UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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NUCLEAR REGULATORY COMMISSION

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BRIEFING ON CHANGES TO THE

PERFORMANCE INDICATOR PROGRAM

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PUBLIC MEETING

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Nuclear Regulatory Commission

Commissioners Conference Room

One White Flint North

11555 Rockville Pike

Rockville, Maryland

Tuesday, August 22, 1995

The Commission met in open session, pursuant to notice, at 10:00 a.m., Shirley A. Jackson, Chairman, presiding.

COMMISSIONERS PRESENT:

SHIRLEY A. JACKSON, Chairman of the Commission

KENNETH C. ROGERS, Member of the Commission

STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:

K. CYR, OGC

A. BATES, SECY

J. TAYLOR, EDO

E. JORDAN, AEOD

S. MAYS, AEOD

P. BARANOWSKY, AEOD

P R O C E E D I N G S

[10:00 a.m.]

CHAIRMAN JACKSON: Good morning. I am pleased to welcome our staff here to brief the Commission on proposed changes to the Performance Indicator Program. That program provides operational data as we know that are used in the assessment of plant specific and industry performance.

Traditional performance indicator data have become more sparse as there have been improvements in performance in areas that that data measures. The Agency movement toward risk-based regulation has caused the staff to consider risk-based approaches to monitor plant performance.

This approach can provide a direct indication of the risk significance of operational events and can be used to trend plant performance.

At today's meeting the staff will discuss its proposed changes and refinements to the Performance Indicator Program and I understand that copies of the viewgraphs, as usual, are available at entrances to the room. Is that correct

MR. JORDAN: Yes.

CHAIRMAN JACKSON: Commissioner Rogers, do you have any opening comments?

COMMISSIONER ROGERS: Just that we back in June

expressed some concerns on the basis of SECY-95-135 of some proposed changes to the Performance Indicator Program and now looking at the slides here, I think that there is a much better view of what you want to accomplish and the reason for your changes that seems to be coming through here that I don't think came through in the earlier SECY.

So some of the concerns that I had at that time are perhaps out of date now but I would like to hear from you with respect to the issues that we raised in the SRM just how those issues that in particular I asked in a June 27th memo, what your view about those is now.

There was some proposal to reduce the scope of the SCSS Program and I have a sort of different view of it now on the basis of the slides I have seen but I may be wrong and I would like to hear what you have to say.

CHAIRMAN JACKSON: Why don't we proceed and how responsive your comments are to those concerns. Mr. Taylor.

MR. TAYLOR: Good morning. With me at the table from AEOD is Ed Jordan, Steve Mays and Pat Baranowsky. Just a few thoughts, the NRC developed its Performance Indicator Program beginning back in 1986 and there have been a number of evolutions in the years since then to an existing set of seven indicators plus cause codes, peer group comparisons and recognition of the fact of operation interruption during refueling.

We have used the Performance Indicators through the years but we have made no plant specific conclusions drawn exclusively from performance indicators. There are merely tools which have raised certain questions and provided insights through the years.

The purpose of this briefing is to discuss the projected transition of the existing set of indicators to make them more risk-based and to also reduce costs of compiling the data. With those thoughts, I will turn it over to Mr. Jordan.

MR. JORDAN: Could I have the first slide, please?

[Slide.]

MR. JORDAN: The stimulus for the changes that are discussing today with you was a staff proposal and Commission reaction to eliminate cause codes and to cut back the sequence coding and search system for inputting certain licensee event report information in order to reduce costs.

The cost reductions were proposed in order to offset the costs of developing new performance indicators, new risk-based indicators. The proposal would have caused a discontinuity in some of the data pending development and implementation of other indicators.

Based on the Commission comments, the staff is now proposing a more integrated approach so there are differences from what we discussed and put in the previous

paper that provides a rationale and an orderly transition toward a more risk-based performance indicator program.

We have reprogrammed funds and we have made necessary changes to both maintain continuity of the current set of indicators and to develop risk-based indicators. Steve Mays, the Section Chief for Reactor Risk and Assessment Section, will continue the briefing.

MR. MAYS: Thank you. In SECY-95-135 we discussed the Performance Indicator Program and the Sequence Coding and Search System Program and there are really two fundamental areas that we were discussing. May I have the next slide, please/

[Slide.]

MR. MAYS: The issues that we were raising can be roughly divided into technical issues and issued associated with funding and among the technical issues I will refer throughout the rest of this presentation about current programs and move to risk-based indicators. Next slide, please?

[Slide.]

MR. MAYS: Under the current programs and when I use the term current programs, I will use it to talk about several things because they are related. The performance indicator program which lists here the indicators that we track and trend along with the accident sequence precursor

program which is also another indicator of performance of plants more specifically related to specific events and the sequence coding and search system which takes the licensee event reports and puts them into an evaluated database format. So when I say current programs, those are the three current programs that I will be referring to.

[Slide.]

MR. MAYS: Under the Sequence Coding and Search System technical issues that we are faced with when we put together this SECY paper, the coding of events is a well established process. We have been doing that for years. We have several sets of people that are contracted at Oak Ridge National Labs who have undergone a lot of training and have experience on coding and inputting and evaluating the database.

So that is not really a technical issue of any particular concern right now but the technical issue that is of concern has to do with the mainframe and the software on which the coding database resides.

The mainframe is an old machine. It is no longer supported by the manufacturer. The software is arcane and requires a specialist basically to go in and manipulate if you want to change fields or change the status of the database and the maintenance cost are high as a result of that.

When this program was initially started, sequence coding was one of several things on this mainframe and now it is practically the only thing on it any more. So we have a need to move to a more modern hardware and software platform on sequence coding.

[Slide.]

MR. MAYS: The next two slides are just a little bit of background. When people who haven't had a lot of familiarity in using sequence coding hear about it, it is kind of a vague amorphous thing and so what I want to do is talk a little bit about what it does and how it has been used in the next couple of slides.

We take the problems and errors that are in the LERs and we take that text and we put them into reducible searchable coded fields and we try to describe the equipment failures and the personnel errors and the impacts on whatever the unit impacts were and we link these together in sequences of events to have an evaluated database so the staff and industry as well and other people won't have to go through and re-invent the wheel every time they want to do a particular search.

So this is not only to identify that an AFW pump failed at a plant but to be able to distinguish between AFW pumps following trips as opposed to following losses of offsite power as opposed to due to a human error as opposed

to due to whatever.

So that was the purpose of the genesis of the sequence coding system to be able to do that kind of a database search. Next slide, please.

[Slide.]

MR. MAYS: We have about 100 users who are currently signed up with the sequence coding system. We have developed what we call a front-end processor that allows people to describe the kinds of things that they would like to search the database for and the processor then converts that into the appropriate database search language and allows people to hook up through a modem and get access to searches.

We also have over the last eight years conducted over 1,200 searches by calling up our contractor at Oak Ridge and delineating a particular set of criteria or problems that we needed to look for and using their expertise and their familiarity with both the coding and the information that is in it have done those searches.

COMMISSIONER ROGERS: These 100 users, are these all NRC or NRC contractors or is there anyone else in that number.

MR. MAYS: This 100 is ourselves and our contractors. We do have provisions in the contract that if a member of the public or a utility or somebody else wants

to do a search on the system, they can call up Oak Ridge and on a space available basis and a fee recovery basis, they can get searches that we will provide for them. The major offices that use this system are NRR, AEOD, Research and the regions. Next slide, please.

[Slide.]

MR. MAYS: The programs that we have been supporting using the sequence coding in various forms and formats are the Performance Indicator Program, the Accident Sequence Precursor, we have been using it in our System Reliability Studies which is part of those developmental programs along with the Common Cause Failure database development. They have been used to support diagnostic evaluation teams and a number of other customized inspections that have been going on.

[Slide.]

MR. MAYS: That brings us to our next point which had to do with the performance indicators and the desire to move to more risk-based indicators. The movement to risk-based indicators as Chairman Jackson indicated are in support of the PRA implementation plan and the policy statement.

So what I would like to concentrate on here are the characteristics of what a risk-based indicator means because as you are aware when you say PRA or risk in any

particular audience, you have "n" plus one numbers of definitions of what that means.

CHAIRMAN JACKSON: With "n" people in the audience.

MR. MAYS: Yes, ma'am.

[Laughter.]

MR. MAYS: I will tell you what I mean. When I say characteristic of risk based indicators, I mean you have to start at the beginning and decompose risk into its constituent parts for which there is data available to be collected. Then once you have that data to analyze it and use the indication of trends to make conclusions.

[Slide.]

MR. MAYS: So on the next slide is a little pictograph of the decomposition of risk as we see it starting with the top most being industry risk which is composed of an amalgamation of the number of plants that are out there and breaking it further down on an individual plant basis and this corresponds roughly to the kind of risk assessment work that you see being done in terms of level one, level two, level three.

Generally speaking and again I am aware of the comment that all generalities are false including this one, level one is primarily involving core damage frequency; level two, having to deal with releases from the

containment; level three, primarily dealing with health effects. There are exceptions to that rule but that is a pretty good general rule.

In terms of operating experience we have good news and bad news. The good news is that we don't have a lot of health data on deaths from nuclear power plants nor do we have a lot of containment failures that produce radioactive releases. The bad news is that it is difficult to trend data if it is not there.

So we have to concentrate on the places where we do have information and data available and those are primarily related to estimates of core damage frequency. Next slide, please.

[Slide.]

MR. MAYS: So when we break core damage frequency down into its subsequent parts, those are the pieces of which we can gather data, we can do some analysis and those are the ones that we propose to deal with and the primarily areas that we are looking have to do with initiating events, safety system unavailabilities and reliability, common cause failure probabilities and human error probabilities.

[Slide.]

MR. MAYS: This brings me to the next slide which is a comparison of what the current indicators are and what we anticipate seeing as the future indicators. What I would

like to do is just present this as an overview because we will have subsequent slides here that will discuss each one of these comparisons.

As you can see, there are some new indicators that we don't have, some where we use some of the existing ones and some where we are going to significantly change them. What I would like to do now is just go through those in the order they appear on this slide and discuss each of those.

[Slide.]

MR. MAYS: Our current plans would be to take the NRC scram indicator we currently use and replace it with the data that INPO develops and puts out routinely to the plants and to the public and add to that our evaluation of what the initiating event frequencies would be.

So the current indicator has automatic reactor scrams while critical. The INPO indicator is slightly different. It has unplanned automatic scrams per 7,000 hours critical. Those two numbers tend to trend fairly well together and they are both indications of the bulk challenge rates so we feel that that is a reasonable substitution. What we want to do is add the NRC initiating event analysis. Next slide, please.

COMMISSIONER ROGERS: Just before you leave that, the 7,000 hours critical, is that roughly one year of operation?

MR. MAYS: Yes, sir.

COMMISSIONER ROGERS: Is that the idea that it is one year of operation?

MR. MAYS: Yes, sir. That was the basis of that.

COMMISSIONER ROGERS: How does that compare with the number of automatic reactor scrams while critical as a running tally during the course of the year? Does the INPO indicator integrate over a year and nothing until you get the year or how does that work? The current indicator is one that you can look at month-by-month presumably and see where things stand. The INPO indicator, is that tabulated only once a year or how does that work?

MR. BARANOWSKY: I think it is a running number.

MR. MAYS: It is running as well. I believe they get the information from which they compile that from our monthly reports so that is where they get the raw data that they use to compile that and then they in their indicator tabulate it at the end of the year on the basis of 7,000 hours critical operation.

CHAIRMAN JACKSON: Is a way to kind of describe the transition that effectively you are getting the same information?

MR. MAYS: Yes, ma'am.

CHAIRMAN JACKSON: And then you are doing this initiating event analysis on top of it?

MR. MAYS: That is correct and that is what we discuss on the next slide.

MR. JORDAN: I need to add a comment. We are negotiating, we have both corresponded and met with INPO representatives about using data. We currently obtain from them the collective radiation exposure data. We provide them the monthly operating reports but we have not yet reached a full agreement on them providing it.

CHAIRMAN JACKSON: So this is a proposal?

MR. JORDAN: This is a proposal.

CHAIRMAN JACKSON: A question I was going to have was are you having or do you anticipate any problem getting the data you need if the data is not from sources that we already have. So you are saying that this is under negotiation.

MR. JORDAN: It is under negotiation and the object is to reduce administrative costs. The data are already available to us, they are in the LERs, we compile them but there are administrative costs of compiling and a slight proportionality constant would make these data trendable with the data that we have had in the past. So there would be in our sense no significant loss.

COMMISSIONER ROGERS: No gap.

MR. JORDAN: Right.

CHAIRMAN JACKSON: All right.

MR. MAYS: May I have slide number 13, please?

[Slide.]

MR. MAYS: The key areas that we were looking to provide initial information under initiating event frequency is to look at loss of coolant accidents. loss of offsite power, tube ruptures, feedwater, MSIV closures, turbine trips and events initiated through support systems which might be important to supporting mitigating systems following a trip.

These represent more or less the kinds of initiators you see in PRAs and I think it is important to understand what the frequencies of those events have been based on operating experience and where they are going.

You can have a significant reduction in your total number of overall trips but if the number of losses of offsite power or steam generator tube ruptures is going out, that would be masked by the greater number of say routine turbine trips and I think it is important that we be able to function in a risk framework to find out which are the most risk significant initiating events and track how they are doing.

CHAIRMAN JACKSON: Right.

[Slide.]

MR. MAYS: The next area on slide 14, please, that we want to discuss is two indicators that are currently

being used and what we envision as being the way we would replace those. The current ones are the safety system actuation indicator and the safety system failure indicator.

Our proposal would be to replace those indicators with system reliability trends for risk-important systems and functions and common cause data evaluations because we believe those are the two pieces that fit into that indicator more appropriately from a risk standpoint. If we can go to the next slide, please.

[Slide.]

MR. MAYS: The risk-important systems that we are looking at including indicator information on are listed there including diesels, auxiliary feedwater systems, reactor protection systems, the high pressure injection systems for both BWRs and PWRs and the low pressure safety injection systems.

Now one of the other reasons for doing that is that under the current system a safety system actuation gets counted in the indicator and it has no distinguishing features one to the other.

So a safety injection signal that was valid gets counted the same as a spurious control room ventilation switchover signal. The same thing with a failure, a failure that would disable to the auxiliary feedwater system would be counted the same as a failure of the control room

ventilation to switch over.

Those obviously don't have the same risk significance and we would like to be able to get data that had a better risk basis for comparison. Next slide, please?

[Slide.]

MR. MAYS: We currently track a forced outage rate and equipment forced outage rate in the current PI program. INPO/WANO indicators have a similar indicator. The first slide indicates how we calculate forced outage rate and equipment forced outage rate.

[Slide.]

MR. MAYS: The next slide describes the INPO/WANO indicator. There are some differences in the way those indicators are calculated but they are not tremendously significant when you look at what the trends have been and what the evaluations are.

I think the key thing that would cause a difference between our indicator and the INPO indicator, if you notice they always have as their denominator a reference energy generation. They take into account in their analysis things that are beyond the control of the plant.

For example, if the load dispatcher says, "You can't produce more than 50 percent power for the next two months," a classical forced outage rate or a classical capability factor would say, "How much did you produce, how

much were you capable of producing?" The INPO indicators says, "How much did you produce versus how much were you able to produce?"

So there were a factor such as a load dispatch restriction or something that made the plant only be able to do 50 percent power and they did 50 percent power, they consider that to be a 100 percent capability given that limitation which was beyond the plant.

So that is how they define their reference energy generation to give them a better indicator of how the plant specifically is performing. So those indicators are also similar and if we don't have to calculate those, there is extra data and analysis that we don't have to do that reduces our costs and since those indicators are not directly related to risk, we are not terribly concerned about the minor differences between the two. Next slide, please.

[Slide.]

MR. MAYS: The current indicators keep track of significant events and trend significant events as I believe you are aware. The significant events are designated by a panel which is chaired in NRR to review events and determine which events should get that designation on the number of criteria.

What our proposal is in the future is to do an

accident sequence precursor type of analysis on the significant events and to use that as the basis for the indicator as to whether or not the events that are occurring have particular risk significance or not.

Now there are limitations in doing that because some of the events that are designated significant events have to do with areas that are beyond the ASP type analysis capability. For example, containment, seismic events or programmatic events are not easily representable on in an ASP type analysis. So, therefore, we propose continuing to keep track of the significant events but for all the ones for which that kind of analysis could be done, have that be a major part of the indicator.

[Slide.]

MR. MAYS: That brings me to the next slide which I think is one that will probably generate some discussion. We currently do not have in the Performance Indicator program or anywhere else quite frankly an indicator of risk trends for the industry and we would like to be able to take the operating experience data and information and put it into that kind of a format.

So we have no indicator currently and what we would propose to do is take the information on the operating experience for initiating event frequencies, for system reliabilities and for the models that we have developed on

all of these systems and put them together in a risk framework to be able to understand the significance of the events.

Let me give you an example of what I am thinking in that respect. Suppose we were to come up with a plant or a group of plants that had a higher than the industry average diesel generator reliability or I should say a lower reliability, a higher unavailability. That is an important piece of information to know but it is not in a risk framework enough to know that by itself.

What is important from a risk perspective is the combination of events that would get you in trouble that are related to the diesel generator reliability. So it would be important to know what are the initiating events that would cause you to need that.

So you would want to know whether or not we had plants that had high unreliability of diesel generators and whether or not that was coupled with a high incidence of offsite power losses or not.

You would want to know whether or not the systems that were not required AC power such as the HPCI system on BWRs or the turbine-driven auxiliary feedpumps on PWRs, you would want to know what the reliability of those systems were in conjunction with that diesel generator reliability.

So this risk trending indicator we are trying to

talk about here is ways of combining the information we talked about earlier into a risk format to be able to say together with all of these things, does that indicate that we have a problem or not or more importantly if we have this reliability here, what are the other important things we need to concentrate on that need to have lower liability to offset that particular condition. So that is the kind of indicator we are looking at providing in the performance indicators in the future.

COMMISSIONER ROGERS: Just how would you carry out this combination? How would that be done? Would it be done in a qualitative way by looking at these individually or would there be some kind of a mechanistic combination of these things that you multiply everything together to look at it?

MR. MAYS: We would try to put this together. Right now we envision using the simplified plant models that we currently use for doing accident sequence precursor analysis and the enhancements that are being planned for those to be able to use that framework for coming up with event trees and fault tree kinds of frameworks to be able to understand which sequences would or would not be important and therefore be able to take that information and put it into that framework to estimate what the core damage frequencies might be from that kind of scenario.

I think it is important to realize that that is not the same as a full-blown PRA in which all of the interplant dependencies are modeled but it is similar enough to be a framework for which you can look at that information and therefore be guided into more detailed analysis as necessary to understand whether you have a problem or not and that is what we are looking at doing.

CHAIRMAN JACKSON: So you think this will give you enough comfort that it would give you an arrow to suggest whether or not you need to do a more detailed PRA?

MR. MAYS: Yes, ma'am. I think that is the basis for what an indicator is supposed to do.

CHAIRMAN JACKSON: The question I would have is it would be interesting to compare once you started using this.

MR. MAYS: Absolutely. We currently, for example, in the Accident Sequence Precursor Program when we take a specific event, we use those plant specific models that we have developed and we take that information and we take the relationships it has and before we publish the ASP report every year, not only do we circulate that within the NRC but we send it out to the licensees for their comments and we often get comments back from the licensees that say, "Well, we have this other system that is capable of doing that or we believe we have information that the reliability is this."

We take that information and evaluate it and appropriately update the models in accordance with that and I wouldn't imagine we wouldn't do something similar with this as well because I think it is important to make sure that we understand that this is an indicator and not an absolute statement of what the core damage frequency is at any given plant and I think we need to be able to have it as the basis for communicating with the plants for what the risk scenario really is so that we can understand it and I think if we take that attitude and take that approach, I think we will stay out of trouble.

COMMISSIONER ROGERS: It looks a little bit to me as if you are coming to this leading indicator that we have been searching for for lo these many years instead of following indicators.

MR. MAYS: I think by definition a risk assessment is always a leading indicator because it is operating experience, models and probabilities and probabilities are always forward-looking. They may be based on experience which is backward-looking but they are always projecting what the probability of something will be and I think that is more or less where we are heading.

CHAIRMAN JACKSON: Well, actually, you made an interesting point. You are right that your data is a look back and then you use it in whatever models you choose to

try to make a forward, as you say, it is basically a prediction.

MR. MAYS: Yes, ma'am.

CHAIRMAN JACKSON: The question I would have is how much data or how much reliability data do you think you would have to accumulate in order to provide reliable trending information or to develop this risk-trending indicator?

MR. MAYS: That is a good question and the answer is it varies and it depends on the frequency of the events that are occurring. Obviously we can get very good data on turbine trip frequencies. We can get very good data on loss of offsite power frequencies. Safety system reliabilities is a more difficult problem.

That was the basis for much of the impetus in the separate proposal we have before the Commission now on reliability and availability information data gathering. We had this kind of thing in mind when we were proposing that kind of data. It depends on which systems you are talking about and what availability of data is out there.

We currently have programs underway in which we are evaluating reliability of certain safety systems and we will talk about that a little later in this presentation where we have taken five or six years worth of industry data and have been able on the basis of that data to make

reasonable projections of reliabilities that were in most cases in the same realm of uncertainties and bands of probabilities that PRAs are currently using.

That is an industry-wide look at certain systems. You then have to take that and an appropriate Bayesian framework and use the plant specific data in order to come up with a plant specific reliability estimate and you have limitations of the Bayesian methodology that does that.

What you are not going to have is something that is going to vary month to month or probably even year to year or on a given year unless you have significant changes in the performance of a particular plant or group of plants that would cause the data to change but you will have the ability to look at those things and you can see and we have seen in certain cases plant-to-plant variations in data and we are currently working on those projects and we will discuss that a little bit later.

CHAIRMAN JACKSON: All right.

COMMISSIONER ROGERS: Have you tried to go back to any plants that you know got into trouble but it wasn't so apparent to us at the time that they were getting into trouble and tried to use this?

MR. MAYS: No, sir, we haven't. Right now we are still struggling with the available data and gathering it and the methodology to put it in the right framework to be

able to do that so we haven't gotten to that point yet to be able to do that.

MR. JORDAN: I would not want to be too optimistic. This is a goal in this case. This is a division that we have of what we would like to do and the collection of performance indicator elements are aimed at supporting more nearly a risk type model so we are really prescribing a model and the elements that would fit into it in terms of work already done.

We don't really have work already done that we can point to. The existing set of indicators would not, in fact, support this so that is why we think it is appropriate to make a transition. I think as an ideal it is the right thing to do and as far as seeing more than outliers, I wouldn't promise that. I believe that we would be able to see outliers with this process.

CHAIRMAN JACKSON: When do you want us to come back to you and ask you about it? Is it don't call us, we'll call you?

MR. JORDAN: About two years.

COMMISSIONER ROGERS: That's not soon enough.

[Laughter.]

MR. MAYS: That is further down in the script. If we can go to the next slide, please?

[Slide.]

MR. MAYS: The changes that we anticipate to the current indicators in the cause codes we list here on the first slide what the current cause code classifications are and the future indicators looks like of ominous at the bottom of the page. It says, "No Direct Cause Code Indicator." I don't want to leave you with the impression that we won't do anything so if we could go to the next slide, please, I will try to explain what we intend to do.

[Slide.]

MR. MAYS: The cause codes now are a search of the LERs and a grouping of the LERs into those specific categories on the previous page where we take that information and look for groups of problem types that we think might cause a safety system problem in a plant and when we have a particular plant that has a very large accumulation of a particular cause code problem like licensed operator errors, that spurs us to say, "Well, what is going on and is it significant or not?"

What we would rather do is maybe reverse the process where we would go and look at what the reliabilities and the availabilities of systems and components that are important to safety are in the context of risk and then be able to say, "Okay, what does that information tell us about where maybe one of these programmatic or other areas we are having a problem."

So we are hoping to maybe switch the tables on the cause codes in the future and rather than by having a list of places to go look, we would look and then have a list of places to maybe go investigate changes.

[Slide.]

MR. MAYS: That brings us to a very important piece on the next slide which we kind of snuck by on the core damage frequency.

CHAIRMAN JACKSON: No. I have that, human error probability, arrow, core damage frequency written in red here.

MR. MAYS: I was anticipating I was going to get the question before I got to the slide.

CHAIRMAN JACKSON: I am real polite today.

MR. MAYS: Yes, ma'am. I think it is a really important piece that we have to talk about. There is an awful lot of information as I said before about having "n" plus one definitions of risk. You can get about n-squared definitions of human performance in a room with "n" people in it and what their effects are.

I like to think of human performance issues in risk perspective and if you do that, you come up with about five areas where human performance can affect the risk and I have listed those on the slide.

We can either cause trips or cause events to occur

at plants. We can affect the reliability of the systems that respond to those trips before they occur. We can create cases or instances where common cause failure is more likely to occur as a result of human performance and we have seen that kind of thing in the operating data.

The other two areas that we have listed are operator response to transients and accidents and also organizational factors that may go over the whole spectrum of those particular potential risk impact areas. If I can go to the next slide, please.

[Slide.]

MR. MAYS: If you measure the initiating events, if you go and calculate and measure system reliability and you have the ability to calculate and understand the probabilities associated with common cause failures, you have a direct means of evaluating three of those five areas I just talked about.

One of the things that is often said is that in risk-based regulation or application of risk assessment is that we have a problem with human performance. Well, we do have some problem but we also have an awful lot of direct indication of what the effects of those human performance issues are.

Not only do we have direct indication of human performance and by using these measures we also have a means

of comparing that to equipment failures and environmental failures and other things that may not be directly classified as human performance issues.

So I think we have perhaps a little better handle on that than we sometimes allow ourselves to believe but there are two areas for which from an operating experience and an indicator program we don't have operating experience and data.

So the prediction of operator response to transients and accidents, we do have some limited data. We do have some information in things such as simulator training and programs where we can try to simulate that information and there is a lot of working going on in trying to evaluate what operator response characteristics are in those areas as well as the organizational factor areas, what are the characteristics of management, practices that lead to problems in one of those other areas that can impact risk.

We also have research going on in those areas as well. The bottom line from an indicator standpoint is that I can give you indicators on stuff that has operating experience associated with it.

The other ones are going to have to wait until we have a model and a process developed for predicting these things for which we can then try to establish operating

experience and develop an indicator but currently we don't have indicators that would be able to provide on those two areas of human performance.

CHAIRMAN JACKSON: Although, in fact, and I agree. The initiating event system reliability and common cause failures, it is a direct means of accounting for human performance but because of what is in fact in parenthesis, that is along with other factors, it is hard to get a disaggregated means of accounting for human performance.

MR. MAYS: But to the extent that we are able to gather that data, we can disaggregate and we can understand which of the unreliabilities associated with diesel generators were due to the operator performing maintenance badly or whether they were due to some other cause.

So I think we have the capability once we gather that level of data to be able to go back and disaggregate it. I think we can do that and I think that is an appropriate thing to do but we are not going to be able to do indicators, at least we don't anticipate in the short term being able to do that is on those other two areas.

COMMISSIONER ROGERS: The operator response question seems to me to be quite different from the organizational factors. There is a lot of work going on on trying to study behavior of operators and teams and as individuals and so on and so forth all around the world. I

don't know how conclusive those are but I have seen some studies that I thought were very, very interesting.

I haven't seen anything on organizational factors that I would pay any attention to at all. It seems to me there is really a qualitative difference there between the ability to collect data on one and I don't see how you collect data on the other one frankly.

MR. MAYS: Well, you are correct. You have to start with a model and some understanding of what the process is and then you can go and look for data and then you can develop an indicator and you are correct, from an organizational factors, we are much farther away than we are with the operator response.

We have more models about how you might predict operator response under certain sets of conditions and we have some data available, the nature of that data is usually more difficult to come by than system failures and initiating events which are relatively easy.

So what we have to do is look at what we believe are the appropriate models for predicting human performance and then develop a way of looking for where would we find the data associated with that. Fundamentally I think it is going to be a different set of data than what we are currently able to collect. This brings us to the next slide.

MR. JORDAN: So that part is more than two years.

[Laughter.]

[Slide.]

MR. MAYS: This slide we have entitled, "Transition Plan" and this lays out the kinds of things we anticipate doing in order to try to make this risk-based performance indication a reality.

I want to say upfront that this is a plan and a goal in terms of what are the technical milestones that need to be met to do this and it is an ambitious schedule and program. For fiscal year 1995, we are currently working on evaluating initiating events, the BWR high pressure systems, diesel generators and common cause failure data.

We are planning in fiscal year 1996 to update those with updated data as it comes in through the LERs and NPRDS system and to evaluate and add BWR and low pressure systems, PWR high pressure systems and low pressure, auxiliary feedwater and reactor protection system evaluations for reliability based on the data we have now.

We also anticipate in 1996 the need to plan and map out what the reliability rule database would be presuming we get that data whether it is through the rule or whether it is through voluntary with industry, whatever, we need to plan out in advance how we would put that database into a context that would be usable in risk-based regulation

and that is when we plan on doing that.

CHAIRMAN JACKSON: Since you are talking about various systems, let me ask you this question. How much overlap then is there then between these systems and components thereof for this risk-based monitoring and what is within the scope of the maintenance rule?

MR. MAYS: I think what you will find is that the systems that we are talking about in this program as well as the systems that are being discussed in the reliability rule proposal package are, in fact, a subset of what is being covered under the maintenance rule program.

I think the experience has been that the utilities have included through their risk-based and expert opinion panel basis for selecting systems for the maintenance rule a greater set than what we envision here. So I would say it is a subset.

CHAIRMAN JACKSON: Also since you are talking transition, my understanding is a lot of the use of performance based indicators to monitor plant performance is not necessarily in-house expertise. Is this going to be migrated inside? How much experience does the staff have in using this?

MR. MAYS: You are correct. The bulk of this activity in this transition plan with respect to the reliability of systems and evaluations are currently being

done through contractors.

We will get into a little bit of that when we get further down into the presentation but the majority of that work is being done by contractors and we have as part of this transition plan and recognize the need to be able to take that information and once it is developed and once we have a system set up and incorporate that in-house and be able to subsequently update and evaluate that stuff ourselves.

CHAIRMAN JACKSON: All right.

[Slide.]

MR. MAYS: So on the next slide for fiscal year 1997, again we would be updating the previous reports. We would be taking that information on initiating events, system reliability and common cause and we would be applying those to the simplified plant models.

We would anticipate constructing and implementing a reliability rule database or a reliability database would probably be more appropriate and transition from having that information being done by contractors to doing it in-house.

CHAIRMAN JACKSON: You mentioned that using these simplified plant models by definition is not the same because of what the use will be, they are not the same nor meant to be the same as doing full-blown PRAs. Do you have any sense in terms of what you want to get out of this

ultimately in terms of your vision of the adequacy of the simplified plant models?

MR. MAYS: I think the simplified plant models and the improvements to them that we have been doing and Research is currently undertaking are adequate to give you an indication of where the risk important sequences and where the operating experience tells you you need to look.

I think there are a lot of plant specific features of how systems and components interact, that it is not possible for us to put into the models. We don't have the time or the availability of information to do that unless we are going to go off and do a full-blown PRA on 105 plants and that is at about a million or $2 million a copy.

That is a lot of resources and I don't think we intend to do that nor do we need to do that. I think the framework that we have developed where we look at reliability as an indicator and we put that reliability information into event trees that are similar to the PRAs and the fault trees that are associated with those models are similar to what is in the PRAs, that that is sufficient to give us an indication.

To make specific judgments about whether the core damage frequency is this or that or the other at a particular plant, I am not sure that it is appropriate to do that but it is rather to be a starting point for a dialogue

to discussion as to where we think there might be a problem and then to understand whether or not that problem when you flesh it out really is or isn't an issue.

CHAIRMAN JACKSON: Let me make sure I understand the point here. As you say you are not necessarily looking to do plant specific full-blown PRAs on 100-plus plants. Nonetheless you do intent to use these as I will call them arrows relative to specific plants?

MR. MAYS: Yes, ma'am.

CHAIRMAN JACKSON: Therefore, do you anticipate that these performance indicators might be useful in something like the senior management process in terms of providing integrated assessments of plant performance?

MR. MAYS: Yes, ma'am.

CHAIRMAN JACKSON: So you intend for them to be used to that extent?

MR. MAYS: That is correct.

CHAIRMAN JACKSON: All right.

COMMISSIONER ROGERS: Just to pursue this a little further, are the models plant specific or are there sort of a collection of generic models that you plug plant specific data in or maybe just two? How many models do you expect to have?

MR. MAYS: We currently have 75 specific models of event trees and fault trees some of which apply to more than

one plant. For example, if you have a Dresden-2 and 3, you don't need two models, you need one model. So when you reduce the set of 105 specific units into the number of unique sets of event trees and fault trees you need, we have 75 and that covers them.

The level of detail in the models is currently being expanded so that the fault trees associated with those models go beyond just the basic single event reliability of aux feedwater are now being developed on a plant specific basis to reflect the fact that the plant has two turbine driven pumps and one motor or two motors and one turbine at that level so the kind of data we are anticipating being able to extract would fit into that type of model. So from that level, they are plant specific.

What they don't have is plant specific tracing back to the relays and contacts associated with various initiation circuits and a full fault tree evaluation of all the particular component support systems that might be related to that particular action. So there are limitations on what you can do with that as a result.

COMMISSIONER ROGERS: Thank you.

[Slide.]

MR. MAYS: As I said on the transition plan we would be updating if we can go to the next slide, beyond fiscal year 1997 we would anticipate going more into a kind

of production mode where we would just update the previous analysis and incorporate information that would be coming available through the reliability and availability data rule and also further reducing the contractor support by performing tasks in-house associated with the ASP analyses and the other areas that are listed on there.

We don't anticipate that by fiscal year 1998 being devoid of contractor support to do this stuff but we anticipate dramatically trying to reduce the amount of contract support. All of this so far has been the technical issues, that was all the easy stuff.

The funding issues which was a significant part of the original request in SECY-95-135 is what we would like to talk about next. So if I could have the next slide on funding issues.

[Slide.]

MR. MAYS: The current programs as I delineated them earlier, the ASP performance indicator and SCSS systems, the costs that we bid out and contracted for in fiscal year 1995 to run those three programs alone is $3.6 million.

The development programs which I have summarized under three bullets of system, initiating and common cause failures, those programs were bid out at $3 million so you can see our fiscal year 1995 costs were around $6.6 million

to try to do that work. Next slide, please.

[Slide.]

MR. MAYS: The projected budgets for doing this work in fiscal year 1996 and beyond to 2000 based on best available information we have so far is that we will have around $4 million in 1996 and 1997 and it drops down dramatically in 1998 and even more down to the year 2000 to being around $2.5 million available for contractor support for the work. That is again partially reflected in the information in the transition plan of why we have to get to in-house work if we are going to be able to be successful on this plan.

COMMISSIONER ROGERS: Are you going to say anything more about budgets?

MR. MAYS: Other than that is what they are and on the next slide we will tell you what we intend to do with this reality.

COMMISSIONER ROGERS: I have a question here. One of the problems in the very beginning was the computer platform and software that you were using was out of data, costly to maintain and so on and so forth. Where in your budgets are provisions for new computer platforms and new software support?

MR. MAYS: We have obtained funds in order to be able to complete the conversion of SCSS to a modern platform

and new software and we anticipate being able to do that sometime around the spring of next year. So we have funding available through fiscal year 1995 and what we are anticipating are fiscal year 1996 funds to complete that.

CHAIRMAN JACKSON: Is that built into the numbers you are showing us here?

MR. MAYS: Yes, ma'am.

CHAIRMAN JACKSON: What kind of platform is it? Is it a workstation?

MR. MAYS: It is a pentium-based workstation using and I have forgotten the name of the software but it is an SQL type software to build the database query language.

CHAIRMAN JACKSON: All right.

MR. MAYS: We anticipate putting it together in such a way that it could be put on the LAN and make access available wider than SCSS currently is now. That brings us to the last slide we have here of what our intentions are with respect to these two programs and the overall process.

[Slide.]

MR. MAYS: The two main highlights are that we are going to maintain the current programs at least through fiscal year 1997. That is our current intention. We are also while we are doing that looking for ways to reduce the costs that don't affect the functional product.

There are activities associated with the manner in

which we code QA and other process activities that we are looking at all of the possibilities for streamlining those costs to reduce them as much as possible. So we would have more money available to be able to put these development tasks in place.

We are also looking at potential alternative products to bridge any gap that might come as a result of this. We haven't developed those yet but we are looking. We think that is necessary because our second step is to take all of the funds that are not required to maintain those current programs, those being PIs, ASP and SCSS and developing those into the tools needed to move to risk-based indicators.

We have looked at those and we have started the systems and processes that we think are the most important for doing that first. We have the priorities set so that if we come to a position where there is a hard spot between the available funding and the tasks at hand we can have the most important ones done first and the least important ones done later and we are going to have to take that into account yearly as the AEOD and agency funding becomes more clear.

I don't think any of us know exactly what is going to happen to agency or governmental funding in the next few months so I think it is more prudent to take that approach to the process and that is what we intend to do with this

program.

CHAIRMAN JACKSON: Thank you. Commissioner Rogers, further comments?

COMMISSIONER ROGERS: Yes, just a question back on slide 13. The initiating event frequency for key events, it looks to me on this list like turbine trip is the only balance of plant item here unless you include offsite power, is that right?

MR. MAYS: I guess loss of feedwater is balance of plant as well depending on how you want to characterize that.

COMMISSIONER ROGERS: Yes.

MR. MAYS: But right now if you look at the way most PRAs characterize initiating events when they go back and do their analysis, they combine a whole range of events on the basis of what their impact is on the mitigating systems.

So things that might involve turbine hydraulic control system tend to get put together with things that might involve the instrument air system if the net effect of failure of either of those two systems is that the turbine trips and all the other systems are available to work as normal.

So that was the reason for grouping that was that that is a significant event for comparison purposes with

PRAs and we would look if we found any other ones that looked to be important, we would put them in there.

Also, the support system events thing such as service water or building cooling water or other kinds of events that have an impact on causing trip and might also impact the ability of a mitigating function and when I say that mitigating function, I mean in a PRA sense rather than a design basis sense, we would want to give information on what the frequency of those kinds of events are.

COMMISSIONER ROGERS: How does the shutdown situation, events taking place when the reactor is not at power at all but either during some kind of an outage, essentially some time during an outage or on the way to an outage, is there any way of picking those out of the data that are coming through once you get this thing all rolling? Is there anything that allow you to identify that type of contribution to the risk?

MR. MAYS: The basic elements and parameters of how you would do that are the same. What we don't have right now is a set of models on shutdown risk and the nature of shutdown risk is fundamentally different from power operating because of the infinite number of possibilities and varieties of configurations to start with.

We did not include shutdown risk in this plan because right now we are not in a position to be able to

forecast what we would be able to get from that. However, I would have to say that given the set of models that would be appropriate for plants we should be able to gather that kind of information but it is not currently what we are looking to do.

CHAIRMAN JACKSON: So you are saying at this point that you are not planning to over the next time horizon "x" years specifically try to migrate to an ability to look at shutdown risk?

MR. MAYS: We do have work underway as part of the ASP program as well which is where, for example, the simplified plant models come into the picture to develop shutdown models as well as at-power models.

We also have work under that program to look at level two, level three types of models, simplified models.

CHAIRMAN JACKSON: Within the same time horizon that you have laid out here?

MR. MAYS: Those models would not be available to support a performance based indicator in this time horizon. I would anticipate that it would be at least two to five years beyond what this one is before we would be able to do something like that.

CHAIRMAN JACKSON: I see.

MR. JORDAN: What we do presently as you are aware is stratify the performance indicators we have into shutdown

conditions and operating conditions since they really are quite different and we have been able to see plants that seemingly had problems managing shutdown conditions as stand out. I think we would try to partition the set of indicators that would evolve here into the shutdown condition. We would keep peer groups. We would keep the mode of the plant but in terms of having a risk relationship derived, I don't project it in this time frame.

We are looking, for instance, in the ASP program, the Accident Sequence Precursor program, including shutdown models and so as that evolves, then we would want to use it in this program.

COMMISSIONER ROGERS: My concern would be that somehow and this looks like a very interesting program to me and I really want to compliment you for the work that has been done and the thought that has gone into it although it is a pretty ambitious undertaking it seems to me and may take some time before it is fully available but if we have learned anything, we have learned that the shutdown risk has been one of the things that we hadn't paid enough attention to in the past and in pursuing this very fine program, I hope that attention to shutdown conditions is not going to be diminished because I think that is as plants learn how to operate better and better, that is where we know there is still a significant problem. So I would just urge you to

continue and not pull our resources out of that activity to move ahead on this.

MR. JORDAN: We agree. As pressure on utilities mounts to reduce the duration of outages, do more work in a given timeframe we need to be very careful of risk.

CHAIRMAN JACKSON: You need to keep your focus.

COMMISSIONER ROGERS: Otherwise, I don't know how much of this was really in the works before we got the earlier SECY. MR. JORDAN: It was.

COMMISSIONER ROGERS: We just didn't see it. You should have told us because I think this looks like a very fine program and one that I think is going to fit into our risk-based regulation. It is very fundamental there and the two go together very nicely so I want to compliment you on the presentation, Mr. Mays, I think it was really excellent and it looks like a very interesting approach here. I hope we can keep it moving.

CHAIRMAN JACKSON: Thank you, Commissioner Rogers. Thank you very much. It has been very informative for me especially. Performance indicators, obviously, provide important information however hard the questions might be that you get asked by unknowing Chairmen.

It is important to conduct our oversight responsibilities and risk-based, or I like to call them risk-informed, it helps us have a risk-informed approach

seem to be the next logical step and you are moving along that line.

I want to commend you for the movement and I think this briefing has given us as Commissioner Rogers has said a better sense of where you are going. I would like to reinforce his comments that we would not like to see shutdown risk get lost in this and you might think about that in terms of how it might get folded in a nearer term time frame into what you are doing.

But on the other hand, I also recognize that the Agency may be faced with severe budget constraints and so it is important that we make sure that our resources are properly focused on those plant assessment techniques from which we can derive the greatest safety benefit.

As we go forward with doing an assessment and re-baselining of what we do, obviously the Performance Indicator Program is going to be evaluated in that context. So I think you have taken steps in the right direction.

In closing though, I do note the dependence again of your ability to get some of the data you desire on INPO and WANO and so I think that the negotiations with INPO are key in this regard in allowing you to make this transition and I would hope that INPO would be forthcoming in helping us because it helps us do our job and it is obviously beneficial to the industry. So thanks again.

[Whereupon, at 11:07 a.m., the meeting was concluded.]

CERTIFICATE

This is to certify that the attached description of a meeting of the U.S. Nuclear Regulatory Commission entitled:

TITLE OF MEETING: BRIEFING ON CHANGES TO THE PERFORMANCE INDICATOR PROGRAM - PUBLIC MEETING

PLACE OF MEETING: Rockville, Maryland

DATE OF MEETING: Tuesday, August 22, 1995

was held as herein appears, is a true and accurate record of the meeting, and that this is the original transcript thereof taken stenographically by me, thereafter reduced to typewriting by me or under the direction of the court reporting company

Transcriber: Marilynn Estep

Reporter: Marilynn Estep

SEQUENCE CODING AND SEARCH SYSTEM / PERFORMANCE INDICATOR PROGRAMS

Steven E. Mays
Patrick W. Baranowsky
Edward L. Jordan

Office for Analysis and Evaluation
of Operational Data

August 22, 1995

BACKGROUND

5/26/95	SECY-95-135 Staff proposed elimination of cause codes and termination/reduction in Sequence Coding and Search System (SCSS) program to meet funding limitation
6/29/95	SRM disapproved proposal in SECY-95-135 and requested a briefing

ISSUES

Technical Issues

- Maintenance of current programs
- Move to risk based indicators

Funding Issues

MAINTENANCE OF CURRENT PROGRAMS

Performance Indicator (PI) Program

- Scrams
- Safety System Actuations
- Safety System Failures
- Forced Outage Rate
- Equipment Forced Outage Rate
- Radiation Exposure
- Cause Codes

Accident Sequence Precursor (ASP) Program

- Evaluation of Conditional Core Damage Probability (CCDP) of Events and Conditions based on Licensee Event Reports (LERs) and other inputs

Sequence Coding and Search System (SCSS)

- Evaluated Data base of LER Events

SEQUENCE CODING AND SEARCH SYSTEM TECHNICAL ISSUES

- Coding of Events is well established and in production mode
- Mainframe and Software are obsolete
  - Manufacturer no longer supports
  - Code is arcane
  - Maintenance costs are high
- Need to move to modern Hardware/Software platform

SCSS
SEQUENCE CODING AND SEARCH SYSTEM

WHAT IT DOES:

- Documents problems, errors and failures noted in LERs
- Reduces text in LERs to computer-readable and searchable coded sequences
- Describes equipment failures, personnel errors and the effects on the unit
- Identifies complex characteristics of events
- Reduces iterative event reviews by agency staff

SCSS
SEQUENCE CODING AND SEARCH SYSTEM

HOW IT IS USED:

- Approximately 100 users with log-on and search capabilities
- Approximately 1200 searches have been performed by ORNL over the past 8 years
- Major offices supported are NRR, AEOD, RES and the Regions

SCSS
SEQUENCE CODING AND SEARCH SYSTEM
Continued

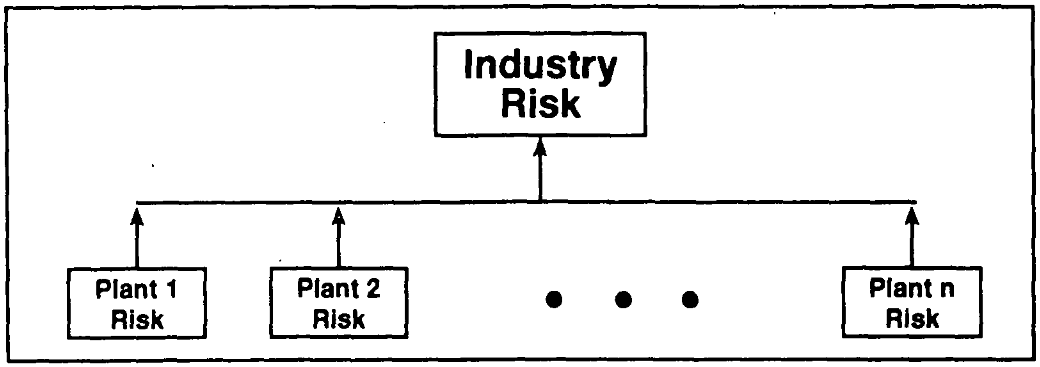
HOW IT IS USED:

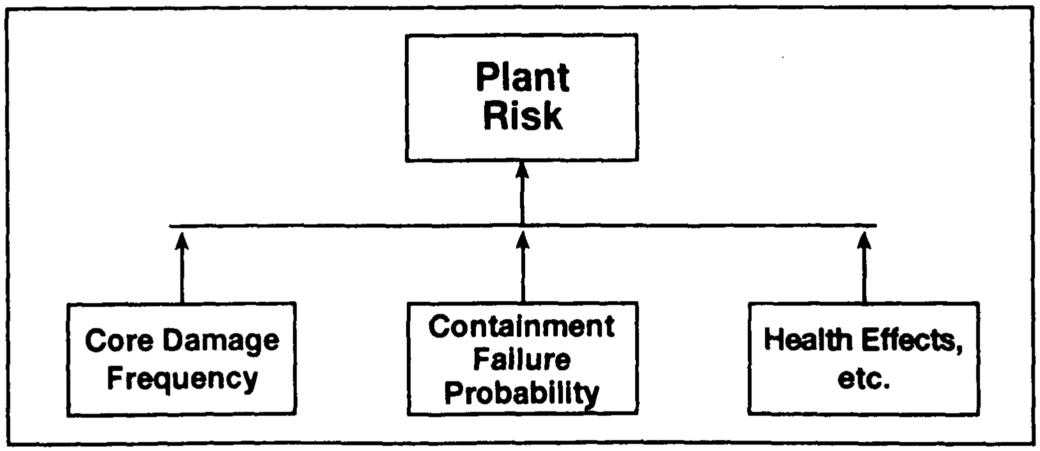
- Programs supported
  - Performance Indicators
  - Accident Sequence Precursor
  - System Reliability Studies
  - Common Cause Failure
  - Diagnostic Evaluations
  - Customized Inspections

MOVE TO RISK-BASED INDICATORS

- Support PRA Implementation Plan
- Support PRA Policy Statement
- Characteristics of Risk Based Indicators
    - Decomposition of risk into constituent parts
    - Collection of data relating to those parts
    - Analysis of data to produce indicators and trends

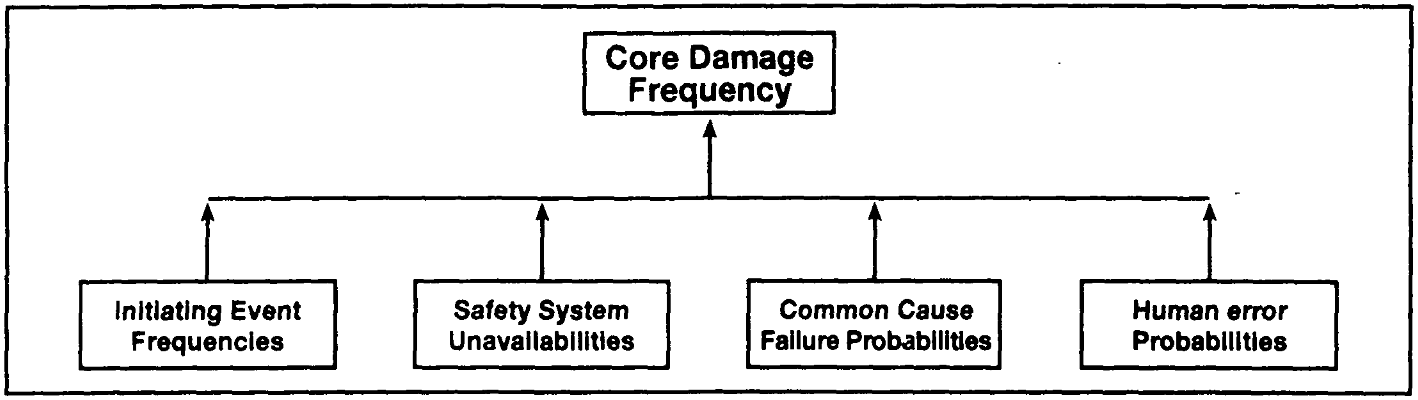
DECOMPOSITION OF RISK





DECOMPOSITION OF RISK

CONTINUED



COMPARISON OF CURRENT AND FUTURE INDICATORS

CURRENT	FUTURE
Automatic Reactor Scrams While Critical	INPO Scrams and NRC Initiating Event Analysis
Safety System Actuations; Safety System Failures	System Reliability Trends of Risk Important Systems and Common Cause Failure (CCF) Data
Forced Outage Rate; Equipment Forced Outages/1000 Commercial Hours	INPO/WANO Capability Factor Indicators
Significant Events	Accident Sequence Precursor (ASP) Analysis of Significant Events
Collective Radiation Exposure (INPO)	Same
None	Risk Insight Based on Oper. Exp. Using IEs, System Rel., CCF, PRAs, and Simplified Models
Cause Codes	Insights derived from contributions to risk based indicators

REPLACE NRC SCRAM INDICATOR WITH INPO SCRAM INDICATOR; ADD NRC INITIATING EVENT ANALYSIS

CURRENT INDICATOR

Number of Automatic Reactor Scrams While Critical (NRC)

PROPOSED FUTURE INDICATORS

Unplanned Automatic Scrams per 7000 Hours Critical (from INPO)

Add NRC Initiating Event Analysis

REPLACE NRC SCRAM INDICATOR WITH INPO SCRAM INDICATOR; ADD NRC INITIATING EVENT ANALYSIS
Continued

DISCUSSION

- INPO/WANO Scram Indicator Similar to NRC; Gives Bulk Indication of Challenges

- Provide Initiating Event Frequency for Key Events

    - Loss of Coolant Accidents
    - Loss of Offsite Power
    - Steam Generator Tube Rupture
    - Loss of Feedwater
    - MSIV Closure
    - Turbine Trip
    - Support System Events, etc.

REPLACE SAFETY SYSTEM ACTUATIONS AND FAILURES BY SYSTEM RELIABILITY INDICATOR

CURRENT INDICATORS

Safety System Actuations

Safety System Failures

PROPOSED FUTURE INDICATORS

System Reliability Trends of Risk-Important Systems/Functions

Common Cause Failure Data

REPLACE SAFETY SYSTEM ACTUATIONS AND FAILURES BY SYSTEM RELIABILITY INDICATOR Continued

DISCUSSION

Current Indicator Does Not Distinguish Among Safety Systems or Severity or Trends in Demands

Risk Important Systems Include

- Emergency Diesel Generators
- Auxiliary Feedwater Systems
- Reactor Protection System
- BWR High Pressure Systems (HPCI, HPCS, RCIC, IC)
- PWR High Pressure Systems (HPSI, Charging)
- PWR/BWR Low Pressure Systems (LPSI, LPCI, LPCS)

REPLACE FORCED OUTAGE RATE AND EQUIPMENT FORCED OUTAGES WITH INPO/WANO INDICATORS

CURRENT INDICATORS (NRC)

Forced Outage Rate	=	Forced Outage Hours/ (Unit Service Hours + Forced Outage Hours)
Equipment Forced Outages	=	Forced Outages Caused by Equipment Failure/ 1000 Critical Hours of Commercial Operation

Derived from Monthly Operating Reports

REPLACE FORCED OUTAGE RATE AND EQUIPMENT FORCED OUTAGES WITH INPO/WANO INDICATORS
Continued

PROPOSED FUTURE INDICATORS (INPO/WANO)

Unit Capability Factor	=	Available Energy Generation/ Reference Energy Generation
Unplanned Capability Loss Factor	=	Unplanned Energy Losses/ Reference Energy Generation

DISCUSSION

- INPO/WANO Indicators Similar to Current NRC Indicators
- Reduce Cost of Collecting and Analyzing Data
- Indicators Not Directly Risk-Based

AUGMENT PI SIGNIFICANT EVENTS WITH ASP TYPE OF ANALYSIS OF SIGNIFICANT EVENTS

CURRENT INDICATOR

- Significant Events

PROPOSED FUTURE INDICATOR

- Continue to monitor significant events and provide Accident Sequence Precursor (ASP) type of analysis of applicable Significant Events

DISCUSSION

- Provide Risk Perspective of Significant Event Designations
- Programmatic/Containment/Seismic events not amenable to ASP-type analysis

RISK TRENDING INDICATOR

CURRENT INDICATOR

None in Current PI Report

PROPOSED FUTURE INDICATOR

Risk Trending Based on Operational Data Using Simplified Plant Models

DISCUSSION

Gives integrated plant-specific view of how indicators interact by combining initiating event, system reliability, common cause, and human performance data in a risk framework

CHANGES TO CAUSE CODES

CURRENT INDICATORS - CAUSE CODES

- Administrative Control Problems
- Licensed Operator Errors
- Other Personnel Errors
- Maintenance Problems
- Design/Construction/Installation/Fabrication Problems
- Miscellaneous

FUTURE INDICATORS

No Direct Cause Code Indicator

CHANGES TO CAUSE CODES
Continued

DISCUSSION

Cause Codes are used to look for groups of problem types that might manifest in safety performance of plants. New process would monitor safety performance more directly. Inferences across systems, plants, and indicators would be available based on contribution to operating experience

HUMAN PERFORMANCE ISSUES

Human Performance Affects Risk in Five Primary Areas

- Initiating Events
- System Reliability
- Common Cause Failure
- Operator Response to Transients/Accidents
- Organizational Factors

HUMAN PERFORMANCE ISSUES
Continued

Measuring Initiating Events, System Reliability and Common Cause Failures provides a direct means of accounting for Human Performance (along with other factors) and places it in a Risk Perspective.

Predicting operator response to Transients/Accidents and measuring the impact of organizational factors are issues being worked in Research.

TRANSITION PLAN

FISCAL YEAR 1995

Initiating Events, BWR High Pressure Systems, Emergency Diesel Generators, and Common Cause Failure Reports

FISCAL YEAR 1996

Update of Fiscal Year 1995 Reports

Add BWR Low Pressure, PWR High Pressure, PWR Low Pressure, Auxiliary Feedwater, and Reactor Protection System Reports

Plan Reliability Rule Database

TRANSITION PLAN
Continued

FISCAL YEAR 1997

Update Fiscal Year 1995 and Fiscal Year 1996 Reports

Apply Above to Simplified Plant Models

Construct and Implement Reliability Rule Database

Transition to System Reliability Database and Common Cause Failure Database In-House

TRANSITION PLAN
Continued

BEYOND FY97

Update previous analyses

Incorporate reliability and availability data rule information

Reduce contractor support by performing tasks in-house:

- ASP analyses
- Reliability data base
- CCF data base updates
- System reliability updates
- Initiating event updates
- PI report production

FUNDING ISSUES

	COSTS IN FY95
CURRENT PROGRAMS - Accident Sequence Precursors - Performance Indicators - Sequence Coding and Search System	$3.6 M
DEVELOPMENT PROGRAMS - System Studies - Initiating Events - Common Cause Failures	$3.0 M
TOTAL	$6.6 M

FUNDING ISSUES
Continued

BUDGET FOR FY96 - FY00

FY96	$4.1 M
FY97	$4.3 M
FY98	$3.3 M
FY99	$2.8 M
FY00	$2.5 M

STAFF INTENTIONS

1. Maintain current programs through at least FY97

   - Reduce costs in ways that do not affect functional product

   - Evaluate alternative products to bridge gap to production of risk based indicators

2. Invest funds not required above to expedite development of risk based indicators

   - Priorities among products is established

   - Evaluations will be made yearly taking into account the latest information regarding AEOD and agency funding and activities.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

TITLE: AFFIRMATION SESSION
(PUBLIC MEETING)

LOCATION: ROCKVILLE, MARYLAND

DATE: WEDNESDAY, AUGUST 30, 1995

PAGES: 1-5

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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AFFIRMATION SESSION

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PUBLIC MEETING

Nuclear Regulatory Commission
One White Flint North
Rockville, Maryland

Wednesday, August 30, 1995

The Commission met in open session, pursuant to notice, at 11:30 a.m., Shirley Ann Jackson, Chairman, presiding.

COMMISSIONERS PRESENT:

SHIRLEY ANN JACKSON, Chairman of the Commission
KENNETH C. ROGERS, Commissioner

STAFF SEATED AT THE COMMISSION TABLE:

KAREN D. CYR, General Counsel

ANDREW L. BATES, Acting Secretary

P R O C E E D I N G S

[11:30 a.m]

CHAIRMAN JACKSON: Good morning ladies and gentlemen. This is an affirmation session, we have two items to come before us this morning. Before I ask the Secretary to lead us through the items for affirmation, does my fellow Commissioner have any opening remarks to make?

COMMISSIONER ROGERS: No.

CHAIRMAN JACKSON: If not, Mr. Bates you may precede.

MR. BATES: Chairman, Commissioner Rogers we have two items this morning. The first one is SECY-95-195 - Final Amendments to 10 CFR Parts 20 and 35 on Medical Administration of Radiation and Radioactive Materials. The Commission is being asked to approve amendments to Parts 20 and 35 to clarify that the medical administration of radiation and radioactive materials to any individual, even an individual not supposed to receive a medical administration, is regulated by the NRC's provisions governing the medical use of byproduct material rather than by the dose limits in the NRC's regulations concerning standards for protection against radiation. The rule is being approved today by the Chairman under delegated authority voted by the Commission as authorized by the NRC Reorganization Plan No. 1 of 1980. The decision was made after consultation with Commissioner Rogers. Chairman

Jackson has stated her approval of the rule, Commissioner Rogers has also stated his agreement with the rule. Would you please affirm your vote?

CHAIRMAN JACKSON: Aye

COMMISSIONER ROGERS: Aye

MR. BATES: The second item is SECY-95-218 - General Atomics' Motion for a Housekeeping Stay of the Atomic Safety and Licensing Board's August 21, 1995 Order Ruling on Intervenor's Motion to Compel Answers to Interrogatories. The Commission is being asked to act on an order that would respond to the stay motion from General Atomics. The order being issued today is against approved by the Chairman under delegation of authority voted by the Commission as authorized by the NRC Reorganization Plan. The decision was made after consultation with Commissioner Rogers. The order grants a temporary housekeeping stay to give the parties an opportunity to file responses to the petition for a full stay, to provide GA time to file a petition for Commission review, and to provide the Commission time to consider the merits of a full stay. The stay will remain in effect until further order of the Commission. Chairman Jackson has stated her approval of the order, Commissioner Rogers has also stated his agreement with the order. Please affirm your vote.

CHAIRMAN JACKSON: Aye

COMMISSIONER ROGERS: Aye

CHAIRMAN JACKSON: Is there anything else to come before us?

MR. BATES: I have nothing else to come before us. I might note that I think we had scheduled tentatively the rulemaking dealing with containment leak testing. That's been postponed now until September 11.

CHAIRMAN JACKSON: If there is nothing else, we stand adjourned.

[Whereupon, 11:32 a.m., the above-entitled matter was adjourned.]

CERTIFICATE

This is to certify that the attached description of a meeting of the U.S. Nuclear Regulatory Commission entitled:

TITLE OF MEETING: Affirmation Session
(PUBLIC MEETING)

PLACE OF MEETING: Rockville, Maryland

DATE OF MEETING: Wednesday, August 30, 1995

was held as herein appears, is a true and accurate record of the meeting, and that this is the original transcript thereof taken stenographically by me, thereafter reduced to typewriting by me or under the direction of the court reporting company.

Transcriber: Gloria Thomas

Reporter: (TAPE RECORDING)