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UNITED STATES NUCLEAR REGULATORY COMMISSION'S

STAKEHOLDERS PUBLIC MEETINGS

OCTOBER 24, 1996

The contents of this transcript of the proceedings of the United States Nuclear Regulatory Commission's Advisory Committee of the Stakeholders Conference on October 24, 1996, as reported herein, is a record of the discussions recorded at the meeting held on the above date.

This transcript has not been reviewed, corrected and edited and it may contain inaccuracies.

1 UNITED STATES OF AMERICA

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3 NUCLEAR REGULATORY COMMISSION

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5 STRATEGIC ASSESSMENT AND REBASELINING

6 STAKEHOLDERS PUBLIC MEETINGS

7 + + + + +

8 PROVIDING RESEARCH EXPERTISE SESSION

9 + + + + +

10 THURSDAY

11 OCTOBER 24, 1996

12 + + + + +

13 WASHINGTON, D.C.

14 The Providing Research Expertise Session was held in
15 the Jefferson East Ballroom of the Washington Hilton and
16 Towers at 1919 Connecticut Avenue, Northwest at 1:00 p.m.,
17 Themis P. Speis, Deputy Director, Research, NRC,
18 presiding.

19 PRESENT:

20 DR. THEMIS P. SPEIS, SPONSOR

21 DR. JAMES JOHNSON, CO-CHAIR

22 DOUG BROOKMAN, FACILITATOR

23 ALSO PRESENT:

24 JOHN W. CRAIG, NRC

25

1 AUDIENCE PARTICIPANTS:

2 FRANK J. MIRARGLIA, JR.

3 KEN PEVELER

4 BRYCE SHRIVER

5 GARY L. VINE

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

2 (1:05 p.m.)

3 DR. SPEIS: Okay. We might as well start. My
4 name is Themis Speis. I am from the Office of Research.
5 To my left is Dr. Johnson, who is the co-chair of the
6 steering committee. He is here for both moral and
7 technical support.

8 I see here that most of the stakeholders are
9 NRC people, but they are our office of stakeholders
10 anyhow, so it's appropriate.

11 This, DSI of course, deals with research. The
12 title of the DSI is what should be the future role and
13 scope of NRC's research program. Maybe it is appropriate
14 to provide some background for this DSI and for the
15 research program itself.

16 Congress, in the Atomic Energy Act, and more
17 specifically in the Energy Reorganization Act of 1974,
18 called for the NRC to have "an independent capability for
19 developing and analyzing technical information related to
20 reactor safety, safeguards, and environmental protection,
21 for support of the licensing and regulatory process." The
22 question arises, what does NRC do with this research
23 information.

24 In summary, it is in essence used to develop
25 new and/or improved existing regulations, to better

1 determine and to refine safety margins. Quite often it is
2 used to anticipate a wide range of problems and issues.
3 In general, to develop the necessary tools to deal with
4 issues as they arise.
5 The scope and emphasis of NRC's research
6 program has changed radically over the years as the
7 nuclear technology has changed and matured. A brief
8 history of the early days, most of the research was done
9 in support of design basis accidents. Mostly to support
10 the large break, loss of coolant oxidant, and the criteria
11 were developed to deal with it.
12 Later on, when TMI happened and especially
13 after the impetus of the Chernobyl accident, quite a bit
14 of -- there was a re-emphasis on severe accident issues.
15 Later on, as plants come to age and operational events
16 which dealt with aging start coming in, then the research
17 program began to focus on aging issues.
18 Later on, when some new design concepts came
19 for the stops review, then some of the research of course
20 tried to address these issues associated with the passive
21 designs.
22 Also, along the way there were issues that
23 came forth that dealt with new technology and the research
24 always tried to address all these new issues.
25 An important factor, an important issue is

1 that no new reactor license applications are foreseen for
2 the future. Many of the issues that I mentioned,
3 especially those associated with design basis accidents,
4 have been resolved. Most of the new issues in front of us
5 are mostly related to aging type of problems. For
6 example, steam generated degradation issues. There is of
7 course the other issue of declining budgets.
8 The industry to a large extent is doing much
9 more research than they used to in the early days, but we
10 have to keep in mind that the primary focus of industry's
11 research has always commercial considerations. So NRC is
12 still responsible for assuring that the information that
13 it gets from the industry is the right one, because it is
14 used to make its own decisions.
15 Another factor is that as the budgets are
16 declining, we will simply be relying more and more on
17 international cooperative efforts. So as we frame the
18 issue and develop the different options, that is something
19 that has to be kept in mind.
20 So in summary then, considering NRC's
21 legislative responsibilities, the changes in the research
22 program and the changes in the industry environment, the
23 question then arises as to what should be the future role
24 and scope of NRC's research program. That is of course
25 the DSI itself.

1 So next viewgraph. To recite some of the key
2 factors, and maybe I alluded to some of them already.
3 External factors that will shape the direction of the
4 future of the research program is the nuclear industry
5 itself, the aging of plants and the introduction of new
6 technologies, as I mentioned already, instrumentation and
7 control, annealing, as vessels are aging, there could be
8 annealed, which is a process which brings the vessels back
9 to the original properties as far as trends are concerned.
10 The industry could be going to the use of
11 higher burn-up fuel. That could raise additional safety
12 issues that were not foreseen when safety criteria were
13 put together a while back.
14 I have listed as an external factor also, the
15 Department of Energy, including the national laboratories.
16 As the DOE's budget is being reduced, so are the budgets
17 of the national laboratories. This affects us because we
18 depend substantially on using the technical capabilities
19 of the national laboratories in many of our programs. So
20 the loss of capability and limiting the expertise
21 available to NRC could be an outcome of the declining
22 budgets.
23 I have listed also the universities. They
24 have been a very important source of technical expertise
25 for the last 20 or 25 years. Again, as resource and

1 development dollars go down, this expertise might no
2 longer be available. So that is an important
3 consideration.
4 I already mentioned international programs.
5 Considerable research is being conducted internationally.
6 We have been able to share in that, but to a large extent
7 this has been so because we have been doing our own
8 research and we have been able to enter into agreements,
9 quid pro quo type of agreements, where we give them the
10 results of our research and then in turn they give us the
11 results of their research.
12 Of course as our budgets are declining, then
13 we might be not as easily dependent on international
14 programs as in the past. So we have to think very
15 carefully how to effectively use the minimum resources
16 that we have in place and still be able to play the
17 international role, the part that we have been able to
18 play in the past.
19 Congress and the public of course are always
20 interested in what we do, so we have to be able to explain
21 things that happen not only in this country with our
22 plants, but if an event takes place overseas, we have to
23 be knowledgeable and sharp enough to be able to address
24 questions that come from it.
25 As for internal factors, the most important

1 one, the major internal factor which is affecting NRC's
2 research program has been the continuing reduction in
3 resources for research. You can see that what can follow
4 from that is the ability for timely response to safety
5 issues. We could lose experimental facilities and ability
6 to maintain technical expertise.
7 The second one, loss of experimental
8 facilities could be accelerated if DOE's budgets go down
9 and they do not support the laboratory, because in the
10 past, we have been able to jointly support some of the
11 facilities. So if we are left alone, the overhead cost
12 would be probably so high that we might not be able to
13 support some of these facilities for ourselves.
14 Going to the next viewgraph. The next
15 viewgraphs lists the options that the steering committee
16 came up with as far as the research program was concerned.
17 We looked over a broad number of options, including number
18 one, which is the discontinuing the research program
19 itself, NRC's research program itself.
20 Then industry would need to conduct the
21 necessary research to support its technical positions.
22 The paper itself lists, at least in our judgement, what
23 are some of the principle consequences of this option. So
24 hopefully you have read it or you'll read it.
25 Another option is to conduct only confirmatory

1 research. The present research program consists of what
2 we call confirmatory research and exploratory research.
3 Confirmatory research is mostly driven by research needs
4 given to the Office of Research from the user offices,
5 from the Office of Nuclear Reactor Regulation, from the
6 materials people. It's mostly to respond to new
7 information that's put in front of us by industry.
8 Only 20 percent, or approximately 20 percent,
9 or maybe it's 18 or maybe it's 25, is exploratory, which
10 addresses issues that could come to us in the future, five
11 years from now or two years from now. It's in the mode of
12 anticipating programs. So we should be able to be in a
13 better position to respond when problems arise.
14 So then the third option then is to conduct
15 only exploratory research. The fourth option deals with
16 both confirmatory and exploratory research. It's
17 presently as we are functioning now, except the program
18 would be more confined than it is now.
19 That brings us to option five, which deals
20 with establishing and maintaining core research
21 capabilities. If I may dwell on this for a moment, for
22 example, if some issues in front of us have been worked
23 and resolved and there are no research requests to ask
24 from the user offices, then what do we do with some
25 activities? Do we kind of get out completely or do we

1 stay in because some of these issues or related ones might
2 arise a few years from now.
3 So what we have been discussing with the
4 Commission, as you'll see later on, the Commission thought
5 this was a pretty good idea to establish and maintain some
6 core research capabilities, but only given some -- after
7 you develop some criteria. You just don't develop core
8 research capabilities ad hoc, but there should be some
9 logic behind what areas we as an agency want to maintain
10 so that if the need arises a few years from now or even in
11 a continuing way, we have the information in front of us
12 to respond.
13 The other option is to continue to use the
14 universities as a resource component of the overall NRC
15 research program. This is already a very small part of
16 the research program. According to congressional
17 mandates, we are supposed to spend one percent of the
18 resource budget to support universities. The only thing
19 is, that we can not support universities to do precisely
20 what we want. The work that they do, it has to be useful
21 to us as well as to other agencies of the government. So
22 we consider that as part of the longer-term kind of
23 exploratory research.
24 The last option is to continue to actively
25 participate in international safety programs. As I said

1 already, by being able to participate in these activities,
2 we get -- and by having our own programs, we are able to
3 gain substantial information at minimum cost. So this is
4 an important component of the research program.
5 In fact, if you see the paper, at present we
6 have about 60 agreements with foreign countries. Some of
7 those programs are exchange of informati . Some of them
8 involve collaborative efforts where we pitch in some
9 funds. Of course the other countries do the same. Then
10 we jointly design a program. Then we share in the
11 results. That has been found to be extremely effective,
12 and cost effective.
13 As for the Commission's preliminary views,
14 they said, and let me read it to you, that the Commission
15 is a strong believer in the research program. They feel
16 that we should continue with the research program. We
17 should include elements of both confirmatory and
18 exploratory research, which is basically our proposed
19 option four. But they should balance in such a way that
20 both current as well as potential emerging issues are
21 being addressed.
22 The next one deals with option five, which is
23 the development of core research capabilities. The
24 Commission said that the Office of Research, in
25 consultation with the other program offices, that is, the

1 Office of Nuclear Reactor Regulation, the Materials
2 Office, as well as the Office of Analysis and Evaluation
3 of Operations, should develop criteria for determining
4 core research capabilities for Commission approval prior
5 to going forward.
6 The paper itself has examples of criteria for
7 developing a core research program. They are listed on
8 page 23, but of course the Commission told us to look
9 deeper into it. Hopefully it's a process of talking to
10 people like you, as well as getting written comments,
11 hopefully that will provide some additional views and
12 wisdom to we can take them into consideration before we go
13 back to the Commission with our recommendations for the
14 criteria to be used to develop a core research program.
15 The next page, continuing with the
16 Commission's preliminary views. The Commission feels,
17 believes that the staff should continue to support the
18 Educational Grant Program, but this program should be re-
19 evaluated at least every two years to ensure that it meets
20 its objectives.
21 Finally -- not finally. One before the final.
22 The staff should continue to support active participation
23 in international safety programs, which should be
24 prioritized and appropriately integrated with NRC's
25 research efforts, and should be considered in the

1 establishment and maintenance of core research capability.
2 I guess finally, the paper itself has a number
3 of questions. The Commission asked us to ensure that
4 those questions are addressed before we go back to them
5 with our final recommendations.
6 So with this brief overview, I will bring this
7 to an end and I'll turn it over to you.
8 MR. BROOKMAN: Thank you.
9 DR. SPEIS: Mr. Rapporteur, or whatever your
10 proper name is.
11 MR. BROOKMAN: Servant of the group. My name
12 is Doug Brookman. I am going to be facilitating this
13 session. I was thinking that perhaps we could have
14 comments or questions based on Dr. Speis' presentation.
15 I think it would be good to try and answer the
16 questions that are listed, which I'll remind you are
17 important considerations that may have been omitted from
18 the issues papers, the accuracy of NRC's assumptions and
19 projections for both internal and external factors. Do
20 the Commission's preliminary views associated with each
21 issue paper respond to the current environment and
22 challenges? And the Commission is seeking specific
23 comments on specific questions. We can maybe list those
24 as we get to them.
25 At the outset, questions, comments, based on

1 Dr. Speis' presentation. I would like, if you would,
2 please, to speak into the mike and also to identify
3 yourself. Yes?
4 MR. PEVELER: I am Ken Peveler with IES
5 Utilities. IES Utilities, a commercial operating plant.
6 I didn't hear anything in your comments in
7 regards to other research that's done by private industry.
8 For example, in the fuels area, you've got the fuel
9 manufacturers who do their own research and development
10 work for the designs of their new fuel. You have also got
11 the Electric Power Research Institute out there that does
12 a lot of research for the industry.
13 Taking those two considerations, in addition,
14 it's the industry that is paying the fees for the most
15 part, to the NRC. So it's the industry that's benefiting,
16 likewise the NRC that's benefiting from this research.
17 It would seem to me that there should be an
18 ability to have a cooperative effort and not necessarily
19 have to have independent research. Good research would
20 involve the establishment of the objectives to be obtained
21 from the research before you start. That way, industry
22 and NRC would both be on board with what we're trying to
23 accomplish with the research and would have a common goal.
24 Were those considerations included in your
25 evaluation?

1 DR. SPEIS: Yes. We looked very carefully.
2 Of course we have mandated responsibilities, but we looked
3 very carefully what the industry has been doing. For
4 example, in the fuels area, we are very familiar with the
5 research that EPRI and others are doing. Most of that
6 work deals with steady state operations.
7 Our research goes beyond and looks at what are
8 the failure criteria, for example, which are relevant to
9 accidents and transients. But most often, our research is
10 really to identify the -- to be able for us to understand
11 what the real issues are, okay? Then normally, we turn
12 quite a bit of the questions and the demand for research
13 to industry.
14 So I should have mentioned earlier on that
15 quite often, especially lately, I'm not talking about
16 early on where the government was doing most of the
17 research, is to understand the issue and be able to
18 articulate it and understand what are the safety
19 consequences and then see how much industry should do, and
20 what is at least a portion of it that we should do as part
21 of our independent responsibilities to ensure that we have
22 independent information.
23 But in fact, to be more specific to your
24 question, in a number of areas we have joint programs with
25 industry, with EPRI in the severe accident area we have

1 some joint efforts which were very productive. So we are
2 constantly trying to find out and be up to speed with what
3 industry is doing and taking that into consideration.
4 MR. BROOKMAN: I thought part of the question
5 was related to the scale, right, the amount. Is the trend
6 towards increasing industry involvement?
7 DR. SPEIS: The trend is towards decreasing
8 resources from the government side. We are concerned
9 because the financial pressures are not only upon us but
10 upon the industry. In fact, we are aware that in fact
11 EPRI, which was doing quite a bit of research in support
12 of the commercial sector, is doing less and less as a
13 function of time because of these pressures. We are doing
14 less and less.
15 So optimizing what we do is an essential issue
16 that we have to both address and be addressing on a
17 continual basis.
18 MR. PEVELER: Can you give us a sense of the
19 level of research activity that's taking place now
20 compared to what it was in the early ages of the reactor
21 program? I mean we're 20 some years into the operation of
22 these plants. There is the advanced reactors now,
23 although there's no application for one in the United
24 States at this point. So it would appear that the lessons
25 learned in the new issues on the advanced reactors would

1 be currently occurring the international forum. So what
2 level research do we have today compared to what we had in
3 the early days?
4 DR. SPEIS: Well, I would put that into three
5 categories. Early on, even before NRC, industry -- the
6 government was spending tremendous amount of money to kind
7 of provide the basic information for nuclear reactors or
8 the operating staple. You know, they built big facilities
9 to evaluate the Doppler coefficient, the void coefficient.
10 Later, when NRC took over back in I guess
11 what, the mid-1970s, early 1970s, the research budget was
12 somewhere between 200 and 300 million dollars. Most of
13 that effort again, was spent on facilities to confirm the
14 criteria that were put together for emergency core cooling
15 systems. You know, LOFT and semi scale and so on.
16 Also, big computer codes were developed. So
17 we're talking about 250 million dollars 20 years ago or 22
18 years. Again, most of that work came to a successful end.
19 Then some additional efforts were put to address the
20 questions dealing with severe accidents. You know, how
21 they progress, how they challenge containments, what are
22 the key phenomenon that we should be concerned with.
23 So even though the budget was coming down
24 because of the LOCA, for a while, the slope wasn't coming
25 down as sharp because there was an increase in severe

1 accidents.

2 Right now, I guess I don't have a precise

3 curve in front of me, but now we're talking about 50

4 million or less basically. That's what we are talking

5 about. So we are a fifth or less. I'm not taking

6 inflation into account, by the way.

7 MR. BROOKMAN: Has the national lab effort

8 stayed, has it declined also as funding from DOE and

9 others have?

10 DR. SPEIS: Of course. Again, I said earlier

11 that we depended and still depend to a large extent on

12 national laboratories, but we are helped because DOE has

13 been supporting the national laboratories. So we are kind

14 of sharing. If DOE support is decreased or kind of fades

15 out, then in some areas we'll have big problems. That is

16 why we are beginning to look much more seriously about the

17 international connection. Okay?

18 MR. BROOKMAN: What about do you think any

19 major or important considerations have been omitted in the

20 papers, the issue paper that you saw? Was it adequate?

21 Is it comprehensive enough?

22 MR. PEVELER: I would offer one comment, I

23 guess. It appears to me that the part of the effort that

24 is trying to be achieved is to maintain the tactical

25 capabilities within the industry. For that to really pay

1 off in the end, we need to keep the industry viable. I am
2 not sure what needs to be done there for that to happen.
3 Obviously, economics is one of the drivers right now
4 that's not made it come back. Another one is the
5 regulatory environment and the predictability of it.
6 It seems to me, if we are at all to succeed in
7 the end, we need to revive the industry. I am not sure
8 what we do to do that, but it's an element.
9 MR. BROOKMAN: Can you say more about the
10 regulatory side of it, the predictability of it, what you
11 meant by saying that?
12 MR. PEVELER: Well, I think if we go back and
13 look at the reactor's built back in the late 1970s, early
14 1980s, it took 10 years to build them. Part of that was
15 because of the backfeed from TMI and other things and the
16 unstable regulatory environment, where new regulations
17 were imposed in order to build the plants.
18 So part of the effort that NRC has taken on in
19 recent years has been to try to stabilize the regulation
20 with the new reactor rules and so forth.
21 MR. BROOKMAN: I was hoping for a comment that
22 was more prospective.
23 What about the choice of options, since I am
24 not hearing any more about the general comments or
25 questions based on the presentation. What about option

1 four, plus some of five, some of six, and some of seven?
2 Is that kind of an almost adequate characterization? What
3 about the option that is the preliminary view of the
4 Commission?
5 I'll hand this mike off to somebody, if you
6 want it. Yes, a taker.
7 MR. VINE: A couple of things about the
8 options. The first one is a question about options two,
9 three, and four, that deal with exploratory versus
10 confirmatory research. I should have said I'm Gary Vine
11 from EPRI.
12 You know, when we talk about exploratory
13 research at EPRI and in the industry, the connotation is
14 one of long-term research or basic research, as opposed to
15 say applied research or confirmatory research.
16 The research necessary to resolve an issue can
17 involve components of both basic and applied research. I
18 think a good example of that is the water reactor safety
19 meeting you had up at Bethesda these last three days. On
20 any one of the issues that you addressed in that
21 conference, there were elements of both basic research and
22 applied research being used to address that issue.
23 Given that the program offices, NRR and NMSS
24 can ask for whatever research is necessary to resolve a
25 particular issue, they may ask for either basic research

1 or applied research to get that issue resolved.

2 I guess the connotation I am picking up from

3 the discussion is that the real difference here isn't

4 between exploratory research and confirmatory research,

5 but between discretionary research and non-discretionary

6 research.

7 If that is the case, then I guess my question

8 is, if exploratory research is really to mean

9 discretionary research, that you don't necessarily have to

10 have a program office say I need that research done, is

11 this in fact still within the confines of the basis for

12 the Office of Research? Namely, that all these things are

13 supposed to come from one of the program offices. If it

14 is beyond those confines, isn't it really a rather simple

15 step to go back to one of the program offices and say

16 there's some long-term research that we think should be

17 done, can't you ask us to do it. Instead of not having

18 any program office involvement at all in this

19 discretionary research.

20 Or am I off on the wrong track? I am just

21 trying to understand.

22 DR. SPEIS: No. I think that's -- let me say

23 something and maybe Frank can add to it. But maybe there

24 is some arbitrariness to some extent, but even I say that

25 approximately 20 percent is characterized as exploratory,

1 it's longer range. But then we take it to the offices and
2 discuss it with them. It goes through an office review,
3 an EDO review, and a Commission review. That research
4 still has to be focused on addressing issues that, you
5 know, maybe they are not on the menu at this point in
6 time, but it's relevant to things that have to be
7 addressed, you know, longer range or even shorter range.
8 So the program offices are aware of everything
9 that we are doing. In fact, if they object violently to
10 something because of technical, or if they say you guys
11 are off, totally off in left field, then we have to
12 resolve that issue. Many times maybe we can even stop
13 that.
14 MR. BROOKMAN: I take it from your comment
15 that you are saying -- I'm sorry.
16 DR. SPEIS: There are some issues that it's
17 more than instantly confirmatory. It's they don't address
18 something in front of us, in front of NRR. For example,
19 when they were reviewing the AP 600, you know, there were
20 well-specified issues that had to be addressed. But when
21 you talk about corrosion or erosion, which is kind of
22 something that comes forth as a result of aging, there are
23 some manifestations that you don't know where the research
24 will take you, but it's relevant to an ageing issue.
25 That's what I mean by longer range.

1 Also, sometimes some research, from the moment
2 that it is designed even conceptually or the experiments
3 begin, it takes a while to finish. For example, issues
4 relating to severe accidents, whether a molten core can be
5 contained in vessel. That research, you don't do it
6 instantly. So it's something that is part of a risk or
7 the safety goal or reducing risks. I put that type of
8 research into the category of exploratory or longer range,
9 but it isn't very precise, black and white. Maybe Frank
10 can add to it.
11 MR. MIRAGLIA: Frank Miraglia, NRR, U.S. NRC.
12 Dr. Speis has alluded to the process. Yes, there is an
13 internal process where the bulk of the research done by
14 the Office of Research is in response to user needs from
15 the various program offices.
16 In addition to that type of process, there is
17 a formal review process conducted at the deputy EDO level
18 in which the program plan is reviewed in its totality.
19 There is not a prescription that 100 percent of everything
20 that research is doing needs to be supported within the
21 context of a specific user need letter.
22 Some of those user need letters identify a
23 need to do some perhaps underlying exploratory or more
24 basic research because there's perhaps other issues and
25 developments that maybe suggested by the particular need

1 at that time. I think that is in the category that Dr.
2 Speis has called exploratory.
3 So in that sense, that whole program plan is
4 reviewed at the deputy executive director's level. In
5 concert, research comes in and indicates this is our plan
6 to respond. This is the needs that we're fulfilling for
7 the program offices. Those kinds of insights and
8 discussions do occur in a multi-office review of that. So
9 there's an examination of that.
10 I'm not quite sure in the terms that Mr. Vine
11 used, discretionary, non-discretionary kind of thing, in
12 terms of if you are trying to talk about the legal
13 prescription about confirmatory and that kind of thing. I
14 think in the program plan and evaluation of the plan, does
15 say that there is overall support. Perhaps the specific
16 user need did not identify this particular piece of
17 research, but it is an outgrowth and it has a particular
18 future application. That piece is reviewed in that kind
19 of context.
20 MR. BROOKMAN: That's a good statement about
21 how kind of the research agenda gets created and how it's
22 tracked and shepherded.
23 MR. MIRAGLIA: In an interactive process.
24 MR. BROOKMAN: Let me ask the group at large
25 what they think about the kind of allocation, the 80-20

1 allocation based on confirmatory, exploratory, noting that
2 it is a declining budget scenario. How does that sit with
3 those of you that are outside the NRC?
4 DR. SPEIS: That's an approximate, it's not,
5 you know --
6 MR. MIRAGLIA: The preliminary view indicated
7 that we should look for an appropriate balance, so it's
8 not a hard fast. I think reflects -- the 80-20 is an
9 approximation of where we are and currently exist. The
10 Commission sort of suggested we need to look at that.
11 Part of the process is to say what the right mix is. We
12 need to consider that as needed and as appropriate kind of
13 basis. So I think there is some flex there.
14 But the overall total of how that is applied
15 is clearly a diminishing resource internally, as well as
16 externally, as discussed.
17 DR. SPEIS: But this really brings us to the
18 main thing because when research requests dry up, the
19 question is, does the Commission still have to maintain
20 capabilities in certain areas, and what are these areas,
21 and what will be the scope of these areas. I think that
22 is the most difficult question.
23 You know, Gary, you know in the old days, we
24 had a big thermal hydraulics program, you know, research.
25 Then we kind of cut it down to five or six people. Then

1 we had to get up when the passive designs came in. Now
2 that the passive designs will be out, the question is, do
3 we kind of cut again and possibility eliminate the thermal
4 hydraulics, or is there some good reason that you need to
5 have thermal hydraulic expertise at the agency, and why,
6 and what are the criteria, and what is the scope. I think
7 that will be the most difficult part to come to grips
8 with. That's option five.
9 MR. BROOKMAN: Option five. I am wondering if
10 people have general comments on option five. Also, to the
11 criteria, the sample criteria I guess they are. They are
12 listed on page 23 and 24. Yes, because I think it could
13 be useful to have comment on that.
14 MR. VINE: I will take a stab at it and go
15 back to answer your prior question about the 80-20, and
16 then answer this one.
17 MR. BROOKMAN: And your name again, please?
18 MR. VINE: Gary Vine from EPRI. The 80-20 you
19 are talking about is probably pretty close to what we are
20 doing. We have struggled with this same question. We
21 have gone to our advisors. We have tried to define a
22 near-term, a mid-term, and a long-term part of the
23 program. We have kind of split those 40-40-20. So the
24 long-term research is still targeted at about 20 percent
25 of the budget. So that's pretty comparable to what you

1 are doing.

2 By the way, the reason for my question was to

3 try to figure out whether this category of exploratory

4 research was something that was really outside the

5 process. I think your answer says that it's clearly

6 within the process. I understand.

7 On option five, I think that in general, the

8 paper reflects a real desire to achieve increased

9 leveraging of research in the international arena, but

10 doesn't focus sufficiently on increasing the leverage

11 domestically. I think that that's missing a little bit in

12 option five.

13 If you look at some of the specific criteria,

14 I think if you focus on more domestic leveraging, some of

15 those criteria don't have to be as stringent as they are.

16 MR. BROOKMAN: Can you be a little more

17 specific and say some of the ways you would leverage

18 domestic resources?

19 MR. VINE: I think that there are a number of

20 examples of how we did this very well in the past. I

21 think an answer to the question that was asked earlier,

22 the trend in collaborative R&D domestically has gone down,

23 that NRC's research program is more isolated, more

24 independent, more duplicating of what the industry is

25 doing today than it was 10 years ago, where we attempted

1 to co-fund some of these activities and don't do that as
2 much any more, although there are some exceptions. We
3 have done it in a few cases recently.
4 I think that with budget pressures on both the
5 industry and NRC's research program, and on DOE's research
6 program, the area for real opportunity for collaboration
7 while still maintaining NRC's required independence is at
8 the beginning of a process where there's a lot of resource
9 requirements.
10 So, for example, a test program requiring a
11 major facility, a large expensive data base, these kinds
12 of things can be developed together and then used
13 independently, or the data from those facilities or tests
14 can be analyzed and the judgements made on them
15 independently, and we can save money in the process.
16 DR. SPEIS: I have one comment. You mentioned
17 the word duplicating. If you provide written comments, I
18 will appreciate if you have any real examples or in what
19 areas we're duplicating. That would be of help because as
20 I said earlier, we did our best and we're doing our best
21 to ensure that in the areas that we are duplicating, there
22 is a good good reason, but in the other areas -- you know.
23 So I would appreciate your comments or anybody else's
24 comments to identify areas of that sort. That will be
25 very helpful to us.

1 MR. BROOKMAN: Let's just linger for a few
2 more minutes on option five. Any additional comments on
3 what core research capabilities should be generally or
4 more specifically on for example, the sample criteria that
5 are listed here or other criteria that should be
6 considered. No additional comments on that?
7 What about option six? It has already been
8 noted that this lists university based resources and
9 doesn't feature other private sector resources.
10 Additional comments on either option six as written, or
11 what's missing from it, or what should be added from it?
12 I take it that the thrust of what is written
13 in this paper, based on the response we're getting in the
14 room is basically confirmatory in nature. That most of
15 the folks here are just thinking that this is fairly close
16 to the mark.
17 MR. SHRIVER: I'm Bryce Shriver, currently
18 with Virginia Power. I might add that before that, I was
19 extensively involved in nuclear research both at the
20 university involving EPRI-sponsored programs. Prior to
21 that, in the Department of Energy in the naval nuclear
22 program.
23 I think there are a number of things we have
24 talked about here that maybe would go beyond just the
25 comment of just saying we're confirming what is in the

1 paper. Number one, we have talked about the concept of
2 confirmatory versus exploratory research. I think that is
3 somewhat of an arbitrary distinction we're making.
4 What I think we all wanted to say is that we
5 need to focus the research on those issues that are
6 important from the licensing effectiveness perspective. I
7 think we have captured that in many ways here, but I think
8 that there needs to be more focus on that. Maybe that is
9 a better focus of the discussion versus using the words
10 confirmatory or exploratory.
11 For example, we talk a lot about the risk
12 informed decisions and the performance based regulation.
13 There's a lot of opportunity for research to directly feed
14 into that.
15 So I think that we need to tie this back to
16 the discussions we had earlier today where we were talking
17 about regulatory effectiveness, and use that as the driver
18 for these questions versus making arbitrary distinctions
19 between confirmatory and exploratory. So I think that's
20 kind of an issue that really ought to be clarified in the
21 paper.
22 Second, a similar comment. We talked a little
23 bit about the collaborative type research. The fact that
24 we have a desire to have the NRC involved in the industry
25 research, particularly in the up front part of defining

1 what the research objectives will be, so that when we get
2 the results, particularly in the industry sponsored area,
3 that's going to answer the questions that are necessary to
4 apply that research in the licensing basis. I think that
5 specifically should be included as an option in the list.
6 We do not address that as being an option of increasing or
7 leveraging the effectiveness of the NRC research in that
8 way.
9 So I think that's an explicit thing that was
10 missed in the paper itself and should be expanded upon as
11 a specific option, not just the narrow focus we have of
12 the options listed.
13 I think that as we look at other areas, we
14 should look broader. For example, in our earlier
15 discussions today of regulatory effectiveness, of the role
16 of industry, we didn't really explicitly talk about
17 research as a part of those topics. It would probably be
18 worthwhile to add the area of research in those
19 discussions as well, to get this cross-functional
20 discussion in mind.
21 The paper does talk about the involvement with
22 other international type research programs. I think we
23 all believe that is important. It's very clear these days
24 that there's a lot of information and operating experience
25 outside of the United States that could be applied to

1 enhance our overall regulatory effectiveness. So we do
2 support that.
3 Also we talked a little bit about the
4 university concept. I do have a university tie. I think
5 that there are advantages to that, certainly in looking to
6 the future of our business, of encouraging the development
7 of individuals and educational programs that will have
8 long-term impact after many of us are gone. So we should
9 not ignore that as one of the advantages of that
10 particular program.
11 MR. BROOKMAN: As you think about it, would
12 you like to comment?
13 DR. SPEIS: They're all good comments.
14 MR. BROOKMAN: I am just thinking, as you think
15 about trying to sort through the research needs of the
16 domestic marketplace and what you can identify NRC,
17 certainly the complexity of it is exponentiated when you
18 think about the international marketplace.
19 I am wondering if the group has thoughts on
20 how that gets accomplished or from Dr. Speis or others?
21 DR. SPEIS: Well, our research program is to
22 serve our own country, our own needs basically, but you
23 know, there is similar experience. You know, operating
24 plants -- there are more operating plants outside the
25 United States than the United States, so it's important

1 that we understand that operational experience and events,
2 the implications.
3 Also, it is important to understand the
4 results of the research programs that these other
5 countries are performing for any implications for us. So
6 whatever we do, it's for our own benefit and our own use.
7 Maybe I misunderstood your question?
8 MR. BROOKMAN: No. I think you responded. I
9 was just thinking that though in terms of assessing what
10 other benefit could be obtained from other places as a
11 part of your mix, as a part of thinking what research you
12 need as well. That's a dicier question. It's more
13 complicated.
14 DR. SPEIS: I guess I have to say that most of
15 the issues really have become internationalized. The
16 instant communication, conferences, meetings with our
17 counterparts. You know, the people from the Office of
18 Nuclear Reactor Regulation have constant interactions with
19 our counterparts in France and Germany and Japan. So the
20 issues, you know, are really, you know, everybody
21 understands the issues.
22 Through more intense cooperation and
23 collaboration, then in many instances, we design some
24 common programs to address some of the things that we
25 don't quite understand and they need additional research

1 or additional work. That is of benefit to us as well as
2 to them, and very cost effective, as I said earlier.
3 We are doing more and more of that. Not only
4 because of budget pressures, but because the information
5 is there. It's very important if an event happens in
6 Japan or France, we want to know what it is and what are
7 the implications for our plants, so we can make that
8 information available to the community and to the industry
9 that we regulate in this country as soon as possible.
10 MR. BROOKMAN: Let me turn to one more
11 specific thing, and then we'll go back to the big picture.
12 Once again, the criteria that are listed on
13 page 23, do you collectively want to endorse these
14 criteria? Do you think it's a good start? Do you have
15 additions to the list? What is your general sense about
16 what is listed there? This would seem to be a key
17 feature.
18 MR. CRAIG: Doug, why don't you read those off
19 since not everybody has copies of the issue paper.
20 MR. BROOKMAN: Okay. Number one is, is the
21 technical area --
22 DR. SPEIS: Excuse me, but say before it's
23 examples of criteria that could be used to establish.
24 MR. BROOKMAN: Thank you very much. Examples,
25 yes.

1 Examples of criteria that could be used to
2 establish essential core capabilities are as follows.
3 One, is the technical area one of the high risk and large
4 uncertainty -- one of high risk and large uncertainty?
5 Does it involve emerging issues or a new technology?
6 Two, is the expertise or facility unique?
7 That is, if the NRC does not maintain the expertise or
8 facility, is it available in other industries, private
9 organizations or universities?
10 Three, if not unique, can the NRC gain access
11 to the outside expertise or facility in a timely manner?
12 Four, can the NRC gain access to independent
13 expertise?
14 Five, how frequently would the expertise or
15 facility be used?
16 Six, what is the impact on NRC's mission
17 capability if the specific expertise and/or facility
18 associated with it was not available?
19 Seven, would the costs to reassemble outside
20 expertise or facilities be prohibitive, e.g. the high
21 costs to build or rebuild experimental facilities?
22 Eight, would the cost of maintaining the
23 expertise or facilities be prohibitive?
24 Nine, how important is it to maintain the
25 specific expertise or facility to sustain important

1 cooperative efforts or leadership in international safety
2 research?
3 What about the list? What about the sample
4 criteria?
5 MR. VINE: I think you heard from Virginia
6 Power, the most important criteria that isn't explicit
7 here at all, although it's kind of implicit in the first
8 one. That is, a risk basis for determining whether it
9 should be retained or not.
10 If you get to the specifics of the criteria
11 that are listed, I think you have to acknowledge that it's
12 not necessarily true that every facility that is unique
13 should necessarily be retained. It's not necessarily true
14 that everything that is new technology must be studied.
15 Again, you have to focus on the risk basis and the safety
16 significance of the particular issue, and whether that
17 facility or existing program is serving that need.
18 MR. CRAIG: That was Mr. Vine from EPRI.
19 MR. BROOKMAN: Additional comments on the
20 sample criteria?
21 I take it then, as I look around the room and
22 see that all of you seem to be listening but not saying
23 anything additional, that it seems possible that we could
24 have option four be featured, and five, six, and seven
25 also included in some form, and that the Commission could

1 find a way to kind of balance and sort through these
2 needs. They are not in conflict or they do support one
3 another. I am seeing some heads nodding yes. I am seeing
4 largely people not saying anything.
5 Give me a sense, you are comfortable with what
6 is being suggested here. Yes. Okay.
7 I think that we have exhausted this topic for
8 the moment at least.
9 DR. SPEIS: That's for the audience to decide.
10 I'm neutral.
11 MR. BROOKMAN: Are there any additional
12 comments at this point?
13 DR. SPEIS: Well, thank you. I appreciate the
14 comments. We will do our best to consider them. Also,
15 please provide any additional comments, especially on this
16 duplication or on the criteria themselves.
17 MR. BROOKMAN: So then let's move directly to
18 the next presentation, which is on the international area.
19 Who will be presenting?
20 (Whereupon, at 2:00 p.m., the proceedings were
21 concluded.)
22
23
24
25

C E R T I F I C A T E

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

Name of Proceeding: STAKEHOLDERS PUBLIC MEETINGS PROVIDING RESEARCH EXPERIENCE

Docket Number: N/A

Place of Proceeding: WASHINGTON, D.C.

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and, thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

Irene Gray

IRENE GRAY
Official Reporter
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DSI 22

★ What Should Be the Future Role and Scope of NRC's Research Program?

Key Factors

- External
  - Nuclear Industry
  - Department of Energy, Including the National Laboratories
  - Universities
  - International Programs
  - Congress and the Public
- Internal
  - Reduction in Resources for Research
    - Ability for Timely Response to Safety Issues
    - Loss of Experimental Facilities
    - Ability to Maintain Technical Expertise

Options

- ★ Discontinue NRC's Research Program
- ★ Conduct Only Confirmatory Research
- ★ Conduct Only Exploratory Research
- ★ Conduct Both Confirmatory and Exploratory Research
- ★ Establishing and Maintaining Core Research Capabilities
- ★ Having University Based Resources as a Component of the Overall NRC Research
- ★ Continue to Actively Participate in International Safety Programs

Commission's Preliminary Views

- ★ Continue the research program which should include elements of both confirmatory and exploratory research (Option 4), balanced in such a way that both current as well as potentially emerging issues are being addressed
- ★ The Office of Research in consultation with the other program offices should develop criteria for determining Core research capabilities (Option 5) for Commission approval prior to going forward

Commission's Preliminary Views (Cont)

- ★ The staff should continue to support the Educational Grant Program (Option 6), but this program should be re-evaluated at least every two years
- ★ The staff should continue to support active participation in International Safety Programs (Option 7) which should be prioritized and appropriately integrated with NRC's research efforts and also considered in the establishment and maintenance of Core research capability

Commission's Preliminary Views (Cont)

- ★ Addressing a number of specific questions raised in the DSI paper, especially under B. Technical Expertise (page 12) and under III. Discussion of the Direction-Setting Issue (page 16)