makes a violation like that.

But on the other hand, when something fails, like a tank ruptures, or some other piece of safety equipment that you expect to be very reliable, and you really didn't expect it to fail and then suddenly it does, then that is different.

And the only way to do that I think is to compare them on the same scale, to make a judgment as to what likelihood you expect the thing to have.

MR. KILLAR: I think they get the drift, and so let's move on.

MR. DAMON: I think we have discussed most of the concepts that are in here in these slides.

MR. PIERSON: Any questions associated with this that you would like to bring up?

MR. PAULSON: This is Ron Paulson, and a question on Slide 8. I have been in this criticality field for quite a while now and I have a very clear understanding of double contingency, and the process design shall be such that two independently, unlikely concurrent process changes are required before a criticality accident is possible.

Now, when I look at risk, it is clear that it has got to two elements, the likelihood and the severity, or the consequence, and the product of those two versus risk. And we are all about defining what is risk, and ranking that risk.

What I don't understand what is inferred in your Slide 8, it appears that you have deviated from a true double contingency implementation, and that in the ISA scheme, if we call a criticality control a control, that in and of itself is sufficient to maintain the process of critical.

Such that that control, if it fails, if you have got a true implementation of double contingency, you have got at least another control to stand on.

Now, if you look at your two accident sequences, failures of IROFS 1, and that is plural IROFS, and then IROFS 2, it looks to me like you have a cascading period of accident sequences or initiating events that needs to control one failure, and cascading into control number two failure.

And so now you are in a triple contingent situation. Is that what you intend to convey?

MR. DAMON: No, no, what you have here is the situation that is going to be described in this example with two items relied on for safety, there are just two items relied on for safety.

It is a situation where both of the items relied on for safety are required to be present continuously. It is that type of a model system. The example is going to evolve later and it is this double containment line that I am talking about.

In other words, if you have got a line containing a toxic chemical, and an outer line to protect in case that inner one leaks, then you need to have both of those lines not be in a non-leaking state continuously or for as long as the toxic chemical is there.

So for a system like that, this is called an active parallel, or an active redundancy. It is that model. So you don't have three events here. It is just two events. One line leaks and the other one leaks.

But there is no implication that there is a cascade effect or anything. It is simply concurrently that they are in a failed state at the same time. So they are both leaking at the same time, and that's what it means.

MR. KILLAR: I think Dennis' point is that what you are saying here is that one fails and then the other fails, you give the impression that when the first one fails, and then the second one fails, that these would not be independent devices.

MR. DAMON: That's not what I am saying.

MR. BOYLE: They are independent.

MR. DAMON: I understand what he is saying. But the way that he has got it expressed here is not what he is saying.

MR. KILLAR: Well, typically, and even the leaking situation, and obviously in the case of the forklift guy driving through, the two failures that would happen simultaneous.

But the normal thing is that one of them happens first in time. In other words, one is a leak in time, or at some point in time it will develop a leak, and then at some later time the other one will. They won't happen at the same time.

MR. PAULSON: I think I understand what you are saying, and it may be a bad example here, but in the case of geometry and concentration control, if the guy drives a forklift through the two walls and defeats your geometry control, you have still got your independent control on concentration intact.

So independent of your geometry, you would still be okay. And I think what you are telling us is that it is your intent that you look at initiating events or credible accident sequences that could lead to, for example, a loss of geometry. And bearing in mind when you assign the risk that you have your independent control on, let's say, concentration intact, because it is in fact an independent control.

MR. DAMON: Right. Nothing that is presented in here is intended to imply that they are dependent failures, except the forklift guy driving the thing through, and in the case of this thing, the two line example, that is a common or a dependency type thing.

But an example of the two lines leaking -- the first one leaking, and then the other leaking -- there is no dependence implied there.

MR. COX: No, there is no dependence implied. And they have individual and independent failure frequencies, each of these kinds of controls, and that's how we are going to get the risk, which is some likelihood times that ultimate consequence, which in this case is an exposure by a toxic chemical. We are not talking criticality here.

MR. SCHILTHELM: But this wouldn't even be within the scope of the rule.

MR. COX: We don't know that. It depends on what the stuff is.

MR. DAMON: It depends on what's in there and where it is located.

MR. COX: And how much gets out.

MR. SCHILTHELM: If it is --

MR. PIERSON: Or whether it could affect an operator that controls the criticality rate, or whether it can affect some critical mass by -- well, I mean, there are a number of different things.

But I think in terms of what you have done on this example, I would like to offer a suggestion so we can move through rather than spending more time on the specifics of this example.

And unless somebody has some question that they can't hold, why don't we move on into the rest of the meeting here. Any problems with that?

MR. COX: Well, I would only suggest that I think we are in a topic that simply will take more time than we have to deal with. And I think the questions are probably very good, and I think a complete understanding of this is what we had hoped to achieve, although we have little time.

So maybe Dennis can give us some suggestions on what he thinks we can skip, and not skip, and still get a sense of this thing. Or we could simply decide to end somewhere and continue with it.

MR. PIERSON: Well, I guess what I would like to say is that rather than going through the discussion, you have heard the presentation, and I think most people have a copy of the slides, and we have two discussions and questions, and why don't we go into questions and discussions about this rather than trying to go through the slides.

I think that probably the examples are probably illustrated, and if you have some more generic questions about how this might apply, or what we are trying to accomplish, or how we need to try to do this, let's move on to that.

MR. DAMON: Yeah, I was just -- the example was to illustrate -- or it was to be a very simple example for one thing, and that illustrates what this concept of downtime was all about, and the fact that considering downtime, and considering it is that you would become aware that a failure had occurred in something, is a feature that in applying the method that was in

Appendix A, leads you to recognizing that it is important to be aware of when an item relied on for safety has failed.

And so that was the point of this, because the method presented in the NEI guidance document did not explicitly show how that issue was addressed.

Now, with respect to that issue and also the issue of whether the controls that appear in a double contingency situation are sufficiently unlikely, what may be true is that the reviewer needs to have become familiar with the entire safety program as documented in the license application before he can make judgments about things.

For example, if in the safety program there are a set of criteria that effectively provide reasonable assurance that anything designated a safety control will have sufficient reliability, then that would satisfy that need.

But if the specifications of what would qualify as a criticality safety control didn't consider surveillance, and they didn't place an adequate bound on it in some way, or explain how it was to be done so that you got an adequate result, then the reviewer would be in a position of not knowing whether he believed or understood why the system was sufficiently reliable.

And that's because he wouldn't know whether or not the failure of that particular item would in fact be observed by someone, or would be detected and corrected in a reasonable time.

So that was the purpose of this example, was to just emphasize that issue of how methodology leads you to identifying the characteristics that you need to address in making a system reliable.

And that same function of making sure that you have addressed everything could be dealt with in a different way. It can be handled simply by describing all the measures that the plan has in place to assure the controls are reliable and documenting that.

And which brings up the fact that it is going to be difficult I think for the reviewers to review an ISA summary unless they have a current version of what the plant is actually doing in terms of safety controls, chem safety controls, and so on.

And so they will need a current version of all those chapters, and also Chapter 11, the thing that addresses management, and they need a current understanding of what the plant does to assure that the controls are reliable, in order to judge this other thing, to review an ISA summary.

MR. SCHILTHELM: That's a good point. Maybe that is the piece that is missing, is that you start looking at these models in a vacuum, and you forget about all the other license commitments that exist.

MR. DAMON: Yes, there is no doubt in my mind that the two can work together. I mean, you can make commitments, and describe what qualities and criteria of a safety control of different types would have to meet.

And then when those types of controls come up, the reviewer will recognize that he can rely upon that other commitment to ensure that that type of control is adequate.

But the dilemma that I saw for the reviewer was being presented with a combination of an event occurring with some frequency, and let's say once in the life of a system, and then some other thing protecting it, an active engineer control, and that's all they knew about it.

He just knows that it is an active engineer control, and he really doesn't know how well engineered that thing is. If you go look at failure rate data for all kind of active things, and they have quite a wide range, and some of them are not so reliable.

And so it puts him in that dilemma. He doesn't know if the thing is adequately reliable or not.

MR. SCHILTHELM: But isn't that a hypothetical dilemma? I mean, we are talking about facilities with licenses, with existing programs, that describe the ground rules for implementing controls.

We are also talking about that there has to be some description of management measures to support the implementation of the NEU Part 70.

So the situation that you are describing is somewhat hypothetical; in that you have a wealth of information that is not in the ISA summary to use to also judge the adequacy of what is in the ISA summary don't you? I can't see why what you just described could ever happen.

MR. PIERSON: I am not sure I understand the question. All I would like to point out here is that what we are looking, and like I keep saying, is some manner to assess consistency across the licensees.

And I think to some extent it will have to be self-defining, as part of an example that we are working through. We are not suggesting that everybody run back and assign likelihoods and come up with a hypothetical probabilistic risk assessment. That's not what we are saying at all.

But what we are saying is that we are likely going to be working with the staff and working with you to come up with some process so that we can have guidelines to the staff, and so that we can achieve a consistent, repeatable, outcome on whatever it is that we review.

So that's how we would like to portray it. Now, what Dennis has done in his example here is what I would like to characterize as a hypothetical example.

I am not aware that it exists at anybody's site. And like you said, maybe there is no regulatory basis. I don't know. That is almost irrelevant.

But what we are trying to do is to show you how time factors into it, and how you can assess this double-line one way, assuming that the outer line is already fractured or possibly leaking.

It is different if it leaks first than if it leaks second. So you have to be sensitive to that, in terms of how you are setting up these constructs, because otherwise you can come out with results that aren't necessarily accurate.

And that is something that we all have to sort of consider, in terms of this process. But I think what we could probably do, rather than trying to talk anymore about this example, I would just like to ask if there are any general questions and discussions from the audience in general about this approach.

And then maybe we could have a break and then move on to your -- to NEI's November 16th letter. So any other questions or comments from any of the other stakeholders?

MR. PAULSON: I have got one comment. This is Ron again at GNFA. Dennis made some comments earlier about reliability of controls, and while most facilities have the necessary infrastructure put in place -- and of course the standard review plan speaks to it in many places about the necessary training and qualification of the personnel.

And of course in the area of the criticality safety or nuclear safety, those individuals are put in those positions based on qualifications.

And they are in fact dividing the items relied upon for safety, or the controls, based on engineering judgment in many cases. And in fact we don't actually call a control a control unless it is robust, and is in fact reliable.

And I would just like you to keep that in mind, that you have the necessary people and infrastructure in place that are really uniquely qualified based on their familiarity with the facility, in making that determination on what constitutes a control.

MR. PIERSON: I will tell you how I would propose to address that process. As I said earlier, if we come up with this concept of a template or a rosetta stone that assigns a certain likelihood of outcome for a component, or perhaps a person performing a procedure, or perhaps somebody conducting an evolution, then the factors that you discussed there would be factors that would be considered as part of the development of that likelihood template, or that outcome process.

So as an example, if you are taking credit for someone who is not qualified to do something, or someone maybe who is just a member of the plant staff to do something, you would not get the same credit that you would if someone is qualified and using a procedure to do something. Do you see what I am trying to say?

MR. PAULSON: I understand.

MR. PIERSON: So that outcome that you are talking about I hope would be enveloped in this process. That is what our intention would be.

MR. KILLAR: Can I make one other observation on Dennis' example here? And it goes a little bit to what Steve was saying earlier, as far as going down with more and more problems with the probabilities.

And that is that when looking at the durations, Dennis was basing it on the assumption of the periodic inspection to determine the durations of the frequency of the system failing and stuff, which I think has been improperly characterized.

Because if you are going out and annually inspecting, say, the outer pipe, and you find that the outer pipe is still intact, you don't do anything until the next year under Dennis' assumption, because you are only doing it once a year.

And you have got to assume that you have got a failure rate of once a year because you are only inspecting once a year, which is not correct.

MR. PIERSON: What you are saying is that essentially the methodology for assigning something that you check once a year, once a week, once every 10 years, once every 5 years, once every 8 years, that is pretty straightforward.

And essentially what the assumption is that it could be in a failed state the day after you look at it. Then basically you take an average and come up with a multiplier.

MR. KILLAR: But if you inspected it five years in a row, and five years in a row it was still intact, then you are still using the assumption that it failed the day afterwards, and since it is this year, and so now you are looking at it, you have to take into consideration the five years of continuous operation, and let me just say that is improper the way it is phrased.

MR. PIERSON: Well, let me just give you some caution there. What you are talking about, in terms of assigning that relative probability of likelihood that it is there or not there, then you start getting into the realm of PRA.

MR. KILLAR: And that is exactly the point that I was making, and that's the direction that you are moving.

MR. PIERSON: No, that's why we don't want to move in that direction. That's why we would rather just take a crude assessment of the lines. Now, if you want to come up with a risk, in terms of the outcome, you could factor that into it. We are not going to tell you that you can't do that.

But we would rather start with something a bit more simplistic, particularly an example like that.

MR. COX: Let me get something straight here for the record. The duration of failure, and the duration of undetected failure is not the same as the random failure frequency of a piece of equipment.

And it shows two different numbers in Table A-1, where the frequency of failure of the outer type and the minus 2, the duration which is tied to the infection frequency is zero. which means once a year.

The frequency of number two is minus 2, which is once in a hundred years. So those are two different numbers.

But you have to understand how they are used, which we did not get to go through here today, and maybe you can figure it out from this, and we will have to deal with it another time.

MR. PIERSON: But if what you are doing is looking at something, each time you look at something, you say it is okay, and then you use that history historical, and I have looked at it, and it is okay, to justify future likelihood that it is or is not okay.

And you start getting into that realm of essentially it is a probabilistic risk assessment, and that --

MR. KILLAR: That is exactly what we are going to do.

MR. PIERSON: No, we're not, because what we are going to do is we are going to sit down with you before you start, and we are going to say look at the pipe, and we are going to give you essentially a value that presumes the integrity of the pipe.

Then we are going to work base on how often you look at the pipe a value that gives you the likelihood that the pipe is in a failed condition when you buy it. We are going to give you that.

We are not going to have you determine that unless you want to, because if you want to do that, that is an option, but that's not what we are asking you to do.

MR. KILLAR: We can continue this on, but I don't think it is going to be of any value.

MR. PIERSON: Any other questions, or comments, or ideas? If not, I would suggest that we take a break and come back.

MR. COX: Let's take 5 minutes. Let's take a quick one, if possible.

(Whereupon, the meeting was recessed at 3:33 p.m., and was again resumed at 3:43 p.m.)

MR. PAULSON: I have a comment regarding the earlier session, and if I could get that in here in a second.

MR. PIERSON: Well, I guess we are all here. Go ahead.

MR. PAULSON: Okay. My comment is this. In the early part of Dennis' discussion, there was some play on the word "all" that is shown in Chart Number 5, and as it related to the high consequence of intermediate consequence events.

And I understand what Dennis is saying and the words that he used, but our facility also got a letter, and also if you look in 70.62, C-1(iv), and you read those words, the qualifier there related to sequences does not limit.

In other words, sequence there is not qualified to just those of the high and intermediate consequence. And so sometimes when we have the discussion and sometimes when you look at it, it focuses on high and intermediate.

But more generally, we seems like we revert to the 70.62 words, which really puts no qualifier on what is being discussed. And it seems generally to be interpreted as all sequences, and all sequences is a pretty encompassing word. And I think that gives a rise to a bit of the concern that is being expressed.

MR. PIERSON: Well, we will have to clarify that, because our intention is not to come up with all conceivable sequences.

MR. PAULSON: That's good and I think that needs to be done. You know, the rules that are in -- the words that are in the rule, we all have to live with.

But I think we need in all cases to get qualified whether we are talking about all or whether we are talking about all, high, and intermediate, and it makes a big, big difference.

MR. PIERSON: That's true. You are absolutely correct.

MR. COX: Okay. Charlie, we will take that. Now, let's get on to Agenda Item 5, which is NRC comment on NEI's cover letter. We have a handout here, and Charlie, you have that, too, I believe. It is six pages in table form.

And since everybody has it, I don't propose to read it all, but I will maybe read the left-hand column, which is a comment that was addressed, and then I will say some fundamental points out of the right-hand side, and not read all the right-hand side.

And as each comment is done, we will take questions or discussions to the extent that people to. Okay. Regarding Comment Number 1, it was on page one, the second paragraph of the NEI letter, and it says, "This chapter should provide guidance to the staff in evaluating the two applicant (or licensee) submissions that must be approved by the NRC."

Basically our position is that Chapter 3 does include such distinct and separate guidance for the two applicant submissions. And the comment response here points to where that guidance appears in Chapter 3. Any comment on that?

MR. KILLAR: I think that goes to what I said in my opening remarks, Tom; is that the way that you currently have the Chapter 3 written, it is not clear whether you are talking about the ISA program, the ISA summary, or the ISA itself.

And, yes, if you sit there and piddle with it, you may be able to gain a distinction. But it certainly is not clear which ones you are referring to.

MR. PIERSON: What you are asking us to do is as we go through Chapter 3, and you say ISA summary, or ISA results, or ISA programmatic commitments. Is that all you are asking us to do, is just discriminate?

MR. FARRELL: But you just make the confusion in the words that you chose. I think part of the problem is the history of Chapter 3. It originally started off -- my understanding was that these were some guiding principles on how to evaluate an ISA.

Then as time evolved a couple of years ago, then it came out when the NRC said, yes, we will approve not the ISAs, but the ISA summary. Then Chapter 3 had to be rewritten a little bit.

MR. PIERSON: There may be some artifacts.

MR. FARRELL: Yes, and that is my concern, and I think we should be very, very -- I think the information is there in Chapter 3. It's just kind of muddled.

And I think that if we can make it rather distinct --

MR. PIERSON: You want to make that an action item?

MR. FARRELL: These are the criteria, and the review criteria for the ISA approach, versus the ISA summary. Just to use one little example. Instead of simply saying we are going to give you some guidance on how to evaluate the ISA approach, you include the word -- you give the reviewer the broad scope of saying that either the programmatic commitments or the ISA approach.

Well, the term programmatic commitments is confusing, because if you go down a couple of more pages, it says the ISA programmatic commitments consist of the process safety information.

Well, process safety information is not something that needs to be evaluated or approved in the ISA approach. So I think it is just of the wording is just imprecise.

MR. PIERSON: We will try and look at that again at our next draft and see --

MR. FARRELL: That was really one of the main thrusts of the rewrite that we proposed to try and separate the two and make them very clear.

MR. COX: I don't think that we wanted to take the rewrite wholesale, because we saw that as being much broader than what you just brought up. But I think we need to do this clarification that you are talking about.

You just pointed out a particular phrase that bothered you and another particular phrase that bothered you. I think we have to know where those things are that are confusing.

MR. KILLAR: Maybe another way to explain it is that what you may need to do is look at each of your subsections. You referred to Section 3.1 and 3.3, and to split it out. And even in Section 3.1, split out the three different or distinct ones you are looking at.

And so you need to be clear and distinct as to which particular aspect you are looking at for how you are going to plot it.

MR. COX: Well, that's what we thought we did, with two sections; one addressing programmatic commitments, and the other addressing ISA results. So it is unclear to us what the real detailed issues are.

MR. FARRELL: Also, I would be cautious of using the word programmatic commitments, because the ISA approach may not simply rely on commitments, and it may actually lay out a little of the structure of the programs that you are going to use.

And so I would be very precise; the ISA approach, the summary, and review criteria.

MR. PIERSON: We will probably do that, and if we are not successful, then when you read it, then you point it out where --

MR. FARRELL: It is a substantive change.

MR. COX: So you like the ISA approach rather than programmatic commitments?

MR. FARRELL: That's what is in the rule, yes. I think so, because the reviewer could get confused when you are looking at programmatic commitments, and those could be for the fire safety program. Anyway, the point is clear.

MR. COX: Okay. Item 2, and that was on the letter, page 2, quoting, and this is a quote, the need to incorporate into Chapter 3 -- and that means NRC Chapter 3 -- guidance similar to that provided in NUREG-1513, on the content of an ISA no longer exists.

Well, I guess we have a fundamental disagreement along those lines. We believe that Chapter 3 should contain guidance on the content of an ISA, and have written it that way, too; as well as on the content of an ISA summary.

And there is a fairly long paragraph there in this handout to explain that. But we think that it should contain guidance necessary to evaluating the approach methods and outcomes from the ISA, and Chapter 3 must contain guidance like that.

MR. KILLAR: That is not what we were commenting on, and you are taking this out of context, at least from my reading. In fact, I can't even find the words that you specifically had here.

What I think we were saying is that looking at Appendix A to Chapter 3, are you using that for reviewing the ISA, the ISA summary, or the ISA specific programmatic requirements of whatever term we just used, so that I don't get the term wrong.

And if you are going to use it for reviewing the ISA or as a simple method for the ISA, that's fine. But make it clear that that is what it applies to.

If you are using it as a demonstration of a method that is used in the ISA, then it should be in 15.13 rather than 15.20.

MR. COX: Well, there are some comments here about what 15.13 is, and I think you need to understand that 15.13 is not a comprehensive guidance document either on how to do an ISA or an ISA summary. And I think that is explained further down in this paragraph.

We don't think that is adequate enough to supplant material that we have included in Chapter 3. NUREG-13 really provides only a basic understanding of the fundamental elements of an ISA. It is basically an introductory document on how to perform an ISA and document the results.

Those limitations on 15.13 are stated in 15.13, where it states that it does not address acceptance criteria for the ISA, and it refers the reader to the standard review plan.

MR. KILLAR: I think once again you are misunderstanding what we are asking for. What we are asking for is what is the purpose of Appendix A, and what does Appendix A tell your NRC reviewer what is he to do with Appendix A.

And as we talked about, it is a method for evaluating the ISA, or I say summary, or the programmatic requirements. It is not clear. Now, from the discussion that we had today, I would assume that it was for evaluating the ISA and the safety of the facility. But I don't know that is clear in what you said here.

MR. PIERSON: It is a method for evaluating the ISA, and from that one would conclude that the ISA summary was acceptable, and one would conclude that the ISA program is acceptable. It goes to the root in evaluating the ISA.

MR. COX: Let me try to say it just a little bit differently than Bob just said it, but essentially it is the same. Appendix A is really there -- well, first of all, we are going to look at what we have, which is the ISA summary.

By extension though, when we review what you have for the ISA summary, that is how we become full of reasonable assurance that the ISA was done in accordance with 70.62.

MR. PIERSON: We have always said that as part of the ISA summary that you may choose a sample, a subset, and go down to the facility and look at that.

And we would run it through that subset or sample, and we would look at what you did, and we would run it through the same sort of value process that we have established for our review, and see if there is some consistency there where we would come to the same conclusion.

MR. KILLAR: I don't want to argue with you, and I have no problem with that. What I am saying is what is Appendix A to Chapter 3 do? What is the reviewer supposed to do with Appendix A?

MR. PIERSON: That is a fair question.

MS. ROCHE: I think it was requested that we provide some examples, and at the beginning, I don't think Chapter 3 had any. And then I thought it was requested that we provide an example of how to go about doing this ISA.

MR. COX: That wasn't in response to a request for an example. That was put into the standard review plan, Chapter 3, in order to show, one, the kinds of information that needs to be submitted in an ISA summary in order for us to find reasonable assurance.

That is, the layout or the elements of information in an accident sequence description, and initiating event and consequence; those indices that we showed and how we structured them.

And it was a suggested method of presenting it in an ISA summary, that the staff could understand, and would go through efficiently, and make judgments on the quality of the ISA summary, and by extension, the ISA.

And it was a suggested layout. Here is the way to report to us in your ISA summary what we want to see.

MR. PIERSON: Here is a way you could report it.

MR. COX: Yes. That is what it is there for; in order to make a simple and concise -- several pages instead of many pages -- presentation of what we thought would be an adequate way to lay out the accident sequences, and specifically the information elements in those tables are what are important to us.

MR. PIERSON: I see that linkage between the ISA summary and the ISA, and the program is iatrical. But I would say what is it used to review?

It is used to make the judgment from the staff's perspective that your ISA has achieved the safety outcome that is required to achieve your license application. That is what it is trying to do.

Now, initially, of course, you said in the ISA summary, and somebody is going to be applying these thought processes to the ISA summary. It is understood or at least assumed from our perspective that in some cases one is going to need more substantiation, or more basis, to make a case.

Maybe some subset of that, and you can go down to the site and pick out those risk significant sequences that you want to look at in more detail, and you still apply the same methodology, the same thought process. That's how we are trying to do that.

MR. FARRELL: The way you present the thought process for the reviewer was a contrast between what Tom said and yourself. Tom used the approach, which I agree with, that we are approving the ISA summary, and we look at the summary, and if we need to go and check a few of the background studies, then we go to the site where all the supporting information is.

So you start with the ISA summary, and then if necessary the ISA. You mentioned that the objective is to approve or to review the ISAs, and based on that successful review, you see whether the ISA summary is correct.

MR. PIERSON: We approved as part of your license submittal the ISA summary. But when we approve that ISA summary, what we are saying is that we in effect accepting for your application the ISA that you provided.

Now, we acknowledge that we don't have to review it all, but in fact what we are doing is accepting your ISA. We are not accepting some subset and holding the rest of it as if it doesn't exist.

So this Appendix A will be used to review the ISA summary that is provided to the staff and submitted.

MR. FARRELL: I wasn't specifically talking about Appendix A.

MR. PIERSON: Well, whatever.

MR. FARRELL: I was talking about the substance of Chapter 3.

MR. PIERSON: But the NRC staff -- well, let me give you a hypothetical example. Let's suppose that you send in an ISA summary, that for whatever reason raises such a concern among the staff that they feel that they need to go down and review the entire ISA to come to the conclusion that it represents a safety judgment that they need to do.

That is perfectly acceptable. There is nothing that says that the staff is limited to some ISA summary for their review. The ISA provides the basis for what the summary is picked from or pulled from.

And so I don't think what Tom and I said was inconsistent. But what I am trying to point out is that we are making a judgment on your ISA, and the way we are trying to do that is by reviewing the summary that you provided.

And if we need to have additional information, we will go to the site and look at that additional information that we need to make the conclusion that the ISA summary represents a justified summarized basis for your ISA, and that the ISA represents a safety judgment that we need to make the conclusion that the facility is safe.

MR. FARRELL: I guess commenting on the approach. Is the bottom down approach, which is to me the whole purpose of Chapter 3, and which Tom stated very well, versus the bottom up approach, where you start with the ISAs, and work up to the ISAs.

MR. PIERSON: I never said we start with the ISAs. I said we start with the ISA summary.

MR. FARRELL: No, you didn't. Well, I don't want to argue. You can check the transcript. I think I agree with the perception that we start with the ISA, and if that document is inadequate to the point that you have to go back and look again --

MR. PIERSON: I think we start with the ISA agreement.

MR. FARRELL: Excuse me, the ISA summary. I can see how that happens. If that is inadequate, and doesn't provide you with the required level of assurance, then you go down --

MR. PIERSON: I would change one other thing. We will look at the ISA summary, and probably, whether it is adequate or inadequate, we are going to look at a subset of the ISA at the site.

MR. FARRELL: Oh, I agree.

MR. PIERSON: So it is not contingent upon the ISA summary being inadequate that triggers the staff's participation on the site in an additional review of the ISA.

MR. FARRELL: But following up the example, you just mentioned a couple of minutes ago that if the thing was so bad, then we would have to go back and start up again.

MR. PIERSON: We might have to review the whole thing.

MR. FARRELL: And that's fine, but under normal circumstances --

MR. PIERSON: We would review some subset.

MR. COX: I think it is written in this response, and is a adequate summary of what we have just discussed for five minutes. It is just right there. It did not talk about Appendix A specifically, because your comment on page 2 didn't address Appendix A.

MR. KILLAR: No, our comment on page 2 started with Appendix A. So there is no need for Appendix A to remain in Chapter 3, and that's what I thought your response was based on that comment.

MR. COX: Let me read the whole thing.

MR. FARRELL: I think the problem is that the page number is incorrect. In fact, the sentence that Tom is commenting on is actually on page one of our document, paragraph 2, where it says --

MR. COX: Paragraph 2, about six lines down, or five lines down.

MR. KILLAR: Oh, we are talking about different things here.

MR. COX: As the ISA is neither submitted to nor approved by the NRC, the need to incorporate into Chapter 3 guidance similar to that provided in NUREG-1513 no longer exists. Well, that doesn't say anything about Appendix A, and so I didn't address it then.

MR. KILLAR: You see, I was looking at the next page, which paragraph one starts that there is no need for Appendix A to remain in Chapter 3. That's why I was addressing that, and that's why I thought you took this out of context and what have you.

So we were at completely different pages and completely different topics. So I still have a problem with Appendix A.

MR. COX: Maybe I will not do page references then because you are right. We convert things from Word into Word Perfect and that is how this occurred, I guess.

MR. KILLAR: We had that happen last time we were looking at Chapter 11 as I recall, too.

MR. COX: Do you think we have exercised that one enough? Okay. The third comment was -- and I guess it is still the second paragraph. I am trying to find it now in terms that you will understand.

It has the phrase in it that the language in the staff revision --

MR. KILLAR: I think we have already discussed that enough already.

MR. COX: Okay. The fourth comment, and again in this second paragraph, which is on page one, this is regarding NRC's Appendix A.

MR. KILLAR: Right.

MR. COX: And it says that the Appendix provides useful and informative guidance to a licensed applicant in the preparation of an ISA risk analysis, and is appropriate for inclusion in NUREG-1513.

However, as it provides little information specific to an ISA summary, it should be removed from this chapter for simplicity and clarity. Do you see that sentence in your letter?

MR. KILLAR: Yes, I am familiar with that sentence.

MR. COX: And our relatively short response over here is that we put this Appendix A in because or specifically for simplicity and clarity, and we think it provides a simple -- we call it a cookbook -- presentation of what results should be reported from the ISA summary.

That is a kind of minimum presentation sort of recommendation there as to how to hand it in. We think it is a simplified definitive exposition of what the staff would look for in an ISA summary.

MR. KILLAR: But it is incomplete. That's our biggest concern.

MR. COX: What is incomplete?

MR. KILLAR: You don't have in there, for instance, the table of the items relied on for safety; how the measures are applied to the items relied on for safety.

Those are part of the things that have to be in the ISA summary, but they are not discussed in the appendix.

MR. COX: That's true.

MR. KILLAR: So what I am saying is that what you have done here is that you have taken one small aspect of it, and to me rather than simplifies it, it makes it more confusing.

In fact, you made the comment earlier that Appendix A was what you were looking for in the ISA summary.

MR. COX: Well, that's not all we were looking for in the ISA summary. I don't want to get away with that one small aspect idea. That is a major idea.

MR. KILLAR: Well, there is a lot of things, granted. The analysis and the evaluation takes up a lot of it, but to me -- and I think what Dennis will relate to, is that when you do your ISA and ISA summary, what you are looking at is the process that you went through to make sure that you have captured those things.

And that when you have identified items relied on for safety, all the paperwork and all the math that you do in between there and stuff is a big chunk of work and staff.

But in the whole meaning of things, it has not the significance of the other two items, and neither one of those are talked about in Appendix A.

MR. COX: I think the list of accident sequences is not an insignificant part compared to these other two ends that you mentioned. Outside of what is in Appendix A, the next most important thing is the list of IROFS and their description, and that would be just about everything.

When management measures description, it does not have to be in detail in the ISA summary. I would expect that you would be describing management measures in detail in Chapter 11. But in the ISA summary, you would be tying together the IROFS with some way of talking about what management measures are applied to them.

MR. KILLAR: Right. But what I am saying is that you don't have anything in Appendix A talking about that.

MR. COX: I would agree with that. We will refer to it as being somewhere else.

MR. DAMON: It is a true statement that Appendix A is not an example of an entire ISA summary format. That wasn't the purpose of it.

MR. PIERSON: But if it clarifies it for reviewers, we can put a place over there and refer back and that's easy enough.

MR. SCHILTHELM: What we should decide to do -- you know, NEI has been working on this guidance for an ISA summary. A piece of that is Appendix A, but it is not in that guidance necessarily the way it is there.

We should either put a whole Appendix A in there that is a guidance for format and content for an ISA summary, or we should pull it out of there and finish this other product, because we don't need two.

I don't have a particular opinion on which is the best way to do it, but you ought to be able to look in one place to get the answer.

MR. DAMON: I would say the ISA summary guidance document has the complete format. That is a complete format description for what goes in an ISA summary. So if somebody wants to follow a document that tells them what else has to go in there, follow that.

MR. SCHILTHELM: Can this come out of there or does this have another purpose?

MR. DAMON: Well, the primary purpose was to illustrate a likelihood evaluation method that the staff felt would meet what they felt were acceptance criteria for demonstrating highly unlikely and unlikely.

So it was primarily to demonstrate a likely evaluation method, and also the format and content of the information from such an evaluation and how that would be presented in the ISA summary.

So that it would be presented in those accident sequence tables. And actually it is really the same scheme that is in the NEI guidance document, in terms of format.

It's just that the actual -- when you get down to one final detail on how those scores and evaluations are assigned, that one little element is different, you know. But everything else is really the same.

MR. SCHILTHELM: Whatever we arrive at, shouldn't it be the same? This is not going to become an NEI guidance document. This is an industry guidance document, and if it is different than the standard review plan, that doesn't serve any useful purpose.

MR. DAMON: Well, we would have to get over this hurdle or question. You see, what the trouble is, and as you well know, the NEI -- that we have difficulties, the staff does, in dealing with the NEI likely evaluation method.

And this Appendix A is one way of dealing with some of the problems we have. We could do it in a structure like this or somewhat like this, and that's why we kept saying it was not really ever intended that this thing be used literally.

You know, you follow what these tables that are actually in here, and that's why we are getting into this templet generation thing; is that we recognize that we didn't have the ability to generate the action criteria that would constitute an acceptable safety design.

But it has a structure. So one option is that you do something of a structure like this, but there are other options. In reviewing BWXT's, I thought of several different ways that one could present information that would convince a staff reviewer that the safety designs resulted in making all accidents highly unlikely.

There are different ways of presenting the information, and as I was talking about before, you can pull out elements of what makes a design good, and describe them somewhere else, like in management measures or whatever.

And when I say describe them, is that the commitments to the quality levels of things, and how you are going to do things that convinces somebody that anybody that follows these, yeah, they are going to result in something that I can evaluate its likelihood.

You know, we can really understand that it is an unlikely event to happen, and then when that same assessment -- but that has to be -- that description of what is done has to relate to whatever likely evaluation the plant actually does use.

For example, active engineer controls was one of the categories in the NEI scheme. Somewhere in management measures, or in the safety or chem safety, they all use that same term, active eng, and active engineer control as a chem control must do the following. You know, A, B, C. and D.

Or in this circumstance, it has to do something else. So it would be referenced to this method so that the reviewer can tie the whole package together.

And he can say, yeah, when they tell me it is an active engineer control, and I see it is in a chem system, oh, I know how they do those things, because they told me somewhere else.

MR. PIERSON: What is your question?

MR. SCHILTHELM: Ny question is that we are talking about a standard review plan here today, but the same appendix -- and one of these comments in here talks about pulling this appendix out and putting it elsewhere where the same appendix, or almost the same appendix, appears in the NEI guidance document for format and content of an ISA summary.

MR. PIERSON: Ideally it would be the same or there would be some good reason why they weren't.

MR. SCHILTHELM: Or they wouldn't even be duplicated. If it is in that and it's okay, why does it need to be here.

MR. COX: Because we all think it is okay in the ISA document.

MR. SCHILTHELM: We have already agreed to disagree.

MR. PIERSON: The point is that we need to have something that needs to be here.

MR. KILLAR: I don't necessary agree with you that needs to be there. You have 15.13 which talks about methods and things along that line, and it talks about likelihood, and why it can't be in 15.13, which is a more expansive document, and it talks about more methods, rather than one limiting case.

MR. PIERSON: Because this is just an example. We can choose to do what we want, in terms of how we construct our standard review plan, but the overall arching objective of the standard review plan is to try and provide some guidance to the staff.

And one of the things that we would like to do is provide an example of how one might be able to do that, and that's what the intent of Appendix A is. It is not the specific way one must do so, but it is just an example for that.

MR. SCHILTHELM: So we should pretty much stop looking at 15.13?

MR. COX: I think that is very easily done. You don't need to look at 15.13 very much, and your people wouldn't.

MR. SCHILTHELM: Your interest is making the standard review plan a stand alone document.

MR. PIERSON: It almost has to be, because otherwise these standard review plans take on a life of their own. And they are really a higher tier in terms of the acceptance from the Commission, and our senior management, and the public, than something like 15.13 is. That is the reason why we have to do that.

MR. SCHILTHELM: I hadn't thought about it that much, but as long as we can agree that we are not going to talk about 15.13 anymore, because that is a point of confusion.

MS. ROCHE: This is what I said before, that this was a request, and the request was made in my presence. And this was a request to provide some guidance and just an example, and that's just what this is, and I think it belongs here in the standard review plan.

MR. KILLAR: And I have no problem with it, but I think what you need to do is to expand it to include that is needed in the ISA summary. So as a complete example, and not just a faction of the part.

MR. PIERSON: That is a good comment, to expand Appendix A to include everything that is needed.

MR. KILLAR: And to identify Appendix A as an example of an ISA summary methodology, or whatever you want to call it.

MR. SCHILTHELM: Then we can stop working on the NEI guidance document.

MR. KILLAR: Right. Because part of the reason that we had dropped off the appendix to our document when we talked about these various tables was because we got into this argument over what is acceptable tables and stuff.

MR. PIERSON: We can take some of that information and incorporate it into this, and just create one document.

MR. DAMON: 15.13 is not like a useless document. It discusses -- if you read the rule about what is supposed to be in the safety program in ISA, it talks about process safety information.

It has a whole chapter discussing what is meant by that.

MR. PIERSON: It is good as background information for someone that wants to understand how to do this process.

MR. COX: There is no question about that. But all they are talking about is do we need to keep reviewing and fine tuning it and I think the answer to that is no, and let's just move on and do something else at this point. That's what we need to do.

15.13 is a good overall review document. It doesn't get to the nitty-gritty that the SRP Chapter 3 does.

MS. ROCHE: It is seven years to go from one to the other.

MR. PIERSON: Okay. Let's move on.

MR. COX: I think we have done Number 5, because that is about the NEI guidance document.

MR. KILLAR: I want to make a comment on that last statement and ISA preparation. I think at that meeting that you were going to provide us some specific comments.

And you didn't tell us what was fundamentally wrong with it. But factor that into Chapter 3 with the appendix and we will be done with it.

MR. COX: I think some fundamental things, like one or two things, dealing with this likelihood business were discussed. That is what I am referring to there.

MR. PIERSON: We said at the January 4th meeting that we would look at the NEI guidance document, and we could still do that. I don't think we discussed it, but just that we were going to provide it at some point in the future. That is not a correct characterization there.

MR. COX: The ISA guidance document is not likely to get resolved here until we get a resolution of Chapter 3 in general, because that guidance document is an attempt to meet what the industry says or an attempt to produce what the industry is saying will be an acceptable ISA summary submittal.

MR. PIERSON: I look at the NEI guidance document as a format and content guide, which we really don't have for this program. But that really in effect what it is.

MR. SCHILTHELM: We said early on that we weren't going to develop one because the standard review plan would be the plan.

MR. PIERSON: But in effect what your NEI guidance document -- and this is just my perception, but it provides good guidance to somebody from the staff, from a staff's perspective on the site, one of your employees, to be able to develop an ISA.

What the contrast though is that it doesn't necessarily provide sufficient information in our opinion for a member of our staff to be able to review that ISA, and that is what we are trying to capture in our standard review plan.

MR. SCHILTHELM: Well, the standard review plan has to capture both.

MS. ROCHE: It does need to capture both.

MR. DAMON: The difficulty, and why I think the NEI document is better as guidance is that the standard review plan, when it deals with format and content, it has to allow for the possibility that the applicant could do a wide variety of different things.

So it has to be very vague and broad, and then it gets so broad that it is not very good guidance.

MR. COX: Okay. The next comment is Item 6, and in responding to the third paragraph of the letter, or I guess it is really the fourth paragraph of the letter.

But the paragraph that starts with, "We are particularly concerned." Go to line 4 of that paragraph, and the sentence says, "In direct contrast to this requirement, Chapter 3 endorses estimation of an accident's qualitative likelihood by considering just the reliability and availability characteristics of IROFS, and sound engineering judgment."

Well, our feeling here is that the quoted material that I have just read is not all that is considered. In fact, an example is that looking at the unmitigated likelihood of consequences before you even have controls is also a fundamental quantitative consideration, because you might completely rule out an accident sequence by looking at its uncontrolled likelihood and consequence, and decide that it doesn't meet any threshold.

But then further the reliability and availability characteristics of IROFS are inherently quantitative and not just qualitative. And the last statement in that comment I believe was also brought up in that earlier meeting on January 4th.

That because of the way that we are moving on this, the staff will provide quantitative estimates of what we get if we don't get quantitative estimates, so we can map it into the structure that we have described in Chapter 3.

MR. PIERSON: That's why we are asking on this template that we are trying to develop, we want to work with the industry, because to achieve the consistency that we think we need to be able to certify that a license is safe, and that it meet the standards that we are asking for in the rule, we need to have something that we can go back and show by mutual comparison between the different licensees how it is achieved.

And so what we think we are trying to do there is rather than get into a situation where we are trying to make a qualitative description for each licensee that may or may not be comparable, we are going to try and make essentially a quantitative assessment for the qualitative description.

And what we would like to do is have you help us do that so we don't go off-track. Now, it doesn't necessary mean that you have to submit the quantitative description. It just means that at some point we will apply some quantitative description of your qualitative submittal to achieve that comparability track.

MR. COX: Can we move to the next one? The next comment comes out of the same paragraph, line 8. "Rather than be burdened with an unnecessarily strict and small quantitative likelihood -- for example, 10 to the minus 5 -- whose value is dependent on the number of potential industry accidents (arbitrarily assumed to be a thousand, although it could be several orders of magnitude different depending on, for example, the definition of accident, and the complexity of new advanced uranium enrichment and/or mixed oxide fuel plants licensed under Part 70," and so on.

I wanted to point out here that the number of accidents is dependent upon the number of high consequence accidents, and that thousand number in Chapter 3 is described as being applying to high consequence actions.

And we recognize that it may be more or less than a thousand in the foreseeable future; that is, when we get ISA summary analyses that indicate how many accident sequences there are throughout the whole industry.

We are working to an industry number, because that is the kind of commission direction we received. It says there that the completion of ISAs in summaries by licensees will show a more accurate number than available today.

And I don't think the NRC is inflexible on that number, but I am not sure that it is going to be different -- you know, several orders of magnitude different one way or the other. I would doubt that.

MR. KILLAR: My concern is that the thousand is arbitrary, and why is it a thousand and not 10,000, or 500.

MR. COX: It wasn't arbitrary. We were trying to estimate based on data material that has come in what the number of high consequence accidents might be per facility.

MR. SCHILTHELM: Ours are bigger than a thousand at BWXT.

MR. COX: Do you report more than a thousand in high consequence accidents?

MR. SCHILTHELM: They have 600 sequences in their recovery display if I recall the number.

MR. PIERSON: We just picked that number, and it may be or less.

MR. SCHILTHELM: But if we find that the number is 10,000 -- and we are not going to solve that here today, but the Commission set this goal.

MR. PIERSON: Then we may have to do some turns around the table and thinking about how we are going to describe this. But I don't think this is a problem that we need to beat our brains about on this thing.

MR. SCHILTHELM: I would leave it out of the standard review, because it does not add a value to the standard review plan. The Commission has a goal, and at some point in time --

MR. PIERSON: What number do you plan on leaving out, the 10,000 or the 10 to minus 5?

MR. SCHILTHELM: I would leave out the issue about the strategic goal out of the standard review plan, because to the individual technical or the individual contributor, the license reviewer, I don't think it adds a lot of value to what he is doing. It is a management issue.

MR. PIERSON: We know the plan and we worked --

MR. SCHILTHELM: But it is a management issue and the resolution is a management resolution. If you find 10,000 accident sequences and somehow you have determined --

MR. PIERSON: It almost doesn't matter about 10,000 accident sequences if your safety systems can mitigate those accidents so that you don't have 10,000 accidents.

MR. KILLAR: But I think that is exactly our point, is that by having a number in there that it is arbitrary.

MR. PIERSON: It implies that there is some causal factor.

MR. KILLAR: Say, for instance, as we start going through this process, and this is geared towards the Part 70 facilities, but when Mario completes whatever type of ISA that they may have specifically for Part 76, he may come in with 10,000.

And if you look at it industry wide, he has got a thousand, and Mario has got 10,000, and you are have a thousand in your plan, what do you do?

MR. PIERSON: I see what you are trying to say. But there might be a vitrification facility or something like that which we might license in the future, and we would have more than a thousand accidents.

MS. ROCHE: So if we have 7,000 or 10,000, or whatever, it would not bother you?

MR. PIERSON: I think the number is has the potential to be mischievous in the future, and that's the problem.

MR. SCHILTHELM: And for an official review of an individual license, I am not sure that it has value in the standard review plan.

MR. PIERSON: We look into it. I am not going to make a commitment one way or the other, but we will look at that.

MR. COX: Okay. The next comment is on -- well, can anybody find where that is, on what page of NEI's topic? Oh, I see it. It is on our page 3, but it is like the fourth paragraph or the fifth paragraph in.

MR. SCHILTHELM: I think it is at the bottom of page 2 .

MR. COX: It is in that same long paragraph that starts with, "We are particularly concerned." It is five lines up from the bottom, saying, "NEI recommends that the choice of a likelihood estimation method remain the prerogative of the license."

Well, this ties into what we are about, and whether we are going to try for some goal or not. But basically we believe that the standardized regular approach begs for an objective, quantitative measure of likelihood of consequences.

That is what an SRP is about and this standardized approach includes the use of quantitative likelihoods. It is not impossible that the likelihood estimation method can be chose by the licensee.

It says at the bottom of that response that you can determine the likelihood value by any method. Our concern is that you do point towards achieving and determining a likelihood value; that is, events per year, and this duration of failure.

MR. SCHILTHELM: I think we have been over that.

MR. COX: We have talked about that a lot.

MR. SCHILTHELM: I think we agree to disagree, and we will have to work on that.

MR. COX: Okay. The next comment is that any quantitative estimate be based solely on available performance data, and I am trying to find where that is.

(Discussion off the record.)

MR. COX: Okay. It is one sentence later than what we were looking at. Any quantitative estimates be based solely on available performance data for the IROFS in the manner in which it is used at the facility. Well, we agree.

MR. PIERSON: Let me tell you what we are trying to do here. If we sit down on this template process and come up to a consensus that, for instance, a heat exchanger has a failure probability of 10 to the minus 2, and I am just pulling those numbers out of the air.

And then somebody comes in and says, well, we don't have -- we have a heat exchanger, but we have a very well designed heat exchanger. It has got titanium tubes, and we think that the failure is 10 to the minus 3, or 10 to the minus 4, or 10 to the minus 5, or whatever it is.

We are willing to accept that specific data. What we are trying to do is make a situation such that we don't push you into a situation where you have to provide specific data.

We don't want to have you trying to justify reliability probabilities, or whatever you want to call them, or failure analysis, or whatever for components, where it is not just worth the outcome, but if you want to do that, there certainly is no problem with that.

MR. SCHILTHELM: Before we make any conclusions, we just have to get into that process.

MR. PIERSON: Okay. And I understand that, and I appreciate that. I think we need to sit down and talk about it, because with these things, the devil is in the details. And that's why we have to sit down and come to some common consensus on that, and I appreciate that.

MR. COX: Okay. Next is Number 10, "Relating the likelihood of an accident to industry-wide performance goals is simply unsound." Maybe we have talked about this, too, except that we are not talking about performance goals.

We would want the likelihood of an accident to be pegged not to a performance goal necessarily, but to actual data that you might get from a database, and modify as you see fit, and propose to us a certain likelihood number.

It would take time to adjust those numbers for actual performance, except for these databases which in fact are based on some performance. Maybe not precisely the way that you would use it.

MR. SCHILTHELM: Well, I think it goes back to what Bob just said; that certainly if you have a standard database, you use a standard database.

But if you have got a system that you have a history of, which a lot of these plants have because they have been operating for 20 or 30 years, and you pull out the maintenance records to see what type of failures they have had with this and stuff.

MR. KILLAR: And we would certainly be willing to consider that.

MR. COX: Okay. And Comment 11, says to see response to Comment 1. Comment 12, is the last sentence of the third paragraph at the bottom of the letter.

"Industry's revision focuses the reviewer on examination of applicant commitments and the principles and core elements of programs to either conduct an ISA or prepare an ISA Summary rather than on detailed prescriptive requirements."

Well, you seem here to agree with the NRC that guidance on the conduct of an ISA is embedded in -- well, you seem to agree with us that guidance on the conduct of an ISA should be in Chapter 3 since you include it in your own proposed Chapter 3, where somewhere else in the letter you said, no, they shouldn't be in here.

MR. SCHILTHELM: I think the issue here is we are having a hard time with this new paradigm of not licensing to the commitments made in the license, and the processes that are in place to ensure safety, and the programs are in place to ensure safety.

But actually shifting that focus to reviewing the safety of each individual on selected individual processes, and that really is a tough one for us.

MR. KILLAR: And I think it also is a little bit of how we read this chapter, and that we read this chapter somewhat as we read Chapter 11. That it wasn't so much what you wanted or what your expectations were, but we read it more of how you want us to accomplish it.

And so we were looking more for the guiding principles than what you are looking for, and for us to determine how to accomplish it. So we felt that reading the way that your Chapter 3 was written is that this is more like how we want you to do it, rather than these are the principles that you need to see accomplished, and you come back and tell us how you accomplished it.

MR. PIERSON: Okay. Well, we will see if we can't make it more amenable to that sort of thing, because our intention is not to set out a prescriptive detailed process that you need to follow.

It is to provide a process that our reviewers could follow to come to a conclusion that what you provided meets the safety requirements.

MR. DAMON: There is another misperception, and that is as to the staff side, and it is not that they are being directed that they have to review every process and make a finding, the NRC staff have to make a finding that that process has an adequate safety design.

It is not really like that, because for one thing -- well, for a number of reasons. The amount of information in the ISA summary is not sufficiently complete, and you can never have the knowledge and perspective of your own staff.

It really is a review of the methodologies that were applied and the total safety program, understanding all these other elements of the safety that we were talking about before, plus the information in front of them, that gives him reasonable assurance that your staff has made it safe, okay?

I don't want our staff to be in the business of taking responsibility for that individual design, but he has to have reasonable assurance that somebody else is. That is my view of what we are doing.

Because there is that danger that some of our staff reviewers, that that is the only way they know how to do it, and that they are going to take each process, and they are going to go down to the plant and talk to the people down there until that guy at the plant convinces them that that is a safe process.

Whereas, the way I look at it is that he should understand --

MR. PIERSON: And also that he hopes to minimize that.

MR. KILLAR: And that's exactly what I said at the beginning of the meeting, because that's what our concern is; that you are going back from reviewing the safety programs to reviewing the system and the plant.

MR. DAMON: Well, like I said, the difference from the old to the new is that we want to make ISA a part of that program. And the trouble with ISA is that it produces this voluminous output, and the trick is to summarize that down to a point that with all these processes that you can communicate to this reviewer how this has been applied and how it works.

The better the method is, the more clear that the method is itself can be relied on to be and produce an acceptable result. In other words, the more that the licensee's own staff is disciplined, and has requirements imposed on it as to how it must proceed to do this stuff, the easier it is for the NRC staff reviewer to believe, hey, if he does it that way, I have reasonable assurance that he will end up with a good result.

So the more methods description that you provide and information about how designs are produced, and what criteria are applied, that's the way I view the thing.

He looks at this ISA summary as simply the evidence that, yes, this has actually been done, and studies some examples, and looks at high risk situations, or situations that he has questions about, and then he has a finding that I have reasonable assurance that this has resulted in an unsatisfactory result.

But if we get into this game of where each situation is unique, and the reviewer is not looking at the safety program that resulted in this design, or there isn't a safety program that has discipline to it, and criteria that the designers had to follow -- in other words, if the applicant, the licensee, has a safety program that is basically engineering judgment, and you assign an engineer to it, and whatever he does, that's okay.

If it is that kind, then you have to review every single process design, because you know I have no criteria. But if the designers at the plant, and the ISA analysts are subjected to the discipline of conforming to a methodology that is documented, and you show that to the staff reviewer, and he says, yeah, that is a good method, then you don't have that situation.

So that is the way that I see this thing unfolding, and as you say, you mention all these dangers, and I see the same dangers, you know. You march right in, and all of a sudden they will start demanding numbers or what.

There is all these dangers, and that's part of this business that I see. There is a process of educating the staff, the NRC staff, as to how to do these reviews.

MR. PIERSON: And also capture in our standard review plan the constraints so that future generations in NRC reviews don't fall subject to the same pitfalls.

MR. KILLAR: I must admit that when we filed our petition for rule making back in '96, I think it was, actually encouraging the ISA process, it was with the intent of what Dennis just talked about; is that we felt that it would be helpful for the industry and it would be helpful for the NRC, because what we have done now is we are taking what used to be Part 2 of the license, and made it more descriptive, and more integrated, and more of a living type document.

The trouble is now that we keep seeing that it is going beyond that, and it keeps creeping beyond that. We can't get the toothpaste back in the tube here.

MR. DAMON: Like I said, what I envisioned in this, and I think what the people who drafted Part 70 in the beginning envisioned, is that if this is done right, the licensing function is going to be greatly reduced at the NRC.

There just is not going to be that much stuff to review because the methodologies will all be established, the procedures and programmatic ways that things are done.

So when a process is done, a new process is done, or a change is done, and they send in an ISA summary on it, it will get a quick review, and you are done.

None of this business of again the staff guy having first off to achieve a complete understanding of that design that this new amendment that is coming in, a complete new process that he has to understand. It is very inefficient to do that.

MR. SCHILTHELM: Everything that we have been doing for the last 5 years has had safety value. We have done the ISA for the facilities, and we have put the teams together, and we have interrogated the crud out of every operation we have.

And we wrote documents that have value to us in an operational mode at the plant, because they describe -- and they are useful as training tools, et cetera.

But I see us entering a phase, a period, where I am going to spend the next 3 years doing something that doesn't have value, and that is convincing you --

MR. PIERSON: Our objective is not to do that.

MR. SCHILTHELM: No, and that's what I am concerned about.

MR. PIERSON: Well, we need to be careful to prevent that, because what we are really trying to do over these next few years as you say, is we are trying to develop a process so that

our staff and your staff can understand that value added that you say your staff has gained, and that the public can understand that, so that in the future we can sit back and say this works.

Because to be truthful, if what you say in your statement just now is true, then in effect you have already captured the reason why we wanted to have this ISA in the first place.

And so all we are doing now is we are trying to make a process and put a process in place so that others can understand the same thing. But that is not meant to be something where you have to go back and do significant amounts of work.

That is not the intention. If you arrived at that, and that really represents what you are saying, then you should be 99 percent there.

MR. COX: I would like to inject a little caution here, and that I think Dennis would back up. Much of the documentation we see describing the process is exactly as you described it, Steve.

Very good for the operational person who needs to know which level to turn, and what button to push, or whatever. And it is not written to provide the safety rationale of why something is done as so much.

And that is really what regulator is interested in, is why is this design feature what it is, and how it is --

MR. SCHILTHELM: I thought you were interested in assuring that we had executed a process that assured safety.

MR. DAMON: To go back to what Dennis said --

MR. PIERSON: Let's move on. I understand what you are saying. I would hope that if we can do this template and this rosetta stone so to speak that we can develop a framework so that we have a common language so that we don't end up tripping over that each time somebody opens up one of these documents and reviews it. That would be the challenge that we need to rise to.

MR. COX: Okay. The next item on the agenda, since we have now covered the comments on the November 16th letter, the next item listed is Industry Guidance on Preparation of an ISA Summary. But I believe that we have talked about that at some length.

I think that it is not going to be resolved, our position that we would take on that, until we work out the Chapter 3.

MR. KILLAR: I think you said you would take into consideration, and maybe take our guidance document and incorporate it into your Appendix A.

MR. PIERSON: I think incorporate relevant portions that are absent, and we could probably do that, or --

MR. KILLAR: That would accomplish what we are trying to accomplish.

MR. COX: Because I think we have even said at prior meetings that it is an effective, and very good format and content type document that covers those topics that should be addressed very comprehensively. So we would consider some methods of perhaps incorporating it.

So that leads us to then the last item, Item 7, which I guess at the time that I wrote this I wasn't completely apprised of the fact that all of these letters are out.

Our letters summarizing our review of material that has been submitted to us already I believe have all been posted to licensees, and probably in your hands. So I really don't have much to say or anything to say from NRC's standpoint, but we can discuss it if you want to.

MR. PIERSON: I would like to make a couple of comments along that line, and that is what I would like to stress to the industry is that this submittal that we are asking you to make in April, we are not in a mode to try and play got you on this thing.

We want to work constructively and come up with a process that allows you to lay out a plan so we can use that plan and factor it into our judgments in the future for how we are going to do staffing, and allocation of work, so we can do the review.

That's what the real purpose of that is. It's not to look at this and say you didn't send in X, Y, or Z, and therefore we are going to reject it. That is not the purpose at all.

So we would urge you if you have questions about what you need to do, and how you need to do that, to call the project manager. And if you want to sit down and meet on another level, that's fine, too, because the objective here is to try and work something through the process so that we understand what you are doing, and you understand what our needs are.

And as we are working into the future, if there is a situation where it looks like we can't understand each other, then let's sit down and talk about it, because that is the only way you can reconcile these things.

I just wanted you to understand that if it is not clear to you what our expectations are, then let's talk some more, because we hope that we are trying to give you enough latitude for you to be able to do the job that you think you need to do without putting you through some sort of an unnecessary burden just to satisfy a regulatory point.

MR. COX: Any other comments for the good of the order? If not, I think we have had a pretty good meeting, and I thank you all for coming.

MR. PIERSON: I want to say, too, that I really appreciate the work that you are doing on this thing, and we all do, and I think it is really important that all the stakeholders involved in this process become involved and work on this.

Because it represents -- at least as I see it, and what you said earlier about capturing that essence of safety, if that is doing it, we are already achieving what the objective of this new rule was, and that's really great. That is something that we can all be proud of.

And we don't want to be in a situation now where we are trying to figure out how to document that and present it to the public. We don't want to throw the baby out with the bath water.

We just want to improve upon that, and come up with some common understanding of what we need to do, and put it together and do that. And we are not expecting all the licensees to come in with the same thing. We are not expecting you to quantify all these things.

But what we are telling you is that to provide an easier process for our reviewers to go back and make judgments on this, we are probably going to have to provide some sort of a quantitative template on what it is that you send to us.

So we would like to invite you to help us provide that template. Then I think if we do that intelligently, and work together constructively I think utilizing that process, then we can use that template and we can eliminate a lot of potential problems down the road.

And at the same time, from our staff's perspective, and from the public's perspective, we can have something that is relatively easy for us to make a justification for. We can say here is what we used, and this is why we used it, and you can look at the numbers and come to the same conclusion we did.

MR. KILLAR: I have a question. Do you have any schedule or expectations as to when the next draft of Chapter 3 will be on the street for us to review?

MR. PIERSON: I would like to do it soon.

MS. ROCHE: We have to do it soon.

MR. PIERSON: I'll tell you what. We will look at the comments that we have got today, and we will get back to you, say, within a week of when it is going to be.

And I would hope that it is going to be short term, like a 5 or 6 week time frame, and not more than that. But a couple of these are pretty big bites, like taking your NEI guides and sticking it in with Appendix A.

So that is a pretty big bite and so I don't want to put the staff --

MR. KILLAR: Well, the fear that we have is that this does still impact our April 18th submittal. In fact, if you look in the comments that were sent back, it says do it in accordance with Chapter 3.

MR. PIERSON: I understand that.

MR. KILLAR: Well, Chapter 3 is not there yet.

MR. PIERSON: Right, and I understand that, and if there is a problem with that, when you make that April submittal what you may have to do is say or put some sort of qualifier in there, and we would be willing to accept that if we can't come to some sort of definitive description before that.

MR. TING: In the meantime we will try to do our best.

MR. PIERSON: But I don't want to be in a situation where we are issuing the guide on April 3rd, and expecting you to do something on April 18th either.

MR. KILLAR: And you said it will be 5 or 6 weeks before Chapter 3 will be out, and that will be about April 1st, and it doesn't give us a whole lot of room between April 1st and April 18th.

MR. PIERSON: Well, I think we need to probably work it sort of separate from one another there.

(Whereupon, the meeting was concluded at 4:54 p.m.)