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1 UNITED STATES OF AMERICA

2 NUCLEAR REGULATORY COMMISSION

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4 NRC PARTICIPATION IN INTERNATIONAL AGREEMENTS

5 AND RESEARCH PROGRAMS

6 ***

7 PUBLIC MEETING

8 ***

9 Nuclear Regulatory Commission

10 Room 1130

11 1717 H Street, Northwest

12 Washington, D.C.

13
14 FRIDAY, MARCH 18, 1988

15
16 The Commission met in open session, pursuant to
17 notice, at 10:03 A.M., the Honorable LANDO W. ZECH, Chairman of
18 the Commission, presiding.

19 COMMISSIONERS PRESENT:

20 LANDO W. ZECH, Chairman of the Commission

21 THOMAS M. ROBERTS, Member of the Commission

22 FREDERICK M. BERNTHAL, Member of the Commission

23 KENNETH CARR, Member of the Commission

24 KENNETH ROGERS, Member of the Commission

25

1 STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:

2

3 W. PARLER

4 S. CHILK

5 V. STELLO

6 H. DENTON

7 E. BECKJORD

8 J. SHEA

9

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11 AUDIENCE SPEAKERS:

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13 G. ARLOTTO

14 J. CORTEZ

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P R O C E E D I N G S

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CHAIRMAN ZECH: Good morning, ladies and gentlemen.

The purpose of today's briefing is to review the international activities and the research programs of the Nuclear Regulatory Commission. This is an information briefing which will help build the framework for establishing the priorities of our international programs.

As most of you know, in the last NRC reorganization, the Office of International Programs was organized within the Office of Governmental and Public Affairs, referred to as GPA.

One of the objectives behind this reorganization was to bring the focus of our international programs closer to the Commission.

In an effort to do this, the Commission requested a review of the policies and procedures by which NRC's international commitments, including research activities, are undertaken and maintained.

In December 1987, GPA forwarded a paper, SECY 87-310, containing recommendations to the Commission for NRC's international priorities and suggested procedures for orienting our programs to support these priorities.

This paper focused on NRC's research activities which we'll be hearing more about today from our Office of Research.

We'll also be given a broad overview of all of our international activities by the Office of International

1 Programs. We're covering a lot of ground here today; I'd ask
2 our briefers to stick to the allotted of time as best they can
3 so that there's time for Commissioner questions.

4 Do any of my fellow Commissioners have any opening
5 comments before we begin?

6 COMMISSIONER BERNTHAL: I just have one comment on a
7 matter that I'd like to have Harold focus on somewhat at least,
8 and that is fairly obvious I guess, but the roll that GPA and
9 IP, I guess, in particular, can and should play in this area of
10 general oversight and review of our research programs and
11 priorities.

12 I assume you're prepared to speak to that subject,
13 but it's something I'd like to hear a little bit about.

14 CHAIRMAN ZECH: All right. Any other comments? Mr.
15 Denton, you may begin please.

16 [SLIDE.]

17 MR. DENTON: Thank you, Mr. Chairman. As you
18 mentioned, we've been organized for about nine months at the
19 Commission level. During that time we've been trying to get
20 our arms around all the Commission's activities and their
21 practices, and we're looking for ways to keep you more involved
22 and better informed about what we're doing.

23 You've seen some of the results. We try to make sure
24 you're informed about all the developments that are going on
25 worldwide. There's been an enormous increase, I think, in

1 international activities since Chernobyl.

2 You know there are now 417 reactors operating
3 worldwide in 26 different countries.

4 In the materials area, I was a little surprised to
5 find that the three microspheres were being distributed in some
6 44 countries, for example, that we had to coordinate with.
7 About 15 of those countries have very small regulatory
8 programs.

9 So in both the nuclear reactor safety and material
10 safety area I think there's been a big increase in the use of
11 these materials and the information we can gain back and in
12 people who want information from us.

13 We're looking for ways to keep the Commission
14 involved at the right level; trying to get a unified NRC
15 position and then make sure it's consistent with the U.S.
16 position so that when we interact with any group outside the
17 U.S. we are really reflecting what you want done and what the
18 U.S. wants done.

19 Jim has about a 20 minute overview of the agreements,
20 the NEA/IAEA arrangements and how we interact with the outside
21 world and within the agency, and I think it's probably best to
22 let him get right into that. That would be followed by Eric
23 talking about the research program, and then we could go into
24 whatever areas that would be appropriate.

25 CHAIRMAN ZECH: All right, fine. Mr. Shea, you may

1 proceed.

2 [SLIDE.]

3 MR. SHEA: Thank you, Mr. Chairman. The next slide
4 would show the proposed outline to the briefing. As Harold
5 indicated, I will start off by giving an overview of NRC's
6 international program. You have a copy of the handouts there.

7 That would give sort of the goals, structures,
8 resources and activities in our program, and come into the
9 question of policy oversight by the Commission and the current
10 Commission involved in any possible recommendations for the
11 future.

12 My emphasis will be on the non-research safety
13 cooperation since Eric Beckjord will follow with discussion of
14 the research cooperation. The time is limited -- can I have
15 the next slide, please?

16 [SLIDE.]

17 MR. SHEA: The time is limited here so I won't be
18 able to dwell too much on any one topic. The purpose today is
19 to give you an overview, to give you an information base for
20 later Commission decisions.

21 We had given you a previous paper, as you noted, Mr.
22 Chairman, and a Commission assistance briefing and a background
23 paper that was provided, draft paper, a couple of days ago to
24 supplement the information in the first paper in some areas
25 that were not covered.

1 I want to focus our briefing on the question of
2 Commission involvement and the oversight of these activities.

3 [SLIDE.]

4 MR. SHEA: The next slide will just briefly note a
5 very important element of our program that NRC carries out it's
6 international activities within the overall foreign policy
7 context set by the State Department.

8 Our international activities have as their purpose to
9 advance U.S. and NRC overall interest. The State Department,
10 looking at it very broadly, negotiates broad agreements for
11 cooperation with other countries, setting the terms and
12 conditions for nuclear cooperation. And, within that
13 framework, NRC develops its regulatory exchange arrangements
14 which are centered in GPA, and specific research cooperation
15 agreements centered in the Office of Research but it's within
16 that overall foreign policy framework.

17 Also our export and international safeguards or
18 related activities are carried out within that framework and
19 taking policy guidance from the State Department continuously.

20 On particular issues, and also on technical policy
21 issues, seeks to forge an inter-agency consensus. We are
22 heavily involved in that process.

23 Moving on the next slide.

24 [SLIDE.]

25 MR. SHEA: This outlines very broadly our

1 international goals. Not in priority order, but in two basic
2 categories; one in the safety area and one in the
3 export/safeguards area.

4 They are centered in general, ensuring that our NRC
5 programs support our statutory purposes and NRC's programmatic
6 need for foreign input. For example, in the public health and
7 safety protection, the central purpose of the Commission, we
8 look to receive foreign information to fold into our regulatory
9 decisions since there's a lot of reactors operating abroad,
10 including experiences that we need to know about.

11 Also, supporting State Department objectives, say for
12 example, through providing safety assistance to foreign
13 nations. State also wants that done.

14 And, we try to be responsive to foreign governments
15 and international organizations for NRC support.

16 Most of our effort is in the reactor safety area. We
17 are trying to do more in areas such as radiation protection and
18 waste management. And, I might say that in general,
19 historically NRC's international programs have been approved
20 and developed as separate parts of programs within the
21 Commission.

22 Now we're taking a broad look back and looking at the
23 program as a whole to see if some improvements can be made,
24 better coordination, and more oversight, whatever is needed.

25 We're taking a fresh look at it. It's an important

1 area, as Harold noted, referenced in our five year plan and if
2 you have no further questions about the specific statutory
3 requirements and purposes, I can move on.

4 COMMISSIONER CARR: Let me ask a question on the
5 first item, the first bullet there. What statutory requirement
6 are you referring to there?

7 MR. SHEA: Referring to NRC's responsibilities to
8 protect the public health and safety.

9 COMMISSIONER CARR: But it doesn't say we have to use
10 foreign data and resources.

11 MR. SHEA: No, that's right. The statutes are not
12 explicit on that point. It is an implicit statutory basis and
13 in order to carry out our domestic responsibilities, we would
14 want to be aware of input from foreign reactors which are often
15 very similar to U.S. reactors and have experience that has
16 often proved beneficial to our program. Sometimes problems
17 will show up in foreign reactors first before they are noted
18 here and that enables us to fix problems before they show up in
19 our reactors.

20 COMMISSIONER BERNTHAL: I agree and I don't think
21 Commissioner Carr is questioning it, but --

22 COMMISSIONER CARR: I think you ought to use all the
23 help you can get.

24 COMMISSIONER BERNTHAL: I do, too.

25 COMMISSIONER CARR: It's the statutory requirement

1 for that.

2 COMMISSIONER BERNTHAL: There's not a terribly clear
3 statutory requirement and I think the very good memo that GPA
4 did points that out. It's mostly implicit.

5 MR. SHEA: That's right. And within that area you
6 have research activities, we have our material safety, waste
7 management research, all of this as well as our reactor safety
8 focused activities underway.

9 [SLIDE.]

10 MR. SHEA: So, if I could move on the next slide,
11 which outlines our current partners in safety cooperation and
12 the major forms of cooperation, we have three basic means here;
13 bilaterals directly with other countries, NRC equivalents
14 through the IAEA and through the nuclear energy agency of the
15 European OECD.

16 Each of these areas have certain advantages and
17 disadvantages. For example, the bilaterals are often very
18 important for direct acquisition of safety information and
19 clarifying particular technical problems or checking out
20 rumors; for example, the recent report of a second Soviet
21 accident, we were able to put to rest within a few hours by our
22 worldwide network of direct contacts and safety agencies
23 calling in and finding out what was involved there.

24 Specific technical problems, you can call people up
25 and solve those problems. People are candid, it's a quick

1 channel, a good way for our assignees from foreign countries to
2 be trained.

3 The IAEA has global membership and has certain
4 strengths for looking at longer term issues, getting full
5 coordination among various countries in the world, rather than
6 dealing with them one by one, and, of course, the safeguards
7 area is unique to the IAEA.

8 The European community and the NEA involves our
9 closest friends and it's noted here Western European nations
10 and Japan, they are prime users of U. S. type reactor
11 technology and you avoid the political activities of the IAEA;
12 non-political framework which helps us get on with the business
13 more swiftly.

14 COMMISSIONER BERNTHAL: I don't want to jump ahead in
15 the presentation here, so if you're going to address this let
16 me know, but I would like at some point to get a sense of what
17 we have done in the past; what mechanisms there have been, and
18 I guess, maybe this would be you to speak to, Vic, perhaps as
19 much as anyone, what we have done in the past to exercise some
20 oversight in planning and how these many, many cooperative
21 programs develop.

22 The answer may be that they've kind of grown like
23 topsy and there has been no careful coordination oversight.

24 MR. DENTON: I think, Commissioner, we will try to
25 answer what we have done in just a few slides, and then we can

1 determine if it is adequate or not.

2 MR. SHEA: I might just note quickly the OSART
3 program under the IAEA is particularly important to us, and we
4 have had not only support, but foreign OSARTs or safety reviews
5 of foreign programs, but one within the U.S. that occurred at
6 Calvert Cliffs last August.

7 Also, the second item under IAEA, the IN SAG group
8 which is important agency or group of experts, really, that
9 advises the IAEA Director General about the broad issues of
10 safety, for example, built on safety principles.

11 The next slide will show the involvement of the NRC
12 Staff in these three areas of activity. You see the headings
13 there for bilateral, IAEA and NEA activities, and the principal
14 offices along the left column of the NRC, and GPA, down there
15 at the bottom, noting the policy development coordination role
16 that we have for across the board.

17 This is not meant to be a comprehensive list, but
18 it's pretty inclusive, and it's illustrative of the areas in
19 which we do get involved, and you see quite a bit in the
20 bilateral, shading down a bit in the IAEA, and to some extent
21 less in the NEA, but they're all very important, and all have
22 certain advantages and disadvantages, as I noted earlier.

23 If there are no specific questions on those areas, I
24 didn't plan to go through them all in detail. I think most of
25 them you are generally familiar with.

1 COMMISSIONER CARR: I think the bottom bullet there
2 is the one that we are most interested in today, right?

3 MR. SHEA: Yes. That's the one I wanted to get to
4 quickly on the last couple of slides.

5 CHAIRMAN ZECH: All right, let's proceed.

6 MR. SHEA: The next slide that's in your order there,
7 the resources, just to give you an idea of what kind of
8 resources we have in the international program area. It adds
9 up to about 45 staff FTEs with the bulk of them, over 60
10 percent, working on Safety Cooperation; some 28 FTEs, most of
11 them in GPA and exports and international safeguards, a little
12 bit under 40 percent, 17 FTEs, a grand total of about 1.5
13 percent of the NRC staff resources dedicated to this effort.

14 The next slide gives you a quick idea of the foreign
15 travel that we do at NRC, for one year, fiscal '87, you see the
16 bulk of the travel devoted to reactor safety, almost 90
17 percent. A little bit in materials safety, a small amount in
18 exports and international safeguards, and a small amount in
19 waste.

20 The export safeguards resources FTEs exceeds the
21 foreign travel by quite a bit. Most of the travel is related
22 to reactor safety.

23 The foreign travel in fiscal '87 ran a little under 5
24 percent of the total NRC travel projections, and that will be
25 up a bit next year.

1 If I could move to the next --

2 COMMISSIONER CARR: What is the gross on that?

3 500,000 something?

4 MR. SHEA: Yes, about 500,000 for '87, 535,000 out of
5 about 11,300,000 total travel, looking at projections of about
6 716,000 for '88, in line with the increased involvement in
7 international activities.

8 CHAIRMAN ZECH: How about '89? What's '89, do you
9 know?

10 MR. SHEA: No, I don't have a projection, Mr.
11 Chairman, on that.

12 CHAIRMAN ZECH: All right.

13 COMMISSIONER BERNTHAL: Let's see, these are trips,
14 not money?

15 MR. SHEA: Yes, that's cut by trips. We could also
16 do it the other way.

17 COMMISSIONER BERNTHAL: I think you ought to do it in
18 money as well, as trips can be over and back, or they can be
19 two, three weeks; a big difference.

20 MR. DENTON: I think that's true. This was more
21 illustrative of the -- in general, it's mostly reactor safety
22 and not the other areas. But we are trying to --

23 COMMISSIONER BERNTHAL: I guess it probably would
24 cut, if anything, even more heavily in reactor if you did it
25 the other way. I suppose that's true.

1 MR. SHEA: I think that's right. We have looked at
2 that, and it's pretty similar.

3 COMMISSIONER BERNTHAL: Okay.

4 MR. SHEA: The next slide will be getting right into
5 the area that we really want to focus on today. First slide of
6 three here shows the coordination and approval of NRC's formal
7 international commitments and the current Commission
8 involvement.

9 The first is the major export-import licenses that
10 come to the Commission. There, there is a very structured
11 system for Commission review, in which they are informed of all
12 major activities, approve those not delegated to the Staff, and
13 the signature of the exports is done at the Staff level, but
14 with Commission review.

15 Our regulatory exchange arrangements, which on the
16 next slide I noted are negotiated by GPA and coordinated with
17 the State Department, as are all our agreements, our research
18 agreements, too. Most of those come up for Commission
19 approval. They are usually assigned by the Chairman, in fact.
20 The research cooperation agreements, as with these other
21 activities, are all notified to the Commission, but the
22 approval is -- by the Commission is only occasional. This is
23 selective. For example, the Tadotsu Seismic Research
24 Agreement, and there is a Japanese code program in '86 and '85,
25 German and Spain research agreements were signed by the

1 Commission, but it's more selective than the case of the
2 regulatory.

3 MR. DENTON: We have been trying to send more of
4 those up to the Commission. I think we just sent the Alligator
5 River project, for example, as a novel approach. So we are
6 trying to screen for the Commission the ones that seem to rise
7 to some threshold.

8 COMMISSIONER CARR: I would think we would want to
9 see the ones that committed budgetary outyear numbers.

10 COMMISSIONER BERNTHAL: Yes, certainly -- I agree.
11 Certainly the same threshold that the EDO, for example,
12 currently uses to send matters to the Commission. If we are
13 committing resources that rise to that threshold in principal,
14 those always should have been submitted to the Commission,
15 whatever that is, three quarters of a million dollars, I guess.

16 MR. SHEA: We do have a slide, one later, that has a
17 recommendation that we pick certain agreements that have major
18 resource commitments, and send them to you for review.

19 COMMISSIONER BERNTHAL: Now there may be other
20 criteria as well which you may be getting to. For example,
21 first time cooperative agreements, country to country, which
22 often even aren't area-specific.

23 MR. DENTON: I think we are working on a threshold
24 below Vic's budget threshold, and we are trying to pick out
25 those that have those unique --

1 COMMISSIONER BERNTHAL: It's policy matters, it seems
2 to me that those should --

3 MR. SHEA: We are trying to send more to you in
4 general to keep you informed, to give you the option to say I
5 want to see more of this or that.

6 The next slide attempts to outline the current
7 management oversight for NRC of international activities.
8 Looking at the Commission role, GPA and EDO. The Commission
9 role, as we noted there, is to look at policy matters that the
10 Staff may send up or the Commission may initiate with GPA then
11 informing the Commission and EDO of significant international
12 development screening activities that occur, and sending those
13 to the Commission. Making sure that policies, from the State
14 Department primarily, are made known to the appropriate people,
15 and for major activities such as international -- helping the
16 Commission develop policies and priorities, coordinating with
17 EDO as appropriate. And, of course, EDO's role is then to
18 implement the Commission guidance programmatically and watching
19 resources, such as foreign travel, and keeping the Commission
20 informed of the significance of foreign safety information and
21 experience, and supporting Commission policies.

22 We have -- I was mentioning the informing of the
23 Commission -- a number of examples I might just mention to make
24 this a little more concrete, such as when we sent to you review
25 of our foreign assignee program to see whether we should make

1 any changes in light of increasing movement toward cooperation
2 with the Soviet Union and Eastern Europe. You reviewed that
3 recently, gave us guidelines, and we carried those out.
4 Assistance to the Koreans in nuclear safety was another issue
5 which we sent up to define a program, and there's some policy
6 issues that are continuing to the present day.

7 We have emerging cooperation with the Soviet Union
8 and Eastern Europe that has heavily involved the Commission,
9 and we're moving toward a possible cooperation and agreement
10 with the Soviet Union at this time.

11 The recent NUCHEM affair could affect our export
12 licenses. We looked at that closely and kept the Commission
13 informed. The U.S.-China agreement, going back a little bit,
14 South African uranium import issue, and Calvert Cliffs OSART,
15 Mexican and Canadian issues on our borders. Those are
16 examples, much as -- note the mechanisms by which we do this.
17 We have a new quarterly report which we started a few months
18 ago. The second one should be on your desk in the next day or
19 two. Special memos on issues on clearing cables, cable
20 highlights, memos and so on that we send out, and senior
21 commission visitors have memos for their visit which outline
22 issues as well.

23 So those are examples of what we do, and the next
24 slide --

25 COMMISSIONER CARR: On the top line there on that

1 one, it says "as issues arrive." Are we really just reactive,
2 or are we trying to be proactive?

3 MR. SHEA: We are definitely trying to be proactive.
4 GPA's role is an evolving one, since we were reorganized, as
5 Harold mentions, last year, and we have been trying to get more
6 proactive, identify issues early, send them to the Commission,
7 and have those decided, have you more involved in deciding
8 those, and if you'd like to give us any more defined guidance
9 about that, we would appreciate it.

10 MR. DENTON: Vic and I have been trying to lay out
11 what the issues are each year, and you have seen some recent
12 memos on that, that say these are the big issues, they tend to
13 be operational safety issues, improving safety, and assigned
14 resources for the entire year, and send that up to you and see
15 if you agree if that's the way to allocate resources. And then
16 everybody can plan that way, so it's not taken just ad hoc in
17 every individual case.

18 COMMISSIONER CARR: I'm interested especially in
19 issues we can put to bed and quit worrying about.

20 COMMISSIONER BERNTHAL: There aren't any like that
21 around here.

22 [Laughter.]

23 CHAIRMAN ZECH: Well, let me just make a point here,
24 too. I think it's awfully important to me, and I think to my
25 colleagues, as we have gone into this reorganization, and

1 brought IP to the Commission level, GPA and IP folks should
2 recognize that the Commission wants to take a stronger hand in
3 all this. And it means you have a different role in IP. You
4 are not just liaison with other international officials or even
5 our own agency officials in the country. We are looking to you
6 to be more substantive and to give us recommendations on
7 issues.

8 Now that doesn't mean you have to have all the
9 expertise in your own organization, but it does indeed mean, in
10 my view, that you should bring recommendations to us on large
11 issues that we can close out or not close out, but that are
12 going to be ongoing or whatever, and give us a substantive
13 recommendation. Not just a recommendation, for example, from
14 the State Department; not just a recommendation from other
15 departments; but -- of course, all those will be input to your
16 recommendation, but what I'm looking, and I think my colleagues
17 are looking to, is a more substantive recommendation on
18 international activities from our international programs office
19 than you have been used to in the past. That's a different
20 role for you, and it's important to us that we feel we get the
21 best professional advice we can on these policies that we're
22 involved in. That's important, and I hope we all understand
23 that, and I think you do, Jim, and I think some of your people
24 do, but it is a new role, and you may need more support in that
25 office, I don't know. But you're going to have to tell us.

1 But you've got to recognize, you're in a new role. We don't
2 want you just being liaison. We want you to be more involved
3 in the substance of matters.

4 Okay, let's go on.

5 MR. SHEA: Yes, thank you, Mr. Chairman.

6 That is how I view the role and the staff as well.

7 [SLIDE.]

8 MR. SHEA: The last slide shows recommendations for
9 you related to what we've been talking about where we suggest
10 that GPA working closely with EDO would inform the Commission
11 of international activities that might have policy relevance,
12 the very point you were mentioning, and make recommendations,
13 and keep checking on international activities and let you know
14 periodically what we think of the Commission objectives, and
15 whether they're being met.

16 GPA might also send the Commission for review and
17 approval, proposed agreements with new countries, defining what
18 agreements we'd send up. It might be new countries, agreements
19 requiring significant new NRC resource commitments, or those
20 having policy significance.

21 Those are kind of three categories that occurred to
22 us that might be useful for you to look at.

23 COMMISSIONER BERNTHAL: We're certainly to the first
24 level now in the outline of what needs to transpire, it seems
25 to me. We went through two tries to get to this point, but

1 there's an awful lot said in that first recommendation there as
2 you well understand, and Vic, as you can attest, this isn't a
3 solicited question or response, but I can well imagine that, at
4 least I would hope that you would welcome the directive and
5 opportunity here to get a handle on these commitments and how
6 they grow and what we're doing and set up the appropriate
7 institutional coordination here at Harold's shop.

8 I don't frankly know what the next step in the
9 outline below point one is or should be, or what makes sense,
10 but it's clear that there has to be some definition of
11 responsibility and a great deal of close coordination for
12 oversight on sort of a weekly, almost daily basis between IP
13 and the Commission's shop and your shop.

14 I don't know whether you have any comment on that or
15 not, but it seems to me we've got a fair distance to go here in
16 getting a real handle on what our commitments are, how they
17 develop and where the resources should go.

18 MR. STELLO: Short answer is I agree fully. I think
19 you're right, it's a first step. For many years we really
20 haven't been sitting down trying to evolve what ought to be the
21 Commission's policy with regard to the whole host of
22 international programs, and we're evolving it now.

23 I think it is very important because it does have
24 implicit with it a commitment to do things and usually the
25 commitment involves fairly high level people. It isn't the

1 kind of a thing you can just send up as typical.

2 CHAIRMAN ZECH: Let me just make a comment, too, and
3 this is a very important point that Commissioner Bernthal has
4 raised and I was looking at that chart the same way and I
5 think, perhaps, maybe the most important words you've got up
6 there on the first line, say, "in coordination with the EDO."

7 Because, you see what's happened over the years, at
8 least my perception is, and many years of practice of IP under
9 the EDO, and other EDO's before Mr. Stello, EDO has a very big
10 job; a lot of responsibilities.

11 He has to focus on the urgent priorities of the day
12 to day business, public health and safety and so forth.

13 International programs, it's at least been my
14 perception, has not been necessarily the highest on his
15 priority list and as a result international programs people
16 have, indeed, gone along and done what they thought interfacing
17 with research and whoever, and they did the best they could and
18 I think they did a very good job.

19 But, my point is, I don't think the EDO, any EDO,
20 really had the time, even if he had the inclination, to jump in
21 on these international programs and give it the attention it
22 should have.

23 I don't blame the EDO. I don't blame the staff. And
24 that's why I thought, and my colleagues thought, it would be
25 important to bring this to the Commission.

1 Now, in so doing though, it is very important, as far
2 I'm concerned, that we don't cut out the EDO. Now you see,
3 we're trying to help him in his job as I see it because he is
4 focused on a day to day basis on public health and safety
5 issues.

6 And that means that our international activities have
7 got to coordinate with the EDO. So when you say "in
8 coordination with EDO" that means an awful lot to me because we
9 don't want you to think you're going to bring your programs to
10 the Commission, the Commission is going to operate on a vacuum
11 internationally. We're not going to do that.

12 So, it's important to me and I think all of us to
13 know that you will coordinate with EDO.

14 Now what it means to Vic Stello is that as you bring
15 things to him, you'll have them staffed out. You'll have
16 pro's, con's, the here's what happens if we attend this
17 conference, or if we go to this meeting and can we afford to
18 send one of his senior people here, there, whatever, and also
19 what stance should we take when we go to an international
20 meeting.

21 COMMISSIONER BERNTHAL: That's an important point.

22 CHAIRMAN ZECH: Exactly. And so, Vic, you've got to
23 be involved in this and we've got to know when one of your
24 senior people goes to an international meeting representing the
25 Nuclear Regulatory Commission and the United States of America;

1 that's our job.

2 We have to know what he's going to say, we've got to
3 prove his position, and my perception has been in the past, we
4 really haven't done that very well and we're trying to do it
5 better now. And, it's very important.

6 And, so IP would bring, as I envision the system,
7 through GPA, and this means Harold, you and Vic have got to be
8 close on these matters. Not just Jim Shea and Eric Beckjord,
9 but you and Vic, and Vic's got to be given the completed staff
10 work, if you will.

11 You've got to say here's what we think, here's the
12 pro's and con's and then Vic's got to say I agree or I disagree
13 and I'll tell you why I disagree.

14 And so when it comes to the Commission, if there is
15 disagreement, we should hear about that. We could say you
16 think this, he thinks that, fine, bring it to us, we'll make
17 the decision.

18 But we would hope that you could work most of those
19 things out yourself. So that we're really -- you're giving the
20 Commission what Vic and his judgment overseeing the staff feels
21 is in the best interest of public health and safety for the
22 United States.

23 And you're of course tuned to the same issues so I
24 would think that most of the time, almost all the time, you
25 would bring us a coordinated position. And so, it's important

1 that you coordinate with EDO and keep him informed so he
2 doesn't have to spend a tremendous amount of time deciding
3 whether it's well staffed. You should give him a well staffed
4 piece of work and with all the background, so he can say yes
5 that makes sense to me, that's exactly what we want to do.

6 And my view is as we keep working on this in the
7 months ahead, and perhaps years ahead, then we will be
8 developing a clear close coordinated relationship so the
9 Commission will be getting the best solid advice from the staff
10 and supervised and supported and coordinated by the GPA and the
11 IP organization, so the Commission can then feel confident that
12 we really are prioritizing our international activities.

13 So, it really is important that you coordinate and I
14 agree with that thought very strongly.

15 COMMISSIONER ROGERS: Mr. Chairman, if I could just
16 say, I agree with everything you've say. I think that that's
17 very important.

18 I think we have to keep in mind in that process,
19 though, the importance of the information that comes through
20 the research network of what the opportunities are
21 internationally that may not come so readily through the more
22 formalized and higher level connections at GPA and that
23 international programs maintains.

24 CHAIRMAN ZECH: Good point.

25 COMMISSIONER ROGERS: There's a network out there of

1 working scientists who are communicating with each other all
2 the time and feel very comfortable by working through the
3 research end of the establishment that we must be very
4 cognizant of in trying to match the opportunities which we may
5 or may not want to pick up, and our own priorities as a
6 Commission.

7 So, that I think it's terribly important that that
8 level be in there in the scrubbing down of priorities and
9 matching them to opportunities. Some opportunities we may just
10 have to take pass on. They look very attractive, but we don't
11 think they fit in with our priorities.

12 So I think it is important in the priorities setting
13 of international programs that there be a strong input from the
14 research end of the house where the connections and knowledge
15 exist as to what the opportunities are, but I think that
16 information then has to be matched up against the Commission
17 overall priorities.

18 CHAIRMAN ZECH: I agree and I envision, Eric, that's
19 your job. You hear about these international or research
20 things maybe before anybody.

21 You have to tell Vic, convince him that it's
22 something really important and therefore he can interface with
23 the others, and of course, you can, too.

24 It's a very good point. We have all kinds of
25 opportunities in the research world to be informed and that's

1 how I envision it would fit in the system.

2 You would make sure that the EDO was informed about
3 your support for certain activities and make sure that it is
4 surfaced and then, of course, the EDO could work it out with
5 the GPA people and bring it to the Commission.

6 That's a good point.

7 COMMISSIONER BERNTHAL: I agree and it's clear that
8 the Chairman has a fairly clear vision in his mind now of what
9 is ultimately your responsibility, Mr. Chairman, that's how to
10 coordinate this from a management standpoint.

11 One does not want to overly formalize these things,
12 but there may even, indeed, be some amount of paper that would
13 be appropriate to make clear to everybody what the
14 responsibilities are here, that remains to be seen, I guess.

15 MR. SHEA: I might just end up, Mr. Chairman, noting
16 the last two recommendations are periodic perhaps annual
17 reports to the Commission, so that you have a better idea of
18 what's happening in the regulatory research activities.

19 And then, suggesting that you decide on NRC's
20 international priorities, we have looked at all the information
21 considered, the staff briefings, and so on. The earlier papers
22 suggested some priorities.

23 At this point, I'd like to turn it over to the Office
24 of Research to describe their program, Eric Beckjord.

25 CHAIRMAN ZECH: All right, thank you very much. Mr.

1 Beckjord, you may proceed.

2 MR. BECKJORD: Thank you. If I could have the slide
3 marked No. 1.

4 [SLIDE.]

5 MR. BECKJORD: This is the outline of what I'm going
6 to cover and I don't think I need to say more about the
7 outline.

8 I'll go to No. 2, please.

9 [SLIDE.]

10 MR. BECKJORD: As a frame of reference I've set forth
11 here the NRC research program objectives, guiding principles
12 for planning, implementing and managing the research program,
13 which is in the strategic plan, in the philosophy statement as
14 modified in the response that's going to go forward to the
15 National Academy of Science.

16 And, the program plan, the research programs are
17 described in the five year plan, and then at a level of greater
18 detail, there are also individual research program plans.

19 [SLIDE.]

20 MR. BECKJORD: Next is shown the structure of the
21 research program in the five main areas that we work in. I'm
22 sure you're all familiar with both the context of the program
23 and with these other elements through the programmatic reviews
24 and the budget reviews, and I don't need to dwell on it.

25 But it is the frame of reference for talking about

1 the international cooperative activities. So go to the next
2 slide, please.

3 [SLIDE.]

4 MR. BECKJORD: I want to say a few words about the
5 basics of the international activities.

6 They're important to the NRC research program and the
7 results that are expected from it because they are a complement
8 to the program.

9 They help to expand the research and improve its
10 quality and I think, most important, these cooperative efforts
11 put the research people in contact with the facilities that are
12 available in other countries, with foreign scientists and
13 engineers that are working on common problems.

14 And this contact enables us to draw on their research
15 results generally as well as the explicit things that we're
16 cooperating on.

17 And it contributes to the network that Commissioner
18 Rogers has already so well described.

19 I'm going to be saying more about this. If I could
20 have the next slide, please.

21 [Slide.]

22 MR. BECKJORD: The authorization for engaging in
23 these activities has already been described. It is shown again
24 here. It's authorized by Congress, it's authorized by the
25 Commissioners in the policy and planning guidance, and finally

1 all the agreements for research cooperation are reviewed by the
2 Staff, by the State Department, and finally signed off by the
3 EDO, and in some cases the Commission.

4 If I could have the next slide, please.

5 [Slide.]

6 MR. BECKJORD: The objectives for foreign cooperation
7 are spelled out here. I think they are evident and I don't
8 need to say much more about them. I think in those objectives
9 are included both the things that we receive from foreign
10 cooperation and the things that we make available to the
11 governments and people that we are cooperating with.

12 COMMISSIONER BERNTHAL: Let me just make one comment,
13 and again I don't know where this fits in, but if you're going
14 to address this issue later, let me know. One of the things
15 that I hope at least this agency would be attentive to -- I
16 wish other agencies would be, as well -- but one of the things
17 that I would hope, picking up on Commissioner Rogers' earlier
18 point, that we would be very sensitive to, is trying to make
19 sure that the real research experts, the scientists, are the
20 guys that, when appropriate, and it very often is appropriate,
21 that they are the ones that under the aegis of the NRC are
22 representing the United States government, when that's
23 appropriate, abroad in the interactions with the scientists
24 abroad, as opposed to, if I may say so, as opposed to the
25 administrators who may well be going along and may well be

1 representing. But the reason I raise this issue is because of
2 the striking disparity that I frequently heard about, where
3 international meetings are held and -- well, to pick a random
4 example, the Soviets will send someone like Velikhov or -- not
5 just the Soviets, I think many other countries -- the
6 representatives of the governments in highly scientific areas
7 from many other countries tend to be those who are the experts
8 in the particular subject matter, or at least have very broad
9 technical expertise, and I would hope that we consciously try
10 to match that kind of policy here in this agency. I think we
11 do better than many other agencies, I should say, but just a
12 point to keep in mind.

13 I hope I'm making myself clear, and I hope you
14 understand the point.

15 MR. BECKJORD: Well, Commissioner, I like to think
16 that I have not very many administrators, but I've got a lot of
17 program managers --

18 COMMISSIONER BERNTHAL: Right.

19 MR. BECKJORD: And so in carrying out these
20 cooperations, we -- the program managers have to be involved,
21 because they are responsible for directing the program. But we
22 involve in every case that I know about, you know, people who
23 are working on the engineering and scientific question. So I
24 think it's a --

25 COMMISSIONER BERNTHAL: Well, it's very simple. As a

1 practical matter, and I agree with you, the NRC has oversight
2 responsibility. But if you're going to a meeting where -- I
3 don't know what it is, on severe accidents or something, let's
4 say, I think we do this pretty well, actually. I'm not
5 necessarily here being critical. We always can do better, I
6 think, but we also want to represent this country with the very
7 best people in severe accidents, then. It might only be one;
8 it might be two. But that does not always happen, I think. It
9 certainly doesn't always happen throughout the government, and
10 I don't think it always happens here as often as it should.

11 CHAIRMAN ZECH: All right.

12 MR. BECKJORD: If I could have the next slide.

13 CHAIRMAN ZECH: I agree with Mr. Bernthal, though. I
14 think the point is well taken, and I think we do that fairly
15 well, but I think it's something to keep in mind. I think it's
16 a good point.

17 All right, let's go.

18 MR. BECKJORD: This is a matrix which shows the
19 areas, the structural areas of the program, and then the
20 countries that are involved with us in these efforts. The top
21 line, which states general research cooperation, is the
22 umbrella agreement. We have this umbrella agreement which is a
23 general agreement on cooperation. What is really important is
24 the agreements, the more detailed ones, that are established
25 under it.

1 And so the next four areas down are the main
2 technical areas of the program, and you can see by the stars
3 which countries are involved in those programs. I think the
4 chart tells you a lot. There also it is important to note that
5 the countries that have the most important programs are France,
6 the Federal Republic of Germany, Japan, then the United
7 Kingdom, and the OECD/CEC countries taken as a whole.

8 And one thing in the integrity of reactor components
9 program that is very important, there are fewer stars in it
10 which seems to indicate otherwise, but that's not the case and,
11 in fact, the programs there are contributed to -- we are
12 involved with those countries having the strongest research
13 efforts in that area.

14 But I think it indicates a very broad range of
15 cooperation with many countries in many areas.

16 COMMISSIONER CARR: You might discuss in that last
17 one for me a little bit that has no stars in it.

18 MR. BECKJORD: Well, I left that in there,
19 Commissioner, because that's an important area of the program.
20 I'm going to touch on that. There are no formal agreements
21 relating to the resolution of safety issues, but there's a lot
22 of discussion and exchange of information on approaches in
23 different countries. So I would say that that bottom line,
24 although it's blank, it's conducted informally, rather than by
25 formal agreement.

1 If I could move to the next slide.

2 [Slide.]

3 MR. BECKJORD: This indicates the dollars in fiscal
4 1987, fiscal 1988, and it's shown -- the first set of programs
5 shows the contributions from overseas to the NRC programs, and
6 then the second category shows our contributions on foreign
7 programs. And I do note that there is a favorable balance.
8 It's not a major point, but at least it's better than the trade
9 balance is at the time.

10 There is one other comment I want to make about it.
11 If you look at the commitments in the outyears, which are not
12 shown on the viewgraph, in all but two cases, these are one-
13 year commitments for about the same amount of money as is shown
14 in the fiscal '88 column. The two exceptions to that are the
15 severe accident program, which is on the second line of the
16 first series.

17 That program runs out for another three years, by the
18 current agreements, and at about a level of \$3 million in each
19 year. And the second one that is a longer range commitment is
20 the Alligator River Analogue Project, which is the last line of
21 the second series, and that runs for three years beyond fiscal
22 1988 at about the same level of approximately \$150,000 a year.

23 So those are the long range commitments in the
24 outyears that we have now, those two.

25 If I could move to the next slide.

1 [Slide.]

2 MR. BECKJORD: Now I want to get in, a little bit
3 more into the details of the programs, taking them up by the
4 main program elements, first integrity of reactor components.
5 There are five programs shown here. I'm going to show a little
6 bit more detail on the IPIRG, or International Piping Integrity
7 Program, which I think is the next slide or two.

8 The second program here is an important one, a
9 program for inspection of steel components in cooperation with
10 OECD countries. That's otherwise known as the PISC III
11 program. It's mainly for flaw detection and location in reactor
12 vessels and piping and nozzles. And it is a -- that is also a
13 three-year program. The funding on it is rather large by the
14 OECD countries, totaling about \$18 million a year. Our own
15 contribution to it is principally in services and the provision
16 of samples for study. Our expenditures in it have been
17 something less than \$1 million a year spent in this country.

18 The next program is characterization of pressure
19 vessel materials, involvement with the UK and the Federal
20 Republic of Germany. The total program is about \$2.5 million.

21 The next one is the Seismic Safety Research Program.
22 I think I have a slide on that, the Tadotsu facility, later
23 which I will comment on. Yes, that's on the next slide. I'll
24 comment on that in the next slide.

25 And then finally, the TMI 2 reactor vessel bottom

1 head examination. I said a few words about that yesterday at
2 the Commission meeting. In summary, that is expected to be
3 about a \$7 million program. We are asking for contribution by
4 the OECD countries of 50 percent of that amount. It will
5 extend over three years, obtaining the samples at the end of
6 this calendar year, or the beginning of next year. Then
7 laboratory examinations, which will begin in 1989, and be
8 completed in the following year.

9 There is a great deal of interest in the program. As
10 I said, I am optimistic that we are going to get an important
11 response and financial contribution to it.

12 The main effort of that program will be to establish
13 the condition of the vessel bottom head at the time of the
14 accident, so that we know what capabilities we had and what
15 additional margin, if any, that there was. It's very important
16 to the severe accident program and, in particular, the
17 development of better accident management strategies in the
18 future.

19 COMMISSIONER BERNTHAL: This Japanese seismic program
20 --

21 MR. BECKJORD: If I could have the next slide,
22 please.

23 COMMISSIONER BERNTHAL: Oh, I'm sorry. Am I ahead of
24 you?

25 MR. BECKJORD: No, it's coming up on the next slide.

1 COMMISSIONER BERNTHAL: All right. Go ahead.

2 MR. BECKJORD: Well, I visited the Tadotsu facility
3 in December when I was in Japan. It's a very impressive
4 facility. It is, at the time that I was there, it was testing
5 a one-third scale model of a PWR primary system with one loop
6 to represent the others. The weight of that was about 1000
7 tons. It's on a 15 meter by 15 meter test pad, which moves in
8 the vertical direction and moves in one direction horizontally.

9 When you see the test going on, you might say, well,
10 ho-hum, you can see something moving maybe a couple of inches.
11 But when you think about it and realize that that's a thousand
12 tons that's moving, and that it's moving at frequencies up to
13 three times the actual seismic spectra that they're using for
14 the test, why, there's tremendous energy involved in it. And
15 it's going to -- the tests are in both the elastic range and
16 they're going to do some in the inelastic range. That facility
17 now, to build that, we're talking about in excess of half a
18 billion dollars to reproduce that facility now. The Japanese
19 have put enormous resources into it, and we are very fortunate
20 to be able to be a part of that effort with a rather small
21 contribution. Our contribution to it is, oh, on the order of
22 \$1-\$2 million total over the program.

23 COMMISSIONER BERNTHAL: Oh, I'm sorry, this slide
24 says NRC costs less than \$100 million, and I -- that looked a
25 little expensive to me.

1 MR. BECKJORD: No, there's a typo there. About \$1
2 million. They -- in addition, I mentioned the PWR third scale
3 test. They are testing other -- they will be testing BWRs and
4 containment structures as well. If you are in Japan, I would
5 highly recommend a visit to that. It's extremely impressive
6 work, and it has been -- the entire program, from design to
7 construction to testing, is being executed in an excellent
8 fashion.

9 COMMISSIONER BERNTHAL: Well, let me -- excuse me.

10 COMMISSIONER ROGERS: Was that laboratory set up for
11 general seismic work for all purposes, or was that --

12 MR. BECKJORD: No, nuclear.

13 COMMISSIONER ROGERS: Just for nuclear?

14 MR. BECKJORD: They may have in mind doing some other
15 testing there, but it was built for --

16 COMMISSIONER ROGERS: For building construction and
17 things like that?

18 MR. BECKJORD: -- for the nuclear plants. And it is
19 -- the work is managed under a company which was set up under
20 the aegis of MITI for -- in fact, it's the Nuclear Power
21 Engineering Company.

22 COMMISSIONER ROGERS: I see.

23 CHAIRMAN ZECH: I had seen it when I was in Japan,
24 and it's very worthwhile visiting it, if you have an
25 opportunity to see it. It's very impressive.

1 COMMISSIONER BERNTHAL: I was just going to do a
2 quick reversal of field here, first wondering about the 100
3 million and who else was paying, and now I'm going to ask
4 whether we're really getting access to everything that comes
5 out of this for under a million? Is that all the information?

6 MR. BECKJORD: Guy, do you want to comment on that?
7 Mr. Arlotto? I think the answer is yes.

8 CHAIRMAN ZECH: Please identify yourself, Guy, for
9 the reporter.

10 MR. ARLOTTO: Guy Arlotto.

11 Mr. Chairman, we are getting everything. In fact, as
12 part of our workshop, which we are going to have with the
13 Japanese in May, they are going to put more on the table
14 regarding tests that we are not involved in. We are
15 principally involved in the PWR loop test. They were
16 specifically -- that was specifically designed by the Japanese
17 as a proof test, in essence for public consumption, that we're
18 okay. That's not much good for us. We're looking to benchmark
19 our seismic codes as they go from elastic to inelastic, and we
20 now have convinced them, and they are going to perform the
21 test, to go inelastic.

22 To go back to something else, and this is another
23 example of the fact that we really do send the experts. In
24 this area we send almost exclusively the people from
25 Brookhaven.

1 COMMISSIONER BERNTHAL: Good.

2 MR. ARLOTTO: To interact with the Japanese in design
3 and structure of this test.

4 COMMISSIONER BERNTHAL: I think we do fairly well.
5 Well, I'd just say that's a tremendous bargain, if we're
6 getting all of the information. It really is.

7 CHAIRMAN ZECH: All right, let's proceed.

8 [Slide.]

9 MR. BECKJORD: If I could go to the next slide, just
10 a brief mention of the IPIRG program. This program had the
11 objective of providing technical data to back up the leak-
12 before-break investigations which have been largely completed
13 for the large reactor coolant piping.

14 It's very beneficial to the NRC. What I would say
15 about it is, it's about a \$5.5 million program, which as I
16 understand it, the NRC originally was going to carry out
17 entirely on its own, and several years ago when there were some
18 budget problems at the time, the decision was made that rather
19 than cut the program back to see if it would be possible to
20 enlist foreign cooperation, and it was entirely successful, and
21 the program is now going forward at the original scope, getting
22 very good results, and our NRC contribution to it is about \$1.6
23 million out of the 5.5.

24 If I could have the next slide, please.

25 [Slide.]

1 MR. BECKJORD: That's moving to reactor core damage
2 prevention. The big efforts there are in the ROSA program in
3 Japan, which is for small break loss-of-coolant accident
4 investigations, and the 2D/3D program in Germany, which is for
5 the large LOCA. I've got a slide on that coming up to say a
6 bit more about it. So I'll defer to that. The BETHSY test
7 facility in France has been constructed for the purpose of
8 testing accidents, the course of development of a severe
9 accident, before -- at the early stages, and we are cooperating
10 in that, and we are going to get -- I believe there are four
11 test runs that will be done explicitly at our request.

12 COMMISSIONER BERNTHAL: What's the total amount
13 committed in that category? International programs? Thermal
14 hydraulic research.

15 MR. BECKJORD: Let's see. I can --

16 CHAIRMAN ZECH: Step to the microphone and identify
17 yourself, please.

18 MR. CORTEZ: I am Jose Cortez from the Office of
19 Research. As far as money contribution directed to the thermal
20 hydraulics area, the BETHSY program, we are not contributing
21 funds, we are providing codes and analyses in return of
22 experimental data.

23 COMMISSIONER BERNTHAL: Okay.

24 MR. CORTEZ: On all of them, essentially we provide
25 the instrumentation and codes to the programs. In the case of

1 2D/3D, we provided instrumentation that is now being used in
2 the test facility. We spent quite a bit of money on that
3 particular program. It's been going on for almost eight years,
4 it will be close to a 10-year program.

5 COMMISSIONER BERNTHAL: I guess they're -- I didn't
6 get a dollar answer, but obviously we spent a good deal of
7 money on the instrumentation.

8 MR. CORTEZ: No, I understood the question to be how
9 much we spent overseas, and we've been talking about how much
10 we spent overseas versus how much we spend in-house.

11 COMMISSIONER BERNTHAL: But we provide
12 instrumentation that was developed here in-house, right?

13 MR. CORTEZ: At Oak Ridge, right.

14 MR. BECKJORD: We provide it and we install it. That
15 commitment has about another year to go, and then we will be
16 finished with the 2D/3D.

17 CHAIRMAN ZECH: All right, continue.

18 MR. BECKJORD: Just about a word about the other
19 programs here. The human reliability with CEC countries,
20 that's for -- a program for measuring human reliability methods
21 for application to PRA studies, small but important program.

22 The next one, maintenance personnel, it's a study of
23 personnel errors in equipment maintenance, and ways of reducing
24 the maintenance errors that could cause accidents.

25 Next one, next to last one on the list, is the common

1 cause failure analysis, a program with the UK-AEA. It's
2 developing a database for common cause failures, again for
3 probabilistic risk assessment application.

4 And finally, the accident management cooperation.
5 That's a new program which is developing now with Prof.
6 Birkhoffer's group, the GRS. We will -- we have agreed in
7 principle on the program, and there's a meeting coming up, I
8 believe, in the beginning of July to get it seriously underway,
9 and that will be a very important program.

10 If I could have the next slide.

11 [Slide.]

12 MR. BECKJORD: There's a bit more information here on
13 the major thermal hydraulics testing program, the 2D/3D, which
14 encompasses both German facility, the upper plenum test
15 facility, and the Japanese ROSA 4 for small-break testing.

16 There have been large amounts of money invested, not
17 only in overseas, but as you know, a great deal of money in the
18 follow-up on the loss-of-coolant accident and emergency core
19 cooling technology.

20 My view on that is that that has been an extremely
21 successful program. It's coming out, the final results of it
22 will be coming out in the Appendix K revision which is --
23 essentially gives the regulations for emergency core cooling
24 systems, which you will be seeing in a few months. It's been
25 very successful. I think the research in that area is going to

1 be winding down on the design basis loss-of-coolant accidents,
2 but I think that we will be using the -- some of the people and
3 some of the codes and technologies as we move forward into new
4 work on accident management.

5 There are still a few areas to finish off on the
6 traditional thermal hydraulics work, and what we're looking at
7 carefully now is to answer the question what should be the
8 level that we taper off to? We will always want to maintain
9 capability in the thermal hydraulics area because it's of such
10 obvious importance to the safe -- operation, safe operations of
11 the power plants.

12 I think I will go to the next slide, reactor
13 containment performance.

14 [Slide.]

15 MR. BECKJORD: The most important reactor containment
16 integrity work has been on the steel containment experiment of
17 several years ago which you're aware of, and then the 1/6th
18 scale reinforced concrete containment test at Sandia last year
19 in July.

20 The tests -- that series of tests is complete. It
21 was reported to you. The analysis and the evaluation is
22 underway, but not yet complete.

23 I think that has been also a very successful test
24 showing that there's a very considerable margin in the
25 reinforced concrete containments.

1 I think that we need to go forward and do work in the
2 prestressed or post-tension concrete containment area to get a
3 good idea of what the margins are in those designs established
4 on an experimental basis.

5 We are looking into the possibilities of doing that
6 with the United Kingdom, where a test is planned in that area.

7 The second area I would like to mention here is the
8 severe accident phenomenon. You received a report last year
9 from Dr. Koutz at Brookhaven on the uncertainties, the eight
10 major uncertainties. I'm not going to go through those in
11 detail, but the severe accident, the severe fuel damage program
12 is an important one. It's ongoing. We are looking to focusing
13 that into developing some of the answers that we're going to be
14 needing in the kinds of questions that come up in the MARK I
15 containments, and that will -- other questions, similar
16 questions will come up relative to the other containments, the
17 ice condensers and the large drys that we are also looking at.

18 We get some -- there's some very good work that's
19 done overseas in this area. I would just mention the CORA
20 facility at Karlsruhe in Germany, which is an electrically
21 heated mock-up of core fuel which is heated to -- up to damage
22 and then melting temperatures, and it's given some very good
23 tests under controlled conditions which are very helpful in
24 developing models for the development of severe core damage,
25 core melt progression.

1 Another facility also at Karlsruhe is the Beta
2 facility, and I think some of the best work in core-concrete
3 interaction was done a couple of years ago at Karlsruhe, and we
4 are cooperating with both of those programs.

5 If I could move to the next slide.

6 [Slide.]

7 MR. BECKJORD: This goes -- gets into the safety of
8 nuclear waste disposal. We have cooperative efforts that --
9 the scale of programs here on high level waste is smaller than
10 in the ones I've previously discussed, but I think this is a
11 growing area, and I think we are going to see more research as
12 time goes on, particularly as we approach the licensing of a
13 fuel repository in this country.

14 In the first line there, cooperative work with
15 France, Japan and Switzerland, that's on the characterization
16 of high level and transuranic wastes and on the migration of
17 radionuclides through soils.

18 In the second category, those -- the Hydrocoin and
19 Intraval are programs organized by Sweden. They are concerned
20 with groundwater hydrology and radionuclide transport. They
21 have been very, very important, and very useful programs.

22 The third one is the International Alligator Rivers
23 Analogue Project, which I believe you have had a briefing on.
24 That's just getting underway. That's geohydrology and
25 geochemistry, and using the natural uranium ore bodies in

1 Australia as a means of establishing just how the migration of
2 materials, the radionuclides, would take place after long
3 periods of time.

4 And there are some other projects under discussion.

5 As I said, I think it's a growth area. I guess one
6 concern that I have in this area is that -- some great concern
7 to me is that the legislation on the high level waste
8 repository requires that this be designed for 10,000 years of
9 operation, and that poses a problem, I think, in establishing a
10 scientific base for proving that something will carry out its
11 function for that long. That's going to be a very difficult
12 problem for the research program. I just point that out. It
13 will require the best of effort all the way around.

14 MR. PARLER: My recollection, Mr. Chairman, was that
15 is the EPA standards which probably refer to the legislation.

16 MR. BECKJORD: Yes.

17 CHAIRMAN ZECH: Thank you.

18 MR. PARLER: A subject that I believe our advisory
19 committee commented on, the 10,000 years.

20 CHAIRMAN ZECH: Yes.

21 COMMISSIONER BERNTHAL: That's right.

22 MR. BECKJORD: The Research Advisory Committee is
23 going to be commenting on that, also. If I could go on to the
24 next slide which is entitled Foreign Nuclear Safety Regulatory
25 Research Philosophy.

1 [SLIDE.]

2 MR. BECKJORD: What I've shown here, there are three
3 examples of specific safety issues which were identified
4 overseas.

5 First, the reactor coolant pump seal failure by
6 EDF/CEA in France; the in-core instrument tube vibration
7 problem in BWR; and steam generator tube vibration problems
8 identified also in France.

9 I think these were important issues which came to our
10 attention earlier than they, perhaps, otherwise might have
11 through our research contacts.

12 The next category, there are three more general
13 categories of information or insights gained from contact
14 overseas. The French approach to resolution of black out
15 issues and the development of their severe accident procedures,
16 the H and U procedures.

17 The U.K. approach to resolving some generic issues
18 for their Sizewell B Plant.

19 And then finally the Swedish approach to dealing with
20 specific plant vulnerabilities.

21 And these contacts here have had important fall out
22 in the black out rule which is now before you and in the
23 resolution, severe accident implementation policy, and there
24 will be a generic letter on the independent plant examination
25 which will be coming to you over the next month or so.

1 What we've learned overseas has had an important part
2 in the development of that rule and the IPE process.

3 If I could go quickly to a couple more here. The
4 next one, benefits of the research cooperation.

5 [SLIDE.]

6 MR. BECKJORD: I guess the point is that we can -- on
7 the first point, we can do more and we can get further with
8 international cooperation than we could on our own, given the
9 same level of expenditure. That's the first point.

10 The second point, we can gain access to expert
11 knowledge overseas and get a measure of peer review on our work
12 and that improves the quality.

13 And finally, on the third point, we get some very
14 good ideas from overseas sooner than they might occur to us,
15 and the results of all this flow into rules, they flow into
16 writing of regulations, and what is very important which is our
17 own ability that we have to make -- our own ability within the
18 NRC and our contractors to make better decisions, more reliable
19 decisions relating to safety as a result of these contacts, the
20 points that Commissioner Rogers has already made.

21 [SLIDE.]

22 MR. BECKJORD: The benefits to foreign groups are
23 shown on the next slide. I think these are self-evident.

24 As we improve the safety technology base, it helps us
25 and it helps the foreign partners that are engaged in these

1 programs with us and I think that's important.

2 [SLIDE.]

3 MR. BECKJORD: If I could go to the last slide, a
4 summary of what I've covered here. What's important about the
5 nuclear safety research cooperation, I guess in giving my own
6 additional summary, I think that we can achieve our goals in
7 the future faster and better by sustaining and expanding our
8 cooperative safety research projects with other countries.

9 I think, as we go along, our own research program is
10 going to evolve and it's going to sharpen its focus on some
11 issues.

12 But, in any event, what I've said is true; that the
13 foreign cooperation is going to be helpful to us, it's going to
14 be of benefit on both sides, and I believe that this is an
15 important fact.

16 The best ties that we've had over the years
17 historically have been through the research people in other
18 countries in this area, and I think that's an important
19 consideration in the development of the policy.

20 I think that completes what I have to say.

21 CHAIRMAN ZECH: All right, thank you very much. Mr.
22 Stello? Do you have some comments to make?

23 MR. STELLO: I just have a few brief observations I
24 want to make.

25 Over the years, and Eric has already pointed out some

1 examples of information, we learn safety problems first in
2 foreign countries and there's probably a dozen or more rather
3 significant problems we learn about in that manner.

4 Those of you who can remember way, the BWR problems
5 and the most recent pump shaft failures at Palo Verde, which
6 directly impacted our ability to make our safety judgments and,
7 hence, licensing of the plants, or continued operation of the
8 plants.

9 I wouldn't want to just stop to say well we heard
10 about the problem, that helps us get our understanding of the
11 problem and the solution, but we also get a lot of technology
12 out of that.

13 We learned about the large pipe cracking in the BWRs
14 first in Japan, and we learned about some of their techniques
15 for examination, instrumentation and how to do it, as well as
16 insights in some of the things they do to preclude those kinds
17 of problems.

18 So, in the point of view of getting information which
19 helps us do our safety job better and faster, there's obviously
20 a secondary benefit which allows us to get that job done a lot
21 more efficiently and not have to unnecessarily shut plants down
22 to do examinations of equipment that we can avoid doing because
23 we can get that information from other places.

24 So this involvement with foreign countries, I think,
25 has been very, very helpful in the agency doing its job.

1 Of necessity at this briefing, we had to focus an
2 awful lot on in terms of very broad generalities, except for
3 the area of research, I want to remind you that we have a lot
4 of other areas of cooperation, especially in the area of
5 helping countries like in training.

6 People from Chattanooga, our instructors, go and give
7 complete training packages and actually train some of the
8 regulators in foreign countries as well as assignees who come
9 in and work within the agency as well as some of the people
10 from the NRC that we send overseas.

11 COMMISSIONER BERNTHAL: Let me just ask a question
12 here, Vic. Is there a coordinated focus internationally for,
13 and Harold you may be more familiar with this by now, for
14 trying to decide, since we're so much all in this together now,
15 and since I guess the American design reactors have by and
16 large with modifications formed a world standard to date, is it
17 all pretty ad hoc, in other words, in determining research
18 programs, someone has a bright idea and sends his people out to
19 try and get some money or is there an evolving, more
20 centralized attempt to plan and execute research; well, let's
21 take as an example, the Japanese seismic facility. It doesn't
22 make sense for everybody to do that. It's expensive.

23 But I'm sure the Japanese decided to do it on their
24 own. Is that beginning to change or is there any effort to
25 work together on these things?

1 MR. DENTON: Let me start and I'll let Eric answer.

2 In the NEA context, I think there is a lot of give
3 and take among all their research people about what needs to be
4 done and there have been efforts to catalogue every year what
5 the research programs of each member country is so that
6 research planners like Eric can adjust their own programs.

7 But it comes about through the enterplay in those
8 forms and sometimes countries do things that no one else joins
9 and so forth.

10 In the TMI vessel examination, an initiative started
11 by Eric in which he pushed it into NEA context and people have
12 agreed with it. But let me turn the floor to Eric for a
13 specific answer.

14 MR. BECKJORD: I think that's the most important
15 activity, Harold, of the NEA's committee on the safety of
16 nuclear installations and its subcommittee structure, there's a
17 special expert committee of senior experts, and then there are
18 five groups that deal with systems and transients with severe
19 accidents, with primary system integrity, with operational data
20 collection and human factors, they cover all the areas in these
21 committees and the point is that it serves as both an informal
22 ground for discussing research ideas and activities and also
23 they have a more formal arrangement of establishing standard
24 problems which each of the countries will then work on and then
25 they'll get together and compare their answers.

1 COMMISSIONER BERNTHAL: The question that I have is
2 this really. Suppose, for example, that there is a decision, a
3 consensus among the experts now, at some forum that NEA might
4 devise, that with all the talk about filtered vents that it's
5 really time that we had some central study of that for the
6 international community. Does anybody plan ahead in that way
7 for concerted research, yes, this needs to be done, it's going
8 to take this much money, let's start from here and go out and
9 try and solicit the money and decide where the project is going
10 to be done because it's not a single facility.

11 MR. BECKJORD: The initiatives take place at the
12 countries and then these projects are discussed at places such
13 as CSNI.

14 COMMISSIONER BERNTHAL: So the answer to the question
15 is no, there's no international beginning point that then goes
16 out and tries to put things together.

17 MR. BECKJORD: I think it's the other way around. It
18 happens first nationally and then moves to a firm like the
19 CSNI.

20 COMMISSIONER ROGERS: Just to follow that up a little
21 bit more, have you seen any evidence of that proprietary
22 interest overseas that are perhaps creating some gaps in
23 research that cannot be filled by international programs, that
24 really have to be done at home, that we should be paying
25 attention to?

1 MR. BECKJORD: I will give you an answer off the top
2 of the head.

3 The proprietary interests have always been extremely
4 important in any reactor development questions.

5 They have been less important in the safety questions
6 which everyone recognizes are common safety problems.

7 But again, when you talk about the vent, both the
8 French and the Germans are very interested, and the Swedes are
9 interested in the market possibilities for their systems.

10 So, that may be, as an exception to the rule on
11 safety, that they are perhaps a little less forthcoming on that
12 than they are on other safety issues. So I think that in some
13 cases, the proprietary interests are something of a gate.

14 CHAIRMAN ZECH: All right.

15 MR. STELLO: We're finished.

16 CHAIRMAN ZECH: All right. Thank you very much.
17 Questions from my fellow Commissioners. Commissioner Roberts?

18 COMMISSIONER ROBERTS: No.

19 CHAIRMAN ZECH: Commissioner Bernthal?

20 COMMISSIONER BERNTHAL: Well, just to comment. I
21 guess the thing that troubles me a little bit, maybe I should
22 come back home to TMI, is that on a matter as important as the
23 TMI lower head analysis, let's forget about the fact that the
24 United States of America doesn't seem to be able to come up
25 with the small amount of money to finish that research in view

1 of all the money we've spent on the whole accident, but that's
2 not the issue here.

3 It bothers me a little bit, using that as an example,
4 that on a matter so important in research, that it really
5 starts here with our then having to go solicit instead of there
6 being a sort of international focus and I'm using that as an
7 example that, you know, that lower head is terribly important.

8 We all ought to get together on this and make sure
9 that we get everything out of that we can. It seems like it's
10 ad hoc the other direction that you have a bright idea and then
11 you go international and try and collect and solicit some
12 support for it.

13 MR. STELLO: I think it's a mixture. It is ad hoc in
14 large measure. But there is an awful lot that goes on at the
15 CSNI at the levels of people in other countries in jobs similar
16 to Eric's who get together and try to reason together, and have
17 produced some reports overall on what research is being done
18 and where there appear to be gaps.

19 COMMISSIONER BERNTHAL: That's different. I'm not
20 talking about collating or even analyzing the data being done
21 elsewhere.

22 MR. STELLO: The next step in terms of saying here
23 are some gaps or here are some things that we ought to get
24 into, that gets to be more ad hoc done by a particular country
25 coming back in.

1 To try to do that on an international plane of
2 directing in any way that research activity would be enormously
3 hard to recognize in the United States why we have substantial
4 research goes on here at the NRC. You have EPRI, that does
5 some, you have our steam suppliers and architect engineers who
6 are also doing some research.

7 And if you go to some foreign countries, the same
8 things that go on, and that gets to be information that Mr.
9 Rogers has pointed out, proprietary where the designers want to
10 hold that very close because it's in the marketplace and their
11 competing with each other. A very difficult problem.

12 COMMISSIONER BERNTHAL: I agree. And that is
13 probably not the main focus here today. Eric, you had given us
14 a summary of many different areas of research that is going on
15 in the international arena. Does research currently have a
16 systematic process, or are you planning a process for
17 systematic review of priorities that should be attached to
18 these various international commitments? Do we -- you've got
19 it all together in one place now. Is that going to have a
20 systematic careful review from time to time within your shop,
21 to determine where the priorities should be in making
22 international commitments? I don't even know what kind of
23 money we're talking about here, and some of the costs, as we
24 heard earlier, are hidden and hard to identify directly,
25 perhaps, where we supply instrumentation or expertise or

1 something. But is there any mechanism in place for doing that?

2 MR. BECKJORD: Well, prioritization has been
3 discussed for a long time. We are in the middle now of
4 prioritizing all of our safety research for the preparation of
5 the fiscal 1990 budgets.

6 COMMISSIONER BERNTHAL: I understand, yes.

7 MR. BECKJORD: And I haven't separately prioritized
8 the international cooperation, but to me, the international
9 cooperation should complement our own programs. I have always
10 felt that, you know, we should -- on the top priority things,
11 we should be looking for international cooperation and --

12 COMMISSIONER BERNTHAL: Sounds reasonable.

13 MR. BECKJORD: -- and we look at it in each area. So
14 I think that in general that what's going to come out of the
15 research prioritization for the entire program will be a better
16 guide for where we should be going, looking for international
17 agreements.

18 COMMISSIONER BERNTHAL: Well, I agree with that. It
19 seems like a rational, logical approach. You establish your
20 priorities, and then make sure the international programs fit
21 into the domestic program.

22 I have a couple other things. Someone else go ahead
23 here. I think I've said enough for a while.

24 CHAIRMAN ZECH: Commissioner Carr?

25 COMMISSIONER CARR: Yes. I only have two comments.

1 One is I think all this ought to be wrapped into the five-year
2 plan so we can look at it for the long term and see how it fits
3 into the overall goals and where we're going.

4 And the second thing is on the -- I certainly have no
5 problem with the numbers of things we do in the international
6 area. I do have some problem with numbers of travelers we send
7 to the same meetings, and I would encourage us to look, be
8 careful we send the right people and the right number of
9 people.

10 CHAIRMAN ZECH: Commissioner Rogers?

11 COMMISSIONER ROGERS: Well, I guess just on that
12 priorities thing, I guess we all know that that's a very
13 important issue, and I suppose one of the reasons for this
14 meeting was to inform us a little bit about your thinking
15 there, but there didn't seem to me to be an obvious congruence
16 between the priorities in SECY 87-310, which I guess started
17 this ball rolling in some way, that I thought were very neat
18 and tight, seven priorities that Harold Denton listed, and the
19 research program, the international program.

20 It wasn't obvious how they matched up. Maybe they
21 do, maybe they don't. And I think that again, just coming back
22 to one of those early comments that I made, that I think that
23 while I looked at those priorities in 87-310 and they looked
24 very reasonable to me and they looked very neat, they also do
25 have to scrub up against the opportunities in a sense, so that

1 your approach, Eric, sounds a reasonable one, you know, see
2 that your international programs match the priorities of
3 research in general. But I don't know how that fits against
4 the priority list that was in SECY 87-310, the seven items of
5 priorities. I just don't know. Maybe they do, maybe they
6 don't. Could you comment on that?

7 MR. DENTON: Let me start. I was looking more for
8 the future to say what should our priorities, and with all
9 plants essentially in operation, I thought we should have a
10 focus on operational safety aspects. Many of the things Eric
11 is doing relate to operational safety, but I thought that if we
12 were in a budget crunch, our main interaction with
13 international should be to keep the plants we've got operating
14 safely, and we've said that's our number one strategic goal,
15 and so that's why I put that one number one, and then I put
16 category number two, improving the safety through advanced
17 designs and further knowledge and so forth.

18 So I was trying to provide a framework for the
19 future. I think many of the programs that Eric was describing
20 were started years ago, and they're now coming to fruition.

21 COMMISSIONER ROGERS: Well, but now is the time to
22 try to bring these together in some way so that they are --
23 they do fit. Maybe they won't fit right away, but again, it's
24 -- it ties into Commissioner Carr's suggestion that this be
25 folded into the five-year plan, and there is an opportunity to

1 do that.

2 The other one is could you say just a little bit
3 about the distinction between cooperative research and just
4 contracting for research overseas? I assume that there is a
5 difference, that those processes are always not the same. You
6 may find that there is somebody overseas to actually carry out
7 a piece of research and do it much better than we have the
8 capability here, and that need not be a cooperative program,
9 that's just a contracting for research program.

10 Are those items just automatically listed under the
11 cooperative research, or are they a separate item in your
12 international programs?

13 MR. BECKJORD: No, they would be separate. That's
14 rather small. I'd have to go back -- I'm sure there are some,
15 but I don't think they are significant in dollars where we have
16 contracted separately from a cooperative program.

17 MR. STELLO: Well, I think maybe there's some
18 fuzziness there, because the shake table tests in Japan, about
19 the only place you can get them done in the world, and we're
20 funding -- giving money directly --

21 COMMISSIONER ROGERS: Yes. I'm not objecting to it,
22 I'm just raising the question of where it fits in.

23 MR. STELLO: No, but maybe we should call that a
24 contract.

25 COMMISSIONER ROGERS: I would, unless we're -- unless

1 it is, you know, truly a cooperative program, in which we are
2 --

3 MR. BECKJORD: I think it's cooperation, because I
4 don't think what we're contributing pays anywhere near the cost
5 of the tests.

6 MR. STELLO: Well, that's true, too. It's fuzzy in
7 terms of definition.

8 COMMISSIONER ROGERS: Well, it will be interesting
9 just to see what that does amount to. I wouldn't make a big
10 point of it.

11 The other concern I have is this looks so wonderful
12 and such a wonderful bargain, and I'm sure it is, that, you
13 know, there isn't really a free lunch in this world, and
14 somebody's going to decide at some point whether they're
15 getting enough back, and your list of benefits to the overseas
16 people is a very general one, but one wonders whether we in the
17 long run are planning activities which make us an attractive
18 partner in the long term future for some of this kind of thing.
19 And I'm just a little concerned about that.

20 MR. STELLO: Well, there's an easy answer to that.
21 Right now there are on the order of about 300 operating plants
22 in the world, and about 100, nexus of 100 of them in the U.S.
23 So in terms of just the operating experience, we list about a
24 dozen problems that we learned from them first. There are many
25 more than that that they have learned from us, and we give them

1 the same types of information to help them preclude having
2 those kinds of difficulties in their plants. So I think the
3 incentive is clearly there.

4 COMMISSIONER BERNTHAL: So we should be spending a
5 third of the world's expenditure for research; right?

6 MR. STELLO: Well, we --

7 COMMISSIONER ROGERS: I didn't say that.

8 [Laughter.]

9 MR. BECKJORD: We still have the largest and most
10 comprehensive program, and our experts are -- many of them are
11 regarded as the world experts. Also, as I said at the very
12 end, the fact is that the capabilities abroad are increasing
13 and the strength of their programs is increasing.

14 COMMISSIONER ROGERS: Well, this is really what I'm
15 coming to. It is indeed the case if you take a snapshot
16 picture right now, but if you ask and inquire as to what the
17 average age is of the expert in some area of nuclear technology
18 in the United States, and the age, the chronological age of
19 those folks overseas, I'd be interested in knowing what those
20 numbers are, because I think there are younger people coming in
21 overseas that are not coming in here, and that the strength of
22 our programs is based on past performance and experience,
23 rather than future expectations.

24 MR. BECKJORD: Well, you're right about that. I mean
25 we don't have to research it to --

1 [Laughter.]

2 COMMISSIONER ROGERS: I didn't really think we did.
3 But I'm concerned about that sort of thing, because while we
4 have that reservoir of expertise, it's not always going to be
5 there, and we're still looking now at another 20 or 30 years
6 for existing plants, and we want to continue to improve our
7 capabilities in safety research, and I just wonder whether the
8 situation that we are enjoying right now, which is really
9 reaping the benefits of our past performance and commitments,
10 will in fact be a situation that we could look forward to,
11 let's say, 15 years from now.

12 MR. STELLO: Why only go 15 years? Are we truly the
13 leaders today? If you look worldwide and you look at who has
14 built the latest research reactor, that can do the best
15 research, I think you'll find lots of them overseas and none of
16 them here. I don't know whether we've lost it or not, but a
17 lot of the people that I talk to, especially in the
18 universities, they are of the feeling that we have already lost
19 our leadership at that grass roots level, at the university
20 level. That's the feedback I get.

21 COMMISSIONER ROGERS: Well, I'm just saying that if
22 we're talking about safety research, and we want to be able to
23 stay in that game of reciprocity, we have to be putting
24 something up ourselves.

25 MR. STELLO: I agree.

1 COMMISSIONER ROGERS: And what I see is that we are
2 just running on our past investments, and I don't see the
3 investments in the future, and I think it's something for us
4 all to be concerned about. I think it's a very serious
5 question.

6 MR. BECKJORD: Well, I think that's a broader
7 question than just nuclear regulation and safety. It has to do
8 with the future of energy development, too, and whether there's
9 going to be --

10 COMMISSIONER ROGERS: Well, I just tried to stay out
11 of that, because I think our business is safety, and let's -- I
12 mean let's just look at what we really have to do, and whether
13 we can continue to do it. There are other questions, of
14 course, but let's just -- you know, I'm saying let's just not
15 even get into those, and can we continue to do what we should
16 be doing in delivering the best quality safety oversight in
17 this country with the kind of expectations that we might be
18 facing if you look out another 10 years.

19 CHAIRMAN ZECH: Just a couple comments.

20 As most of you know here, one of my personal
21 initiatives is to bring as much coordination to our NRC
22 activities as possible, and we are doing that. We have
23 reorganized our headquarters staff. We have put some
24 significant changes in that reorganization, one of them being
25 formation of GPA. So today we are talking about coordinating

1 in a very important matter, as far as the Commission is
2 concerned, and I do think that we are making progress, but
3 we've really just taken the first step. I think this
4 initiative is long overdue myself.

5 So we have a lot of fine people. We've got to make
6 sure that we use those people and our resources as effectively
7 as we can, so this coordination that we are talking about is
8 very real and can be -- improve our effectiveness and our
9 efficiency.

10 I appreciate the fact that it's already been
11 mentioned, the reference to the five-year plan, because I was
12 going to mention that, too. Because that's where we are again
13 coordinating and organizing and managing our activities in a
14 formal sort of way. That's important. I appreciate those
15 comments that have just been made.

16 I would also like to say that in reference in SECY
17 87-310, priorities that GPA has recommended, I would like to
18 make sure that the EDO would concur with those and comment on
19 those. So I would like to ask that we get something from the
20 Staff that would comment on those priorities and any other
21 suggested modifications that you might deem necessary, again,
22 in coordinating our staff and our GPA organization, before it
23 comes to the Commission, so I'd like that to take place.

24 I'd also like to emphasize again the importance of
25 our people representing us overseas at various conferences,

1 making sure that they check with EDO, if that's who they belong
2 to, but also check, or EDO have someone check with GPA to make
3 sure that when they go over there, they've got the Commission
4 policy, the Commission position, if we have one, so that when
5 they come back from overseas, they can not only give us the
6 feedback, but they will know ahead of time what our position
7 is. And so that again is coordinated.

8 It is important that we have people going overseas
9 representing us internationally that the Commission knows what
10 the position is going to be, they know the position, and we
11 have an obligation to assist in that regard.

12 So I think in that way we can improve what has taken
13 place in the past. And again, the feedback is important.
14 We've got to find out what happened and we need a better
15 feedback system, I think. I know it's being developed, and
16 Harold, you have been instrumental in attempting to take
17 initiative in that regard, and I'd like that to proceed with
18 some degree of vigor.

19 We haven't talked too much, although just a little
20 bit, about the other parts of our organization, for example,
21 NRR, and NMSS. We have a very strong, as we saw from the --
22 some of the charts, a very strong part of this program, we have
23 focused on research, but appropriately so, research has a lot
24 of things that have been going on overseas for a long time.
25 But I am also aware, and I know my colleagues are, too, that in

1 NRR there is an awful lot of important international
2 negotiations and things going on that we participate in, and
3 that take place from time to time.

4 They have equal importance to the research program,
5 in my judgment, and NMSS, especially in the waste area, as we
6 go into that important field now, and as we noted from one of
7 your slides of other nations, we are coordinating in waste
8 activities, but that also should be not put down too low on the
9 priority list, because those are important programs. So the
10 EDO has other responsibilities that we haven't talked too much
11 about today, but I just wanted to emphasize that the Commission
12 is well aware that those are important responsibilities, too.

13 Are there other questions? Commissioner Bernthal, I
14 believe you had a question.

15 COMMISSIONER BERNTHAL: I just want to make a comment
16 or two, and I will try to couch things in terms of comments
17 here, rather than questions, so we can finish up.

18 I agree with the comments of a couple of people on
19 this side of the table about the priority list that, Harold,
20 you sent to the Commission. It reflects a good deal of
21 thought, and I agree that the EDO should also comment on that.

22 The last two of those items, I guess, once again I
23 would stress that -- I guess I'm getting lost in the
24 organization there. II and III, those last two items, there's
25 a good deal there more than meets the eye in terms of things

1 that the Chairman had mentioned earlier, coordination and
2 implementing a structure for making sure all these wonderful
3 things happen. And I will just leave it at that. I am very
4 interested, though, in hearing EDO's comments and exactly how
5 we are going to make it all happen.

6 Let me just throw out a few items here that, without
7 discussing them and answering them today, it seems to me we
8 ought to be thinking about, and at some point I think the Staff
9 should respond to the Commission on. One is -- well, I don't
10 need to say that, it's already been said, the question of
11 Commission policy, and whether there's a mechanism to make sure
12 that's implemented abroad.

13 I would also ask the extent to which GPA and EDO have
14 been or now can in the future coordinate in respect to foreign
15 travel and make sure that those things are reviewed on some
16 sort of priority basis. One item that has not been mentioned
17 is that of contractor foreign travel, and whether similar
18 standards apply there, what mechanisms are in place to make
19 sure that we're getting the most for our money, and that we get
20 the best people to the right meetings.

21 I would also urge that there be some mechanism put in
22 place for regular reporting of Staff foreign travel. In other
23 words, they go somewhere, they find out something that's
24 important, we don't need to be deluged here with a lot of
25 paper, but I would hope GPA, in working with the EDO, perhaps,

1 can pinpoint things that are important so the Commission sees
2 them. And a similar statement would apply, I guess, to
3 international developments in different forums that I think
4 Harold and IP now are beginning to pay more attention to.

5 I would also like to point out that the memo that you
6 sent down here, somebody sent down here not so long ago, listed
7 40 international activities in the next six months that we're
8 either participating in or supporting at one level or another.
9 Again I get back to priorities and making sure that we ought to
10 be doing all these things. Maybe we should be doing more, I
11 don't know, but let's make sure these aren't accidents.

12 I guess that's it. Those are just a few items that I
13 hope we address.

14 CHAIRMAN ZECH: All right. Any other comments from
15 my fellow Commissioners?

16 Well, let me thank you --

17 COMMISSIONER ROGERS: If I could just say --

18 CHAIRMAN ZECH: Please.

19 COMMISSIONER ROGERS: Because I think this has been a
20 very useful and informative meeting. I think it's been very
21 constructive, and I think that it's been very helpful to me,
22 and I appreciate it very much.

23 COMMISSIONER BERNTHAL: It was a good briefing.

24 CHAIRMAN ZECH: I was going to say the same thing,
25 but I might take another minute and say it, anyway.

1 Harold, I think you have taken on a terrific
2 responsibility here for us in helping us coordinate these
3 important international programs, as well as the state
4 programs, which we haven't discussed here at all today, as well
5 as coordinating the public affairs and Congressional affairs
6 matters, too.

7 But it's a new role. I think you moved out with the
8 help of your office directors in a very commendable manner. We
9 are feeling our way a bit. The purpose of this meeting is
10 really to assist you, make sure you understand what the
11 Commission wants. But I think you have done a very fine job,
12 and I commend you for that.

13 I'd also like to compliment you, Vic, and the way
14 your people have worked with this new organization. Today we
15 have heard from Eric Beckjord, and I believe that -- I've been
16 very encouraged by what I've heard. I feel like we are
17 bringing things together, we are bringing things to the
18 Commission that will be important, and we will coordinate our
19 activities better.

20 So I am very encouraged, too, and I want to
21 compliment all of you for your efforts to attempt to make our
22 organization better coordinated and to assist the Commission in
23 making the best policy decisions we can in the international
24 area, as well as other areas.

25 All right. With that, we will stand adjourned.

1 Thank you very much.

2 [Whereupon, at 11:50 o'clock a.m., the meeting was
3 adjourned.]

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1
2 REPORTER'S CERTIFICATE
3

4 This is to certify that the attached events of a
5 meeting of the U.S. Nuclear Regulatory Commission entitled:
6

7 TITLE OF MEETING: NRC Participation in International Agreements
and Research Programs

8 PLACE OF MEETING: Washington, D.C.

9 DATE OF MEETING: Friday, March 18, 1988.
10

11 were held as herein appears, and that this is the original
12 transcript thereof for the file of the Commission taken
13 stenographically by me, thereafter reduced to typewriting by
14 me or under the direction of the court reporting company, and
15 that the transcript is a true and accurate record of the
16 foregoing events.
17

18 Marilynn M. Nations
Marilynn M. Nations
19
20
21

22 Ann Riley & Associates, Ltd.
23
24
25

NRC'S INTERNATIONAL ACTIVITIES AND RESEARCH PROGRAMS

COMMISSION BRIEFING

MARCH 18, 1988

BRIEFING OUTLINE

- I. OVERVIEW OF NRC'S INTERNATIONAL PROGRAM
-- J. SHEA, GPA/IP
- II. DESCRIPTION OF NRC'S INTERNATIONAL RESEARCH ACTIVITIES
-- E. BECKJORD, RES
- III. CLOSING COMMENTS
-- V. STELLO, EDO

FOREIGN POLICY FRAMEWORK

NRC CARRIES OUT ITS INTERNATIONAL ACTIVITIES WITHIN THE
OVERALL FOREIGN POLICY CONTEXT SET BY STATE DEPARTMENT.

NRC'S INTERNATIONAL GOALS

SAFETY

- ° GAIN ACCESS TO FOREIGN DATA AND RESOURCES TO IMPROVE THE SAFETY OF NRC-LICENSED FACILITIES AND MATERIALS
- ° ENHANCE NUCLEAR SAFETY PRACTICES WORLDWIDE, ESPECIALLY IN THE USE OF U.S.-SUPPLIED POWER REACTOR TECHNOLOGY

EXPORT/SAFEGUARDS

- ° CONTROL EXPORTS OF NUCLEAR-RELATED COMMODITIES AND CONSULT ON EXPORT ACTIONS OF OTHER AGENCIES
- ° IMPROVE INTERNATIONAL SAFEGUARDS AND PHYSICAL SECURITY MEASURES
- ° IMPLEMENT AGREEMENT TO APPLY IAEA SAFEGUARDS TO NRC-LICENSED NUCLEAR FACILITIES

STATUTORY BASES

CARRIES OUT STATUTORY PURPOSE

SUPPORTS USG FOREIGN POLICY OBJECTIVES
AND INDIRECTLY SUPPORTS STATUTORY
PURPOSE

SPECIFIC STATUTORY REQUIREMENTS

CARRIES OUT STATUTORY PURPOSE AND
SUPPORTS USG NATIONAL SECURITY OBJECTIVES

USG/IAEA SAFEGUARDS AGREEMENT; ALSO
SUPPORTS USG OBJECTIVES

CURRENT PARTNERS IN SAFETY COOPERATION AND MAJOR FORMS OF COOPERATION

° BILATERALS WITH ALL MAJOR NUCLEAR POWER COUNTRIES/AREAS EXCEPT USSR, EASTERN EUROPE AND CANADA

- WORLDWIDE NETWORK OF DIRECT CONTACTS IN SAFETY AGENCIES
- TWO-WAY FLOW OF INCIDENT DATA AND OTHER INFORMATION
- CONSULTATIONS ON REGULATORY ISSUES
- EMERGENCY PLANNING
- RESEARCH COOPERATION
- TECHNICAL ASSISTANCE AND TRAINING
- FOREIGN ASSIGNEES

° IAEA (GLOBAL MEMBERSHIP)

- OSART PROGRAM
- INTERNATIONAL SAFETY PRINCIPLES AND STANDARDS (INSAG)
- U.S. "COST-FREE" EXPERTS
- INTERNATIONAL NUCLEAR SAFETY CONFERENCES AND MEETINGS

° OECD/NEA (W. EUROPE, CANADA, JAPAN, AUSTRALIA, U.S.)

- INCIDENT REPORTING SYSTEM
- STANDING COMMITTEES ON SAFETY, RADIATION PROTECTION AND WASTE MANAGEMENT, THIRD PARTY LIABILITY
- INTERNATIONAL CONFERENCES AND TECHNICAL MEETINGS

NRC STAFF SUPPORT

	BILATERAL	IAEA	NEA
NRR	ABWR-JAPAN USSR/CHERNOBYL ADVICE TO FOREIGN COUNTRIES FOREIGN ASSIGNEES	OSART MISSIONS REACTOR SAFETY MEETINGS ADVISORS TO KOREA, MEXICO, CHINA AND EGYPT POST-CHERNOBYL PROGRAM	LICENSING SUBCOMMITTEE OF CSNI CONTAINMENT VENTING
RES	PIPING INTEGRITY SEISMIC-JAPAN STEAM GENERATORS SEVERE ACCIDENTS PLANT AGING THERMAL HYDRAULIC CODES	SAFETY STANDARDS PRA - NUREG 1150 POST-CHERNOBYL PROGRAM	SAFETY COMMITTEE PRINCIPAL WORKING GROUPS
AEOD	INCIDENT ANALYSIS TRAINING COURSES EMERGENCY COOPERATION FOREIGN ASSIGNEES	INCIDENT REPORTING AND ANALYSIS TRAINING SUPPORT	PRINCIPAL WORKING GROUP
NMSS	SAFEGUARDS ASSESSMENTS PHYSICAL SECURITY TRANSPORTATION CASKS MATERIALS SAFETY	SAFEGUARDS IMPROVEMENTS US VOLUNTARY OFFER RADIATION PROTECTION MISSIONS SAFEGUARDS ADVISOR-US MISSION	RADIATION PROTECTION WASTE MANAGEMENT FUEL CYCLE SAFETY
REGIONS	FOREIGN ASSIGNEES FERMI II/CANADA ASSISTANCE TO MEXICO	OSART MISSIONS ADVISORS TO KOREA AND MEXICO	
ACRS	EXCHANGE MEETINGS WITH FOREIGN COUNTERPARTS		
GPA	POLICY DEVELOPMENT AND COORDINATION FOR ALL NRC'S INTERNATIONAL ACTIVITIES		

COORDINATION AND APPROVAL OF NRC'S FORMAL INTERNATIONAL COMMITMENTS

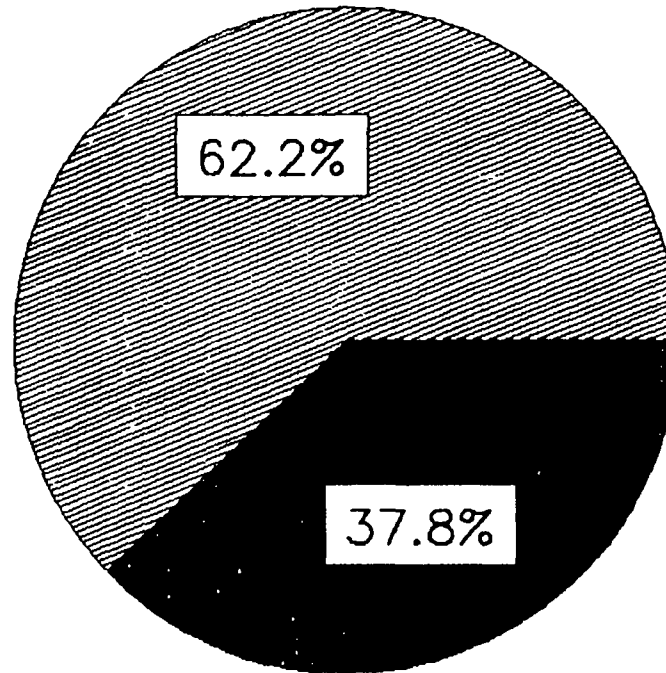
CURRENT COMMISSION INVOLVEMENT

<u>ACTIVITY</u>	<u>INFO</u>	<u>APPROVAL</u>	<u>SIGNATURE</u>
MAJOR EXPORT/IMPORT LICENSES	ALL	THOSE NOT DELEGATED	DELEGATED TO STAFF
REGULATORY EXCHANGE AGREEMENTS	ALL	MOST	MOST
RESEARCH COOPERATION AGREEMENTS	ALL	FEW	OCCASIONAL

RESOURCES BY INTERNATIONAL PROGRAM AREA

45 STAFF FTEs

SAFETY COOPERATION



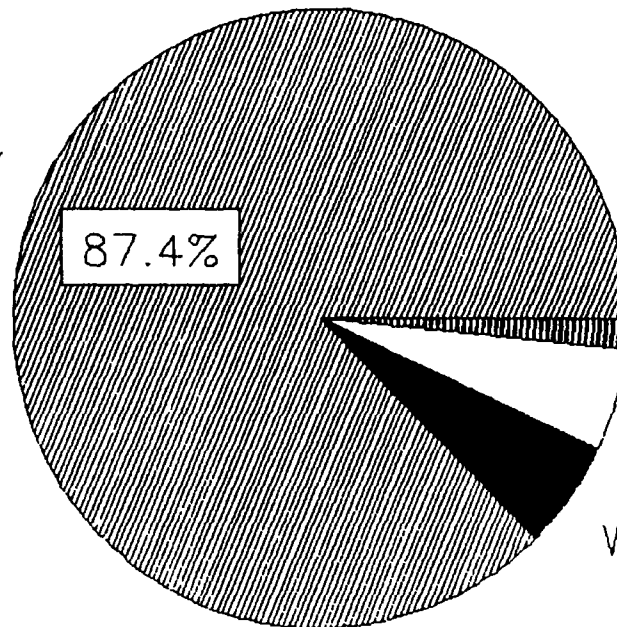
EXPORTS & INTL SAFEGUARDS

(1.5% OF NRC STAFF RESOURCES)

NRC FOREIGN TRAVEL

PURPOSE
FY 1987

REACTOR SAFETY



MATERIAL SAFETY 1.5%
EXP & INT'L SGDS 5.4%

WASTE 5.7%

TRIPS

CURRENT MANAGEMENT OVERSIGHT FOR NRC'S
INTERNATIONAL ACTIVITIES

COMMISSION

- AS ISSUES ARISE, THE COMMISSION REVIEWS, AND DECIDES UPON, INTERNATIONAL POLICY MATTERS. REVIEWS ARE SOMETIMES INITIATED BY COMMISSION AND SOMETIMES BY STAFF.

GPA

- INFORMS COMMISSION AND EDO OF SIGNIFICANT INTERNATIONAL DEVELOPMENTS AND RECOMMENDS ACTIONS AS APPROPRIATE.
- ENSURES USG POLICIES ON INTERNATIONAL ISSUES OF NRC CONCERN ARE MADE KNOWN TO THE COMMISSION AND EDO.
- ASSISTS COMMISSION IN DEVELOPING POLICIES AND PRIORITIES IN THE INTERNATIONAL AREA AND HELPS ASSURE NRC ACTIVITIES ARE IN ACCORD WITH THESE POLICIES AND PRIORITIES.
- COORDINATES WITH EDO AS APPROPRIATE.

EDO

- IMPLEMENTS COMMISSION GUIDANCE PROGRAMMATICALLY FOR INTERNATIONAL MATTERS AND WHEN REPRESENTING NRC INTERNATIONALLY.
- REVIEWS AND APPROVES STAFF RESOURCE COMMITMENTS FOR INTERNATIONAL PURPOSES (E.G., FOREIGN TRAVEL).
- ADVISES COMMISSION OF FOREIGN SAFETY INFORMATION AND EXPERIENCE AND THEIR RELEVANCE TO DOMESTIC ACTIVITIES.
- SUPPORTS COMMISSION POLICIES IN IMPLEMENTATION OF INTERNATIONAL ACTIVITIES.

RECOMMENDATIONS

- GPA, IN COORDINATION WITH EDO, INFORM COMMISSION OF INTERNATIONAL ACTIVITIES OF POTENTIAL POLICY SIGNIFICANCE, WITH APPROPRIATE RECOMMENDATIONS, AND PERIODICALLY ASSESS ALL INTERNATIONAL ACTIVITIES TO ASSURE COMMISSION OBJECTIVES ARE MET.
- GPA SEND THE COMMISSION, FOR REVIEW AND APPROVAL, PROPOSED AGREEMENTS WITH NEW COUNTRIES AND AGREEMENTS REQUIRING SIGNIFICANT NEW NRC RESOURCE COMMITMENTS OR HAVING POLICY SIGNIFICANCE.
- EDO PREPARE ANNUAL REPORT TO THE COMMISSION ON CURRENT AND FUTURE INTERNATIONAL REGULATORY AND RESEARCH COMMITMENTS.
- COMMISSION DECIDE ON NRC'S INTERNATIONAL PRIORITIES AFTER EVALUATING ALL INFORMATION.

OFFICE OF NUCLEAR REGULATORY RESEARCH

NRC PARTICIPATION IN INTERNATIONAL AGREEMENTS AND RESEARCH PROGRAMS

COMMISSION BRIEFING

MARCH 18, 1988

ERIC S. BECKJORD, DIRECTOR
OFFICE OF NUCLEAR REGULATORY RESEARCH

OFFICE OF NUCLEAR REGULATORY RESEARCH

NRC PARTICIPATION IN INTERNATIONAL AGREEMENTS AND RESEARCH PROGRAMS

OUTLINE

I. RESEARCH PROGRAM RESPONSIBILITIES WITHIN THE NRC

II. INTERNATIONAL NUCLEAR SAFETY RESEARCH COOPERATION

- RATIONALE FOR SAFETY RESEARCH COOPERATION
- AUTHORITY/COMMISSION PLANNING AND GUIDANCE
- FOREIGN RESEARCH COOPERATION OBJECTIVES
- FOREIGN RESEARCH COOPERATION BENEFITS

III. SUMMARY

OFFICE OF NUCLEAR REGULATORY RESEARCH
INTERNATIONAL COOPERATIVE ACTIVITIES

RES RESPONSIBILITIES WITHIN THE USNRC

- ° THE PURPOSE OF THE NRC'S OFFICE OF NUCLEAR REGULATORY RESEARCH IS TO DEVELOP THE NECESSARY TECHNICAL INFORMATION BASE NEEDED TO MAKE SOUND REGULATORY DECISIONS.
- ° APPROACH DEFINED IN NUCLEAR REGULATORY RESEARCH PHILOSOPHY (STRATEGIC PLAN; NAS REPORT RESPONSE)
- ° PROGRAMS DESCRIBED IN 5 YEAR PLAN
- ° PROGRAM STRUCTURE:
THE NRC NUCLEAR REGULATORY RESEARCH IS DIVIDED INTO FIVE PROGRAM CATEGORIES:
 1. INTEGRITY OF REACTOR COMPONENTS
 2. PREVENTING DAMAGE TO REACTOR CORES
 3. REACTOR CONTAINMENT PERFORMANCE AND PUBLIC PROTECTION FROM RADIATION
 4. CONFIRMING SAFETY OF NUCLEAR WASTE DISPOSAL, AND
 5. RESOLVING SAFETY ISSUES AND DEVELOPING REGULATIONS

OFFICE OF NUCLEAR REGULATORY RESEARCH
INTERNATIONAL COOPERATIVE ACTIVITIES

INTERNATIONAL NUCLEAR SAFETY RESEARCH COOPERATION

- ° INTERNATIONAL SAFETY RESEARCH COOPERATION IS A VITAL PART OF THE NRC PROGRAM.
- ° COOPERATIVE RESEARCH COMPLEMENTS AND SUPPORTS NRC PROGRAMS.
- ° THE NRC PARTICIPATES IN INTERNATIONAL COOPERATIVE PROGRAMS TO EXPAND AND IMPROVE ON THE QUALITY OF SAFETY RESEARCH RESULTS NECESSARY TO MAKE SOUND TECHNICAL REGULATORY DECISIONS IN A COST EFFECTIVE MANNER.
- ° INTERNATIONAL COOPERATIVE RESEARCH PROGRAMS BENEFIT THE NRC SAFETY RESEARCH PROGRAMS BY PROVIDING ACCESS TO:
 - FOREIGN RESEARCH FACILITIES
 - FOREIGN SCIENTIFIC PERSONNEL AND
 - FOREIGN RESEARCH RESULTS

OFFICE OF NUCLEAR REGULATORY RESEARCH
INTERNATIONAL COOPERATIVE ACTIVITIES

FOREIGN INVOLVEMENT AUTHORIZED BY:

1. COMMISSION 1987 POLICY AND PLANNING GUIDANCE-NUREG-0885 (SEC.F. 5)
2. NRC CONGRESSIONAL AUTHORIZATION OF APPROPRIATIONS BILLS FOR FY 88 AND FY 89
3. COOPERATIVE AGREEMENTS RECEIVE NRC STAFF REVIEW AND U.S. STATE DEPARTMENT REVIEW AND AUTHORIZATION PRIOR TO NRC SIGNATURE

OFFICE OF NUCLEAR REGULATORY RESEARCH
INTERNATIONAL COOPERATIVE ACTIVITIES

FOREIGN RESEARCH COOPERATION OBJECTIVES

THE NRC POLICY OF COOPERATING WITH OTHER COUNTRIES IS DESIGNED TO ACCOMPLISH THE FOLLOWING OBJECTIVES:

1. EXCHANGE INFORMATION TO EXPAND NRC TECHNICAL DATA BASE
2. ORGANIZE AND JOIN FOREIGN SAFETY RESEARCH PROGRAMS TO MAKE OPTIMUM USE OF OUR OWN RESOURCES AND ENHANCE OUR RESEARCH CAPABILITIES
3. PARTICIPATE IN COOPERATIVE PROJECTS TO SHARE IN THE EXPERIMENTAL AND ANALYTICAL RESULTS GENERATED BY FOREIGN RESEARCH GROUPS
4. PROVIDE SAFETY INFORMATION TO COUNTRIES USING OR CONTEMPLATING THE USE OF U.S. NUCLEAR TECHNOLOGY, AND
5. INTERACT WITH INTERNATIONAL ORGANIZATIONS CONCERNED WITH NUCLEAR SAFETY TO PRESENT OUR RESEARCH RESULTS AND OBTAIN EXPERT REVIEW

OFFICE OF NUCLEAR REGULATORY RESEARCH INTERNATIONAL COOPERATIVE ACTIVITIES

	COUNTRY																			
	Australia	Belgium	Canada	Finland	France	F.R. Germany	Italy	Japan	Korea	Mexico	Netherlands	Norway	Philippines	Spain	Sweden	Switzerland	AIT	U.K.	Yugoslavia	OECD/CEC
General Research Cooperation					*	*		*		*	*			*				*	*	*
Integrity of Reactor Components			*		*	*	*	*							*	*	*	*		*
Preventing Damage to Reactor Cores		*		*	*	*	*	*	*		*	*	*	*	*	*	*	*		*
Reactor Containment Performance & Public Protection from Radiation		*	*	*	*	*	*	*	*		*	*	*	*	*	*	*	*		*
Confirming Safety of Nuclear Waste Disposal	*				*			*							*	*				
Resolving Safety Issues and Developing Regulations																				

OFFICE OF NUCLEAR REGULATORY RESEARCH
INTERNATIONAL COOPERATIVE ACTIVITIES

I. FOREIGN FINANCIAL CONTRIBUTIONS TO RES PROGRAMS

<u>PROGRAM</u>	<u>FY 87</u>	<u>FY 88</u>
IPIRG (PIPING INTEGRITY)*	\$1,100K	\$1,100K
SEVERE ACCIDENTS AND CONTAINMENT LOADING*	\$3,235K	\$3,085K
ADVANCED CODE DEVELOPMENT (AFDM, CONTAIN)*	\$0,640K	\$0,520K (PROJECTED)
SEISMIC STUDIES (FRANCE)	\$ -	\$0,085K
PLANT ANALYZER DEVELOPMENT (SPAIN, AIT)	<u>\$0,050K</u>	<u>\$0,350K</u> (PROJECTED)
* (SEVERAL COUNTRIES PARTICIPATE)		
TOTALS	\$5,025K	\$5,140K

II. NRC FINANCIAL CONTRIBUTIONS TO FOREIGN PROGRAMS

HALDEN REACTOR PROJECT (OECD)	\$0,766K	\$0,766K
SYSTEMS ANALYSIS AND RISK ASSESSMENT (UK)	\$0,085K	\$0,090K
HDR SEISMIC PROGRAM (FRG)	\$0,040K	\$0,100K
TADOTSU SEISMIC PROGRAM (JAPAN)	\$0,100K	\$0,350K
ALLIGATOR RIVERS ANALOGUE PROJECT (OECD)	<u>\$ -</u>	<u>\$0,150K</u>
TOTALS	\$0,991K	\$1,456K

OFFICE OF NUCLEAR REGULATORY RESEARCH

INTERNATIONAL COOPERATIVE ACTIVITIES

PROGRAM CATEGORY: INTEGRITY OF REACTOR COMPONENTS

SIGNIFICANT COOPERATIVE ACTIVITIES SUPPORTING THIS PROGRAM CATEGORY

- ° IPIRG - INTERNATIONAL PIPING INTEGRITY RESEARCH GROUP
(SEVEN COUNTRIES PARTICIPATE)
- ° PROGRAM FOR THE INSPECTION OF STEEL COMPONENTS (OECD)
- ° CHARACTERIZATION OF IRRADIATED PRESSURE VESSEL MATERIALS (UK AND GERMANY)
- ° SEISMIC SAFETY RESEARCH COOPERATION (JAPAN, GERMANY, FRANCE, AND CANADA)
- ° TMI-2 REACTOR BOTTOM VESSEL EXAMINATION PROGRAM (OECD) - UNDER DISCUSSION

OFFICE OF NUCLEAR REGULATORY RESEARCH

INTERNATIONAL COOPERATIVE ACTIVITIES

SEISMIC SAFETY RESEARCH COOPERATION

TADOTSU SEISMIC PROGRAM: IN COOPERATION WITH JAPAN WE ARE PRESENTLY PERFORMING 1/3 SCALE MODEL PWR REACTOR COOLANT SYSTEM VIBRATION TESTS INTO THE INELASTIC RANGE.

THE NRC PROGRAM IS ONE OF A SERIES OF EIGHT EXPERIMENTS BEING CONDUCTED BY THE JAPANESE TO STUDY THE SEISMIC RESPONSE OF LARGE REACTOR COMPONENTS MODELS OF:

- CONTAINMENT VESSELS (1/3.75 SCALE)
- PRIMARY COOLANT LOOPS (1/2 SCALE)
- REACTOR VESSELS (1/2 SCALE) AND
- REACTOR INTERNALS (FULL SCALE) FOR BOTH PWRS AND BWRS

TOTAL COST TO THE JAPANESE OF THIS 6-YEAR PROGRAM: >\$500 MILLION (INCLUDES \$200 MILLION TO BUILD GIANT SEISMIC VIBRATION TABLE)

NRC COST IN THIS PROGRAM: <\$1 MILLION

BENEFIT TO NRC:

- OBTAIN SEISMIC FRAGILITY MEASUREMENTS ON MAJOR COMPONENTS
- VALIDATION OF SEISMIC CODES

OFFICE OF NUCLEAR REGULATORY RESEARCH

INTERNATIONAL COOPERATIVE ACTIVITIES

INTERNATIONAL PIPING INTEGRITY RESEARCH GROUP (IPIRG)

EXAMPLES OF DATA OBTAINED VIA IPIRG:

- . DYNAMIC LOADING PIPE FRACTURE (JAPAN)
- . QUASI-STATIC LOADING PIPE FRACTURE (JAPAN, FRANCE, CANADA)
- . AGED CAST STAINLESS STEEL MATERIAL (FRANCE)
- . LEAK RATE AS A FUNCTION OF CRACK SIZE AND LOAD (CANADA, JAPAN, UK)

BENEFIT TO NRC:

- . GAINING CRITICAL TECHNICAL INFORMATION WITHOUT EXPENDING RESOURCES
- . JOINT FUNDING OF LARGE TEST FACILITY AND DEVELOPMENT OF CRITICAL PIPE FRACTURE TEST DATA
- . INTERNATIONAL CONSENSUS ON LEAK-BEFORE-BREAK TECHNOLOGY

OFFICE OF NUCLEAR REGULATORY RESEARCH

INTERNATIONAL COOPERATIVE ACTIVITIES

PROGRAM CATEGORY: PREVENTING DAMAGE TO REACTOR CORES

SIGNIFICANT COOPERATIVE ACTIVITIES SUPPORTING THIS PROGRAM CATEGORY:

- ° THERMAL HYDRAULIC RESEARCH AND COMPUTER CODES ANALYSIS
 - ROSA-IV PROGRAM (JAPAN)
 - 2D/3D PROGRAM (JAPAN/FEDERAL REPUBLIC OF GERMANY)
 - BETHSY TEST FACILITY (FRANCE)
 - SPES AND GEST-GEN (ITALY)
 - ICAP INTERNATIONAL CODE ASSESSMENT AND APPLICATIONS PROGRAM
(12 COUNTRIES PARTICIPATE)
- ° COMMISSION OF EUROPEAN COMMUNITIES (CEC) HUMAN RELIABILITY BENCHMARK EXERCISE
- ° MULTI-NATIONAL MAPPS CODE CASE STUDY (CEC SPONSORSHIP)
(MAPPS - MAINTENANCE PERSONNEL PERFORMANCE SIMULATION)
- ° DEVELOPMENT OF COMMON CAUSE FAILURE ANALYSIS METHODS (UK)
- ° ACCIDENT MANAGEMENT COOPERATION (BMU-GERMANY)

OFFICE OF NUCLEAR REGULATORY RESEARCH

INTERNATIONAL COOPERATION ACTIVITIES

DEVELOPMENT OF 2D/3D COOPERATIVE EXPERIMENTAL PROGRAM

- . GERMANY BUILT LARGE SCALE TEST FACILITY: UPPER PLENUM TEST FACILITY (UPTF)
- . JAPAN BUILT TWO INTERMEDIATE SCALE TEST FACILITIES
- . NRC SCOPE: CODES, ADVANCED INSTRUMENTATION, DATA ACQUISITION SYSTEMS
- . JAPAN INPUT THROUGH 1988: \$120M
- . F.R. GERMANY INPUT THROUGH 1988: \$180M
- . NRC INPUT THROUGH 1988: \$85M

BENEFIT OF COOPERATIVE PROGRAM TO NRC:

- . FULL SCALE DATA USED TO SUPPORT REALISTIC ANALYSIS OF LOCA:
REVISION TO 10 CFR 50 APPENDIX K

OFFICE OF NUCLEAR REGULATORY RESEARCH

INTERNATIONAL COOPERATION ACTIVITIES

PROGRAM CATEGORY: REACTOR CONTAINMENT PERFORMANCE AND
PUBLIC PROTECTION FROM RADIATION

SIGNIFICANT COOPERATIVE PROGRAMS SUPPORTING THIS PROGRAM CATEGORY

- ° CONTAINMENT INTEGRITY (UK, FRANCE, GERMANY AND OTHERS)
- ° INTERNATIONAL SEVERE ACCIDENTS AND CONTAINMENT LOADS RESEARCH GROUP
(12 COUNTRIES PARTICIPATE)
 - EXPERIMENTAL PROGRAM
 - CODE DEVELOPMENT AND ASSESSMENT

OFFICE OF NUCLEAR REGULATORY RESEARCH

INTERNATIONAL COOPERATIVE ACTIVITIES

PROGRAM CATEGORY: CONFIRMING SAFETY OF NUCLEAR WASTE DISPOSAL

SIGNIFICANT COOPERATIVE ACTIVITIES SUPPORTING THIS PROGRAM CATEGORY

- ° COOPERATIVE INFORMATION EXCHANGE AGREEMENTS WITH FRANCE, JAPAN AND SWITZERLAND,
- ° INTERNATIONAL STUDY GROUPS (HYDROCOIN AND INTRAVAL) ORGANIZED BY SWEDEN,
- ° INTERNATIONAL ALLIGATOR RIVERS ANALOGUE PROJECT - AN AUSTRALIAN PROJECT SPONSORED BY THE OECD, AND
- ° COOPERATIVE PROJECTS WITH CANADA AND THE UNITED KINGDOM - UNDER DISCUSSION.

OFFICE OF NUCLEAR REGULATORY RESEARCH
INTERNATIONAL COOPERATIVE ACTIVITIES

FOREIGN NUCLEAR SAFETY REGULATORY RESEARCH PHILOSOPHY

THE USNRC HAS BENEFITED FROM FOREIGN SAFETY RESEARCH/REGULATORY APPROACH AND PHILOSOPHY.

- ° EXAMPLES OF SAFETY ISSUES IDENTIFIED OVERSEAS FIRST
 - REACTOR COOLANT PUMP SEAL FAILURE
 - IN-CORE INSTRUMENT TUBE VIBRATION IN BWR
 - STEAM GENERATOR TUBE VIBRATION
- ° EXAMPLES OF INFORMATION/INSIGHTS FROM FOREIGN APPROACHES TO RESOLVING GENERIC ISSUES
 - FRENCH APPROACH TO RESOLVING BLACKOUT AND THE DEVELOPMENT OF SEVERE ACCIDENTS PROCEDURES
 - U.K. APPROACH TO RESOLVING PWR RELATED GENERIC ISSUES FOR THE SIZEWELL B PLANT
 - SWEDISH APPROACH TO IDENTIFYING PLANT SPECIFIC VULNERABILITIES AND DECISIONS ON HOW TO HANDLE THEM

OFFICE OF NUCLEAR REGULATORY RESEARCH
INTERNATIONAL COOPERATIVE ACTIVITIES

BENEFITS OF NUCLEAR SAFETY RESEARCH COOPERATION

THE NRC HAS RESEARCH COOPERATION AGREEMENTS WITH NEARLY ALL WESTERN COUNTRIES WHICH HAVE SIGNIFICANT NUCLEAR POWER PROGRAMS.

BENEFITS FROM FOREIGN RESEARCH COOPERATION:

1. ALLOWS NRC TO EXPAND OR CONTINUE SAFETY RESEARCH PROGRAMS AT A HIGHER LEVEL OF EFFORT THAN WOULD BE POSSIBLE WITH ONLY DOMESTIC RESOURCES,
2. THE FOREIGN TECHNICAL COOPERATION PROVIDES THE NRC WITH AN INDEPENDENT TECHNICAL EXPERT REVIEW OF NRC RESEARCH PROGRAMS,
3. FOREIGN RESEARCH COOPERATION PROVIDES THE NRC VALUABLE FEEDBACK ON SAFETY PHILOSOPHY AND APPROACH TO SAFETY RESEARCH PROBLEMS.

OFFICE OF NUCLEAR REGULATORY RESEARCH
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SAFETY RESEARCH COOPERATION BENEFITS TO FOREIGN GROUPS

BENEFITS TO FOREIGN GROUPS

- ° MOST WESTERN COUNTRIES JOIN OUR NUCLEAR SAFETY RESEARCH ACTIVITIES BECAUSE THEY WISH TO MAXIMIZE THEIR OWN RESEARCH PROGRAMS.
- ° THESE COUNTRIES REGARD THE NRC AS THE LEADER IN MANY SAFETY RESEARCH AREAS SUCH AS MATERIALS AND SEVERE ACCIDENTS AND CONTAINMENT LOADING RESEARCH, RISK ASSESSMENT, ETC.
- ° IN SOME INSTANCES FOREIGN GROUPS ARE WILLING TO COMBINE THEIR RESOURCES WITH OURS IN ORDER TO ACCOMPLISH THEIR SAFETY RESEARCH OBJECTIVES IN A COST EFFECTIVE MANNER.

OFFICE OF NUCLEAR REGULATORY RESEARCH
INTERNATIONAL COOPERATIVE ACTIVITIES

SUMMARY

NUCLEAR SAFETY RESEARCH COOPERATION

- ° EXPANDS THE NUCLEAR SAFETY DATABASE ON COMMON SAFETY PROBLEMS
- ° MAKES BETTER USE OF EXPENSIVE RESEARCH FACILITIES AND RESOURCES
- ° MAKES OPTIMUM USE OF THE LIMITED SCIENTIFIC AND ENGINEERING PERSONNEL AVAILABLE TO WORK ON NUCLEAR SAFETY WORLD-WIDE
- ° ALLOWS SMALLER COUNTRIES WITH A LIMITED NUCLEAR POWER PROGRAM TO HAVE ACCESS TO VITAL NUCLEAR SAFETY RESEARCH INFORMATION
- ° SAFETY ENHANCEMENT OF LWR NUCLEAR POWER PLANTS WORLD-WIDE