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NUCLEAR REGULATORY COMMISSION

ORIGINAL

COMMISSION MEETING
RETURN TO SECRETARIAT RECORDS

In the Matter of: DISCUSSION OF OPERATIONAL DATA EVALUATION

DATE: December 21, 1981 PAGES: 1 - 95

AT: Washington, D. C.

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RETURN TO SECRETARIAT RECORDS

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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DISCUSSION OF OPERATIONAL DATA EVALUATION

Room 1130
1717 H Street, N. W.
Washington, D. C.

Monday, December 21, 1981

The Commission meeting was convened, pursuant to notice, at 2:03 p.m., NUNZIO PALLADINO, Chairman of the Commission, presiding.

PRESENT:

COMMISSIONERS:

- NUNZIO PALLADINO, Chairman
- JOHN AHEARNE
- PETER BRADFORD
- VICTOR GILINSKY
- THOMAS ROBERTS

COMMISSION STAFF:

- SAMUEL CHILK, Secretary
- LEONARD BICKWIT, General Counsel
- FORREST REMICK
- HAROLD DENTON
- CARL MICHELSON
- ROBERT BERNERO
- ED JORDAN
- JACK HELTEMES
- JOHN DAVIS

DISCLAIMER

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1 reaching some of the goals depends on getting people who may
2 not be available in the near future. With a limited staff,
3 I'm concerned about whether the distribution of effort that
4 we now have will best meet the original office charter.

5 And I was concerned that we at least revisit this,
6 now that the office has been set up for some time. I
7 recognize that there have been a number of good products,
8 excellent products that have come out, and that the workload
9 required always is, as typical of any office that is
10 functioning well, that workload vastly exceeds the finite
11 amount of time that is available to do it all; that
12 nevertheless one of the driving forces, as I recall, to set
13 up this office was to enable trend analysis to be done, so
14 that we could hopefully identify precursors and hope we will
15 get to that at some point this afternoon.

16 CHAIRMAN PALLADINO: Any other comments before we
17 start?

18 (No response.)

19 We turn the meeting over, I guess. Bill?

20 MR. DIRCKS: What we would like to do is cover the
21 whole program for the review and analysis of operational
22 experience. I think we want to show the Commission how we
23 visualize this as an extremely important and broad subject,
24 and how it is that it cuts across many of the office lines
25 in the role of the AEOD.

1 We are particularly sensitive to this
2 cross-cutting phase in the role of Carl Michelson in the
3 AEOD in tying this program together in some sort of
4 comprehensive unity on the issue of operational data
5 analysis. Each of the principal offices involved is here
6 today at the management level. I know it is important to
7 bring each of the managers down to demonstrate to the
8 Commission how we look at this problem within the agency.

9 We will be covering the issue of trend and pattern
10 analysis, and that is an important area that Carl will be
11 covering personally. He's also prepared to talk about how
12 we allocate resources among the various offices, and each
13 one is going to cover that in detail, too.

14 I think in summary I just want to emphasize the
15 importance we place on this program in the agency and I
16 think you will develop some sense of that importance as each
17 office director goes into this area. And I think we have
18 made some significant progress in the past few years.

19 Carl, do you want to pick it up at this point?

20 MR. MICHELSON: The purpose of the briefing this
21 afternoon is to give you an overview of the agency's program
22 for the review and analysis of reactor operation
23 experience. The format that we will use is to have each of
24 the principal offices involved in this program describe
25 their individual roles and contributions.

1 On the first page of your handout -- by the way,
2 the handout is a little different than the one we first sent
3 down to you, because we went back and removed some material
4 to shorten the volume of the handout. It now stands at 18
5 pages, but it's essentially still the same basic coverage.

6 The first page of the handout shows the subjects
7 that will be presented and the schedule for the
8 presentation. And I would like to go then to the second
9 page, which is a standard organizational chart highlighting
10 the offices involved in operational experience. And you can
11 see from this chart that all four major offices are
12 involved, as well as the five regional offices and the
13 Office of State Programs and the Office of International
14 Programs.

15 AEOD, of course, is the coordinating office for
16 the activity, and is the only office that is dedicated
17 solely to the analysis and evaluation of operational data.
18 Although not included in our presentations today, I would
19 like to acknowledge the important contributions of the
20 Office of State Programs and the Office of International
21 Programs.

22 The principal sources of reactor operational --
23 COMMISSIONER AHEARNE: You are acknowledging the
24 important contribution. Is that potential or actual?

25

1 MR. MICHELSON: These are actual. I didn't want
2 to take the time to go into the details of what State
3 Programs and what International Programs does.

4 COMMISSIONER AHEARNE: They are giving you useful
5 information?

6 MR. MICHELSON: Oh, yes, particularly
7 International Programs, of course, which we have to work
8 with very closely in obtaining the foreign reactor operating
9 experience.

10 The principal sources of operational information
11 are shown on page 3, and you will find here -- this is the
12 raw material from which we must do our work. The first
13 source, of course, is the so-called prompt notification.
14 This is the one-hour telephone call in case there are
15 certain types of difficulties, and these are followed up, if
16 a tech spec requirement exists, with a 24-hour written
17 report.

18 The second category, which is the largest single
19 category, is on Licensee event reports. And these of course
20 are either 14-day reports or 30-day reports, depending on
21 the nature.

22 COMMISSIONER GILINSKY: Can I stop you for a
23 minute? These 2,000 prompt notifications a year, that
24 number, was that affected by putting the telephones in?

25 MR. MICHELSON: I really don't know. I think I&E

1 could perhaps answer that.

2 MR. JORDAN: That is about the same ratio we had
3 with the telephone portion of the 14-day report. So not a
4 large increase.

5 MR. MICHELSON: The licensee event report is of
6 course the single largest source of information, and it
7 numbers over 4,000 a year at the present time. And they
8 are, as I said before, the 14-day and 30-day type reports.
9 About 80 percent of them are 30-day reports.

10 COMMISSIONER AHEARNE: At one time, Carl -- it may
11 have been you, in fact -- someone pointed out to us that one
12 of the difficulties with the LER's is they were not falling
13 into a sufficient specific set of guidelines or not being
14 written under a specific set of guidelines, so that what was
15 reportable by one plant may not be reportable by another.
16 Has that been improved at all?

17 MR. MICHELSON: We really are putting our full
18 emphasis in the improvement area upon the restructuring and
19 the rulemaking that is now under way, as you well know. And
20 that rulemaking will result in a regulatory guide which will
21 be far more definitive as to the kinds of information we
22 need and the kinds of information that we don't have to
23 report.

24 COMMISSIONER AHEARNE: So currently they are still
25 operating under the guidelines.

1 MR. MICHELSON: We have made no particular effort
2 to change the reporting patterns, other than the effort that
3 perhaps I&E has made to keep the reporting somewhat
4 consistent. Occasionally we have written letters pointing
5 out rather gross events that were not reported adequately,
6 and some corrective steps have been taken in that area.

7 The construction deficiency reports number about
8 2,000 a year. These are the requirement for 24-hour
9 telephone and written reports, followed up by a 30-day
10 report. The defects, claimed noncompliance, which are the
11 part 21 reports, require two-day notification, five-day
12 written.

13 There are some other sources of operational
14 information. We have estimated perhaps 300 a year or so.
15 These come from inspection activities, Department of Energy
16 experiences, licensee reports of other sorts, and of course
17 the foreign event information. We are working on the
18 foreign event information, and because of some of these
19 events we think that perhaps within another year we will be
20 receiving 200 or more reports from the incident reporting
21 systems of the nuclear energy agency.

22 CHAIRMAN PALLADINO: The numbers you show for
23 those two items has gone up since the earlier viewgraphs?

24 MR. MICHELSON: That is entirely possible. We
25 went back and in some of these cases we are doing more

1 careful counting. I can ask Jack.

2 CHAIRMAN PALLADINO: I just wanted to make sure.
3 I wanted to make sure whether it was a misprint or whether
4 it was a change.

5 MR. MICHELSON: Not likely. What happens is we
6 circulate these viewgraphs around and what happens is people
7 sometimes have second thoughts about numbers, and so as a
8 result the numbers change a little bit.

9 COMMISSIONER AHEARNE: Are you satisfied with the
10 progress being made with respect to getting foreign events?

11 MR. MICHELSON: Yes. I was going to go into that
12 in somewhat greater detail later on, to try and hold the
13 overview concept at the moment.

14 Now, a reasonable perspective on the extent of
15 resources applied by each office to the review and analysis
16 of operational experience can be obtained by looking at page
17 4. On this page, the level of activity is shown on the
18 left-hand side as being low, medium or high, and the office
19 resources being spent are shown on the right-hand side in
20 terms of professional staff years and dollars of support,
21 money.

22 The cross-hatched areas indicate the extent of
23 involvement of each office in the review and analysis of
24 each report type. Note the high level of early on
25 involvement of I&E and NRR in the prompt notifications,

1 whereas the interests of AEOD and Research builds up when
2 the LER is issued.

3 Also noteworthy on this slide is the special
4 interest of I&E and NRR in construction deficiencies and
5 part 21 reports. The interest of I&E in the prompt
6 notification is driven in part by their need to determine if
7 a reactor can return to power or should remain shut down
8 following an event.

9 their relatively high level of interest in the
10 LER's, construction deficiencies and part 21 reports is
11 closely associated with their inspection responsibilities.
12 The interest of NRR in prompt notifications is also
13 associated with the question of return to power, and NRR
14 must assure that the event is within the analyzed safety
15 envelope for the plant.

16 Now, AEOD devotes most of its effort to screening
17 and assessment of the licensee event report itself, and the
18 remainder of its effort is primarily focused on foreign
19 reactor operating experience and a few other miscellaneous
20 areas. AEOD does not assess the construction deficiency or
21 Part 21 type reports.

22 The interest of the Office of Research is
23 primarily driven by the interest in probabilistic risk
24 assessment and the reviews of LER's to develop reliability
25 numbers.

1 COMMISSIONER BRADFORD: Carl, when you say AEOD
2 doesn't assess construction deficiencies, is that a
3 potential weakness in the program? That is, surely some of
4 the deficiencies that have been showing up lately have
5 implications for operating plants, either these if they went
6 into operation or past plants in which they may not have
7 been caught.

8 MR. MICHELSON: I think that is a good question.
9 That is one that I've given a considerable amount of thought
10 to. I think the answer has to go something like this:
11 First of all, a construction deficiency and part 21 reports
12 get very careful attention by I&E and NRR. Therefore, one
13 would ask what additional contribution would AEOD make to
14 examining the report itself, and I would say probably a
15 minimal contribution.

16 The primary interest that we would have would be
17 in the hints or indications that we might get from such
18 reports as to possible difficulties with components that we
19 would then look for in operating experience, and I think
20 that would probably be a good idea. But at that point you
21 have to say, well, am I running out of things to look at?
22 If I am, this might be a good area to look at.

23 The answer is that, no, I've got more information
24 than I can handle and therefore I look at what I think is
25 the most rewarding information first. And this I do not put

1 in the category of most rewarding.

2 COMMISSIONER AHEARNE: But Carl, let's say -- and
3 I recognize that even if you look exactly at the title of
4 your office, clearly one could say, well, it does not fit in
5 that bin -- but putting aside that argument, let's take
6 problems in quality control which are not a precursor of an
7 individual piece of equipment failure, but might be, the
8 trend might, I might say as a hypothetical, might be that
9 there is very lax quality control throughout the
10 architect-engineering community, let us say, as just an
11 hypothesis.

12 Wouldn't that be something then in your charter?

13 MR. MICHELSON: I would think that I could
14 probably look at almost any nuclear-related problem and be
15 within my charter. So I look at it differently than that.
16 I look at it from the viewpoint of our first obligation is
17 to examine operating experience and try to learn the lessons
18 from potentially adverse experiences.

19 That has been keeping me pretty busy. Therefore,
20 and along with some other developments which I'm going to
21 tell you about a little later on this afternoon, I think
22 that focus alone is using the resources I have.

23 COMMISSIONER AHEARNE: All right.

24 CHAIRMAN PALLADINO: Does I&E look at construction
25 problems?

1 MR. JORDAN: Yes, we do, principally on the
2 utility, regional on a utility basis and headquarters across
3 facilities as an overall view.

4 COMMISSIONER AHEARNE: But if you people would
5 accept my suggestion which I have floated to you, they would
6 do it on a broader basis?

7 COMMISSIONER GILINSKY: What suggestion is this?

8 COMMISSIONER AHEARNE: I had a memo out about a
9 week or so ago, Tom and Peter responded to, which is to have
10 I&E do a review of QC practices or particular programs. I
11 just call that to your attention.

12 COMMISSIONER BRADFORD: Let me ask a variant of
13 the same question. If we know that a particular pump
14 manufacturer has had a serious set of breakdowns in quality
15 assurance, where in the agency would you look now to see if
16 it was also showing up, if those pumps in fact were failing
17 or had a higher than normal failure rate in operation in the
18 pumps?

19 MR. MICHELSON: Well, from my own particular
20 viewpoint, I would look to I&E for that type of
21 investigation.

22 COMMISSIONER BRADFORD: Would you even know it if
23 a particular pump manufacturer had in fact been derelict in
24 quality assurance?

25 MR. MICHELSON: Probably not, unless somebody had

1 brought it to my attention, because we don't look at the
2 flow of information that normally incorporates that.

3 COMMISSIONER BRADFORD: Wasn't this one of the
4 bases for looking the NPRDS system, to look at operating and
5 pedigree data to see if you could identify components and
6 trace it back to manufacturers?

7 MR. MICHELSON: Well, there are many aspects of
8 NPRDS and its usefulness. One aspect is exactly what we're
9 talking about here. I had not myself envisioned it for that
10 purpose. But indeed it can be used for that purpose, yes.

11 MR. DIRCKS: One of the reasons why we're talking
12 about, I guess, the reforms in NPRDS is to make it
13 universal, to track back to see if the particular pump
14 manufacturer had a problem that we would see across the
15 board in many plants, and knowing if you could make it more
16 universal.

17 I see somebody else.

18 MR. BERNERO: The LER data reports we published on
19 components, of course, extracting only from LER information,
20 do plot failure rates by plant, by vendor, by type of
21 equipment and so forth. So we do have in hand from the body
22 of LER information the information on vendor-specific or
23 plant specific failures.

24 COMMISSIONER BRADFORD: So let me ask my question
25 again, Bob, and let you answer it.

1 A particular pump manufacturer has widespread QA
2 -- what we find is that he has a breakdown in his QA
3 program, but we don't know, at least at the start, what that
4 has meant in terms of the performance of his pumps out in
5 the field. You are saying there is a place we can go look
6 and find that data.

7 MR. BERNERO: Except that there's a severe
8 mismatch in time. If you go to the data reports, you will
9 find the experience in the period 1969 to 1980-81. You may
10 be looking at a QA breakdown in the factor that is occurring
11 in 1981. So that what you are really looking at is the
12 field experience with the last generation of pumps, not the
13 ones where he's got the breakdown.

14 MR. MINOGUE: I think, though, that what
15 Commissioner Bradford is getting at is are we aware before
16 the fact or during the experience that this particular
17 vendor has QA difficulties?

18 COMMISSIONER BRADFORD: I'm actually trying to
19 play it both ways. I'm trying to start it in one case in a
20 situation where you know he has QA difficulties and wonder
21 what is actually happening as a result of them. And then of
22 course, a later more important question would be to do it
23 backwards and know on a prompt basis that there must be
24 something wrong.

25 MR. MICHELSON: If you do it backwards, you

1 generally look at the experience on why it is so bad, and
2 then you start looking into the record and find out he has
3 QA difficulties. But I would look toward I&E for that type
4 of investigation normally. Our interest is more in the
5 performance of systems and components in the plants
6 themselves, as a part of the dynamic process of keeping the
7 plant operating or mitigating any accidents, and not
8 necessarily in searching out all the why's and wherefore's
9 and the reasons why the performance is poor.

10 These are very interesting subjects. No
11 particular problem doing it. It's just somewhere we have to
12 cut off our area of investigation to match the resources
13 available to do it.

14 COMMISSIONER BRADFORD: Ed, if you'll excuse me
15 one brief diversion. What happens when we look at I&E to
16 answer that same question?

17 MR. JORDAN: Certainly the program that I&E has is
18 the inspection program reviewing the 55(e) and part 21
19 reports, and during the past year we have had a couple of
20 pump-related problems that have come to us in that fashion,
21 that we combined with a look at the vendor and also a look
22 at the application of that particular product in the various
23 facilities, and then a determination of whether there is a
24 generic problem across that particular component or whether
25 it is a plant-unique maintenance type problem.

1 COMMISSIONER BRADFORD: How quickly can you do
2 that if I gave you a pump manufacturer and a particular span
3 of three years? Is it an easy matter for you to tell me
4 whether his pumps of a particular type have been performing
5 average, above average, below average, in that type?

6 MR. JORDAN: As far as the computer data base, we
7 would have the same data base from the LER files that AEOD
8 would have. We would both use that data base to sort out
9 pump failures in operations. The particular problems I was
10 talking about were problems found by construction deficiency
11 reports or part 21 type reports, where the deficiency showed
12 up and then was reviewed at operating plants as well as the
13 other plants.

14 CHAIRMAN PALLADINO: Can we go on?

15 MR. DENTON: To expand on that answer, I think it
16 would depend on the type of pump, wouldn't it?

17 We are fairly knowledgeable about the
18 manufacturers of large pieces of equipment. But if we get
19 down below recirculation pumps and start asking about who
20 manufactured some of the smaller pumps, we find out we don't
21 know that without looking.

22 MR. JORDAN: I would agree, if you go down to very
23 small pumps.

24 CHAIRMAN PALLADINO: Why don't we go on.

25 MR. MICHELSON: Now, on page 4, not shown on this

1 page is the activity resource allocation of NMSS. They
2 review and analyze reactor experience from the safeguards
3 and security viewpoint, and this is expected to involve
4 about one professional staff year and 200 K funding during
5 FY '82.

6 Now, overall it is estimated that the NRC is
7 currently applying about 70 professional staff years and
8 between \$2 and \$3 million for the review and analysis of
9 reactor operational experience. As you might expect, the
10 coordination of this level of activity, involving at least
11 five NRC offices, is a significant task. Some of the ways
12 that we attempt to accomplish this coordination are shown on
13 page 5, and I think a few of them are worthy of special
14 note.

15 Particularly noteworthy and successful has been
16 the weekly meetings on operating events which are held on
17 each Wednesday and involve representatives of NRR, IE, AEOD
18 and Research. I should also note that we have prepared a
19 manual chapter number 515 which covers the entire
20 operational safety review process, including the procedures
21 for coordination of operational information and activities.

22 COMMISSIONER GILINSKY: Who runs that meeting?

23 MR. MICHELSON: Which meeting? The weekly
24 meeting? That is an NRR meeting.

25 MR. JORDAN: I would say it's a joint I&E-NRR

1 meeting.

2 MR. MICHELSON: It is always held in the Phillips
3 Building.

4 (Laughter.)

5 MR. DENTON: Everyone participates and we write up
6 the minutes.

7 We started it mainly to ensure that information on
8 operating events was getting down into our technical review
9 branches, and so they are heavily represented at these
10 meetings.

11 MR. MICHELSON: I think it is a real good
12 activity.

13 COMMISSIONER GILINSKY: Who decides on which items
14 get taken up or does everyone submit items?

15 MR. MICHELSON: I think anyone that has an item he
16 wants discussed, we just ask for it to be put on the
17 agenda. Generally, we don't put items on the agenda,
18 because most of that meeting deals with the immediate events
19 that just happened or happened within the last few days.

20 And therefore most of the agenda items come from NRR.

21 MR. DENTON: They tend to deal with events before
22 they get to the LER stage. They deal with PN's.

23 COMMISSIONER GILINSKY: These are events reported
24 by I&E to you?

25 MR. DENTON: They are from PN's from the regions.

1 MR. JORDAN: So they are events that were called
2 in through the telephone notification system, the operations
3 center, or came to the region's attention through
4 inspection, that deserve staff attention very quickly. And
5 so the decision is made by I&E and NRR staff members,
6 generally on Monday preceding the Wednesday meeting, these
7 are the issues we're going to discuss, and preparation is
8 made for them.

9 COMMISSIONER AHEARNE: At one time I seem to
10 recall that there was thought to having formal memos of
11 understanding between --

12 MR. DENTON: We have that, and I was going to pass
13 out some examples.

14 COMMISSIONER AHEARNE: I see, you do?

15 MR. DENTON: Yes.

16 CHAIRMAN PALLADINO: What level of people go to
17 those meetings, branch chiefs?

18 MR. DENTON: We tend to have our division
19 directors there for NRR, but it's management. And then we
20 have the project manager of that particular plant there and
21 then, depending on the type of issue being discussed, other
22 people.

23 COMMISSIONER AHEARNE: Where is the decision made,
24 or by whom, to treat a set of items as being worthy of doing
25 a study of whether a trend is there?

1 MR. MICHELSON: I can only answer for AEOD that is
2 an office decision. I am assuming it is an office decision
3 in the other offices.

4 COMMISSIONER AHEARNE: In other words, it is not
5 this joint weekly meeting, anyway?

6 MR. MICHELSON: Oh, no.

7 COMMISSIONER AHEARNE: Is there any kind of a
8 coordinating effort?

9 MR. MICHELSON: No. The only effort is we put ou
10 a list of what we are working on. If you want to call that
11 a coordinating effort. What we do is, when we decide to
12 perform a case study, the fellow assigned to it goes out and
13 beats the bushes, finds out what has been done or what is
14 being done or what is even planned to be done.

15 If we find that that area is pretty well covered
16 already, then we will set back and simply monitor the
17 progress. If it is an area that we find no activity in and
18 we feel strongly enough about it, then we pursue it
19 ourselves.

20 There may be cases, however, even though it is
21 being worked on, we look at it and think that it needs to be
22 approached from a different viewpoint, in which case we
23 would proceed to approach it from that viewpoint, even
24 though it is being worked on by others.

25 COMMISSIONER AHEARNE: But there is no approach to

1 classes of problems to say that at NRR this is more a
2 problem that you would end up doing, the re-examination of
3 significance, or I&E or AEOD, but it's each individual
4 office will more or less make sure that everybody knows of
5 information, but then the individual office makes the
6 decision whether it fits within what is most important for
7 them, so that they do their study?

8 MR. DENTON: I think it is more by default. We
9 know -- these meetings generally, we make assignments for
10 people to follow up, and therefore if we know someone else
11 is doing it we don't do that one.

12 MR. MICHELSON: Generally, AEOD does not get
13 involved that early on anyhow, except to start picking up
14 whatever information we can to make it an appraisal later as
15 to whether to pursue it.

16 Now, coordination also has to occur with
17 organizations outside the NRC staff, and this is of course
18 essential, and toward this end we have signed a memorandum
19 of understanding with the INPO and NSAC people concerning
20 the collection of feedback on operational information. And
21 this has now resulted in a close working relationship with
22 both organizations.

23 We also periodically brief the ACRS Operating
24 Reactor Subcommittee concerning operational experience.

25 That is about the extent of what I thought would

1 be appropriate as an overview. So at this time I would like
2 to turn the briefing over to Ed Jordan, who will represent
3 I&E and give you details on their particular activities in
4 this area.

5 CHAIRMAN PALLADINO: There are many items that you
6 listed here. Do they all that kind of coverage that you
7 think they deserve? You were talking about some 8,000
8 different items. Do some of those fall into cracks?

9 MR. MICHELSON: My own personal opinion is you
10 could put many, many more people working on this. You might
11 put half the agency working on this problem and still, you
12 know, have some items that would not get too much
13 attention. However, one has to ask, what is a reasonable
14 level of resource to devote to this kind of activity.

15 I think that so far our limitation, at least in
16 the case of AEOD, has not been whether or not we need more
17 people, but rather getting the act putting together and
18 getting the people on board as quickly as we can assimilate
19 them, and making sure that we have a reasonably efficient
20 operation.

21 CHAIRMAN PALLADINO: I asked about people because
22 I did a little division. You have roughly -- on 8,000
23 items, you have roughly 70 people.

24 COMMISSIONER AHEARNE: There are 70 people
25 throughout the agency.

1 MR. MICHELSON: And they're not each of them
2 searching out each of these items.

3 CHAIRMAN PALLADINO: This is what I'm trying to
4 get a feel for. If I do the kind of division I did, say 100
5 or more per person, that doesn't seem too exorbitant.
6 That's one every other working day.

7 MR. MICHELSON: But some of these items take
8 months, literally, to work out.

9 CHAIRMAN PALLADINO: That is what led me to ask,
10 do you think we are giving them reasonably good attention or
11 are some falling in the cracks?

12 MR. MICHELSON: I think we could -- I think we are
13 giving them reasonable attention commensurate with the
14 resources available.

15 COMMISSIONER AHEARNE: Unfortunately, the answer
16 to the question would probably be, if some sort of a major
17 accident or major problem arises, and then we would find in
18 retrospect that we could have --

19 COMMISSIONER GILINSKY: One way to ask the
20 question is, would a million dollars shifted from research
21 into this activity lead to an improvement in reactor safety
22 or not. And honestly, it is a matter of judgment.

23 MR. MICHELSON: It would lead to a million dollar
24 improvement in the activity. Perhaps that first million
25 dollars might.

1 CHAIRMAN PALLADINO: My question was more
2 fundamental than that. Sometimes you can say, well, we're
3 doing reasonably well with the money we have, and then
4 sometimes you come back and say, we aren't even beginning to
5 touch the job. And I'm trying to find out whether we are
6 kidding ourselves into believing that we're on top of it or
7 do you believe we're reasonably well off.

8 MR. MICHELSON: Let me answer the question that
9 was asked a little further back first. And I have thought
10 about this to some extent. I am quite certain that when and
11 if a significant accident occurs, that I will be able to go
12 back and find dozens of interesting precursors that clearly
13 indicated that this was coming up.

14 After the fact it's very easy to find all of
15 them. I am convinced that they're there. I am convinced
16 that it will take an accident or a serious event to find
17 some of them. What we are hoping to do, though, is find
18 enough of them to get the early warning.

19 Whether we are finding enough to get the early
20 warning, then, is the question. Is the level of activity
21 today at least getting into the problem enough to get some
22 of the early warnings? We won't get them all. It is hard
23 to say.

24 I am not entirely comfortable that we are doing
25 our job well, if that is what you are asking. I am not yet

1 comfortable.

2 CHAIRMAN PALLADINO: Why don't we go on.

3 COMMISSIONER AHEARNE: That makes two of us.

4 COMMISSIONER GILINSKY: Let me ask you if I am
5 getting a reasonable picture of what is going on here. What
6 I seem to understand is that most of this work is really
7 screening the various, following up the various incidents,
8 and so on, and the reports that are done outside your
9 office, and you pick out the more important ones for deeper
10 treatment.

11 MR. MICHELSON: Can I defer that until the AEOD
12 discussion, which is the last thing today? I think you will
13 see from that what our plan of attack is on the problem, and
14 I think that is what you are really searching for: Do we
15 have a plan of attack, is it effective, are you comfortable
16 with it? And I would like to discuss that.

17 COMMISSIONER AHEARNE: Also, when the attack is
18 going to begin.

19 MR. MICHELSON: The attack has already begun. We
20 have been working at this job for quite a while and I think
21 we have made some significant inroads. But there are some
22 more exciting things still to come.

23 CHAIRMAN PALLADINO: Just one more point. In my
24 original question I said 70 people and somebody said, oh,
25 that is agency-wide. Does that mean they are not all doing

1 the function of -- these 70 are not involved in examining
2 operating experience? There was some implication that we
3 should count all 70 as being in this function.

4 MR. MICHELSON: I think the other offices would
5 have to answer as to the precise way in which they are
6 utilizing their manpower, since most of it comes from
7 outside of AEOD.

8 COMMISSIONER GILINSKY: I assume that is man-years
9 devoted to that and to the agency, but much of it outside.

10 COMMISSIONER AHEARNE: I think Harold could
11 probably answer that question. He has a bulk of people on
12 that.

13 MR. DENTON: I have a detailed breakdown, when it
14 gets to me.

15 CHAIRMAN PALLADINO: Well, maybe we should
16 listen. Why don't we give you a chance.

17 MR. MICHELSON: I think it is Ed's turn now.

18 MR. JORDAN: The presentation that I have reflects
19 to some extent changes that are presently under way as a
20 result of the regionalization and changes in structuring of
21 the I&E headquarters office. I think I would like to say at
22 the front end that I&E has the responsibility for the review
23 of operating events, construction deficiency reports, Part
24 21 reports, to ascertain the immediate adherence to
25 regulatory requirements and to review the safety

1 considerations for resumption of operations or for continued
2 operations when there isn't that -- and then subsequently to
3 review and examine for generic issues, and then to
4 recommunicate those findings back into the industry, to the
5 inspection program.

6 The sequence of the presentation from the offices
7 is, I think, representative of the sequence of involvement
8 by those offices in events evaluation. The prompt telephone
9 notifications of events and written reports of events which
10 are made by licensees, construction permit holders and
11 vendors are directed to the regional offices and I&E
12 headquarters for review.

13 The prompt notification by the licensees to the
14 operations center initiates a rather complex screening,
15 inspection, review and research process. Each notification
16 is immediately screened to determine if NRC response actions
17 are warranted.

18 This presentation is directed toward reviews and
19 evaluations subsequent to any NRC incident response action
20 and for events which had no immediate health and safety
21 consequences, requiring incident responses.

22 As noted in an earlier chart, the regional offices
23 and I&E headquarters are responsible for the review of
24 construction deficiency reports and the vendor reports, in
25 addition to the reports of operating events. There is a

1 natural partitioning of actions between the regional offices
2 and I&E headquarters. The regional offices are responsible
3 for determining if regulatory requirements are adhered to.
4 I&E headquarters is responsible for the determination and
5 development of generic issues from a national perspective.

6 An effective way to understand the role and
7 responsibilities of the regional offices and I&E
8 headquarters is to track the sequence of actions for a
9 typical event, and picking up once again a notification
10 where there is no incident response or after the incident
11 response actions are taken, the resident inspector conducts
12 a prompt review to gather additional information and assess
13 licensee actions.

14 Until the written report is received, the resident
15 inspector is the principal information source for the NRC
16 following notification by the utility. This information
17 gathering is often supplemented by inspectors from the
18 regional offices.

19 The assessment by the site inspectors is then
20 discussed with the regional management and it is
21 recommunicated via telephone and computer formatted daily
22 reports to the NRC line offices and, depending upon
23 significance, by preliminary notifications to the other
24 offices, the Commissioners, Congressional Affairs and the
25 public.

1 The regional inspector reviews the written reports
2 submitted by licensees for plant specific concerns and as a
3 part of overall licensee performance review. The regional
4 office is also responsible for conduct of follow-up
5 inspections and investigations, and secondary to recommend
6 generic actions.

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1 In the event generic actions are warranted, the
2 regional office becomes responsible for the review of the
3 licensing actions in response to generic conclusions. I&E
4 headquarters is responsible for the development of policies
5 and procedures for eventual review by the regions and I&E
6 headquarters, based on information obtained during the
7 prompt telephone notifications from the licensee to the NRC
8 duty officer.

9 And subsequent information obtained from the
10 region, I&E nuclear steam supplier specialists perform a
11 prompt screening of each event and a subsequent review of
12 all submitted written reports.

13 Expert engineering support is provided by the I&E
14 headquarters offices and specific disciplines for generic
15 reviews and to assist the regional offices. In assisting
16 the regional offices, the organizational change moves the
17 support functions for day-to-day events that don't have
18 generic implications to the regions.

19 The support in the headquarters office would be
20 toward generic issues rather than day-to-day.

21 COMMISSIONER AHEARNE: Yet when you say "support",
22 that kind of support -- technical analysis?

23 MR. JORDAN: If there's a metalurgical problem,
24 putting the metalurgist directly in contact with the region
25 to supplement the region's staff. And the change in

1 organization would reduce casework in the headquarters
2 office and result in emphasizing to a greater extent the
3 analysis, the more detailed review of the events, rather
4 than fire-fighting.

5 I&E headquarters develops and coordinates actions
6 on generic matters from a national perspective with other
7 NRC offices and with industry. In providing event reviews
8 and providing engineering support, I&E headquarters provides
9 an overview of the regional response to events, and that
10 function will be emphasized as a result of the
11 regionalization and the changes in the I&E headquarters
12 office.

13 So, then, we would be more in review, ascertaining
14 that the regions are performing in accordance with the
15 program requirements and that they are performing in a
16 consistent fashion, region-to-region.

17 COMMISSIONER GILINSKY: Can I ask you -- a PM
18 comes from the region, is that right?

19 MR. JORDAN: That is correct.

20 COMMISSIONER GILINSKY: Does it go through you or
21 does it go simultaneously to you?

22 MR. JORDAN: No. It is distributed simultaneously
23 to all of the offices, to the Commissioners, to
24 Congressional Affairs.

25 COMMISSIONER GILINSKY: So while you are doing all

1 of these things, NRR has got its own system running?

2 MR. DENTON: No.

3 MR. JORDAN: The coordination here is by daily
4 morning call between the NRR reviewers and the I&E
5 reviewers, so we go down the previous 24 hours' events,
6 determine which office is going to handle which event,
7 because if it is a licensing type concern, if it is one that
8 can be fixed with technical specification changes, then that
9 is quite clear. If it is a problem of adherence to
10 regulatory requirements, then it's clear from the I&E
11 standpoint.

12 So we make an agreement, a written agreement, on
13 complex issues so that I&E has portions of it. NRR has
14 other portions.

15 COMMISSIONER AHEARNE: Is there any formal
16 distinction between the type of problems that I&E tracks and
17 the kind of problems that NRR tracks? Is it individual
18 decisions?

19 MR. JORDAN: The formal, I guess, aspects of it
20 are clearly when it is a licensing matter, if there is
21 inadequacy in design, that is an NRR matter, and when it is
22 an implementation problem or question of a generic review or
23 adherence to quality assurance requirements, then that is
24 clearly an I&E matter and there is a gray zone in-between,
25 and that is why we very carefully identify who is going to

1 do what aspect in that gray zone.

2 COMMISSIONER AHEARNE: But in the cases you are
3 talking about so far, there is still, as a result of a
4 specific event rather than several events having occurred in
5 a particular area --

6 MR. JORDAN: That's right, and I think that
7 defines how I&E is generally functioning. It takes a series
8 of events that trigger in someone's mind or cause someone to
9 do a review of the LER file to establish that there is
10 indeed a pattern.

11 If there is a feed pump problem at a plant and
12 there was a feed pump at a plant similar to that last week,
13 then that is easy. If there is a feed pump problem and
14 somebody recollects that there may have been, then a search
15 of the files is necessary.

16 COMMISSIONER AHEARNE: But is your system then
17 predicated upon -- and I guess we will get to it later -- if
18 it is a periodic type problem, given the description you
19 just made, it is clear that it places a lot of reliance upon
20 the individuals' memories.

21 MR. JORDAN: It does.

22 COMMISSIONER AHEARNE: Is the more generalized
23 based upon AEODs, periodic review of reports to pick up any
24 trends that did not rise through the memory?

25 MR. JORDAN: Yes, and I think a case where AEOD

1 and the combined I&E staffs are working in a similar fashion
2 is on instrument air system failures. We had tracks where
3 it became important to both offices in the same time frame,
4 through a combination of events.

5 COMMISSIONER GILINSKY: Have you got somewhere
6 written down a system for keeping track of all of the items
7 that you are pursuing?

8 MR. JORDAN: We have a file of task interface
9 agreements between I&E and NRR on those that we are jointly
10 pursuing and those that we have pending generic action on
11 are carried in a listing from week to week.

12 COMMISSIONER GILINSKY: And how many of these are
13 there?

14 MR. JORDAN: Pending generic action I would guess
15 there are nine or so right now.

16 COMMISSIONER GILINSKY: And how many are covered
17 by agreements with NRR?

18 MR. JORDAN: I would guess --

19 MR. DENTON: There are about fifty task agreements
20 a year where we formally transfer follow-up and study from --

21 COMMISSIONER GILINSKY: So this represents a
22 fairly small group of the total of all of these incidents
23 and reports and so on?

24 MR. JORDAN: That's right. It is distilled down
25 to a relatively small number.

1 COMMISSIONER GILINSKY: Can you give us an example
2 of what are some of the more important things you are
3 working on right now?

4 MR. JORDAN: Okay. We have a review of a
5 particular safety and relief valve used in boiling water
6 reactors from the Pilgrim matter, and so there is
7 consideration for further generic correspondence on that.

8 And that one is where several combined products
9 come together to identify a generic concern. Previous
10 modifications at plants that are installed, this particular
11 type valve tests at a testing laboratory that identifies
12 failures to operate at the correct pressure, examinations of
13 the valves by an office that was reviewing them for
14 deficiencies -- all come together indicating there may be a
15 generic problem with those valves and that is an NRR/I&E
16 joint review process at this point.

17 COMMISSIONER GILINSKY: What is the sort of thing
18 that you are working on on your own?

19 MR. JORDAN: I guess because of the coordination
20 that we do, there is nothing that we are working on that NRR
21 isn't aware of and vice versa.

22 There is, as I say, a daily telephone call between
23 the two branches involved and so they are exchanging
24 information about events and identifying what actions they
25 are going to be taking. The weekly meeting with NRR further

1 identifies that this is the path that the two offices are
2 taking, so there is no independent action in that respect.

3 CHAIRMAN PALLADINO: Are these events categorized
4 and recorded somewhere, either in a computer, in a book, on
5 a work sheet, so that if you got a feedwater problem you
6 could go back and look and see what other feedwater problems
7 there might have been -- feedwater pump problem or whatever?

8 MR. JORDAN: And this would be the LER file, the
9 same file that all the offices share.

10 CHAIRMAN PALLADINO: And are they computerized?

11 MR. JORDAN: Yes, this is the NIH or NSIC files,
12 so we use those files frequently in identifying other
13 failures of that particular type.

14 COMMISSIONER AHEARNE: How far back do those files
15 run?

16 MR. JORDAN: They go back at least five years.

17 MR. MICHELSON: 1969.

18 COMMISSIONER AHEARNE: They have all been put on?

19 MR. MICHELSON: All that we can find. We are
20 attempting to inventory them to make sure that we have got
21 as complete a set as possible. There are a few missing that
22 we are trying to account for.

23 COMMISSIONER AHEARNE: But they've all been put
24 into the data base?

25 MR. MICHELSON: They are all in the data base.

1 There are a lot of provisions. The quality of the
2 information isn't uniform. The best quality started about
3 1975.

4 COMMISSIONER GILINSKY: Let me ask about a
5 specific example. There was an incident at H. B. Robinson a
6 little while ago in which there was some problem with both
7 the block valve and the PORV which suggested the possibility
8 that this was a generic problem. What has happened with
9 that one?

10 MR. JORDAN: That has been a matter of some
11 discussion in the weekly meetings.

12 COMMISSIONER GILINSKY: That would have been taken
13 up in the weekly meeting after the event?

14 MR. JORDAN: Yes, immediately after the event.
15 And there was even a similar event or a related event at
16 Turkey Point with a relief valve, so there were a couple of
17 events in terms of the problems associated. In one case the
18 valve opened when it wasn't intended to, and in the other
19 case it didn't open when it was desired to.

20 COMMISSIONER GILINSKY: And what now? Is this
21 assigned to somebody? Are we keeping track of it? Are we
22 waiting for a third one?

23 MR. JORDAN: Yes, it is. The actual problem is a
24 design problem in terms of a particular modification
25 post-TMI, so it is an NRR matter for that portion of the

1 follow-up. The plant-specific matter was an I&E matter and
2 the regional office has verified that that valve has been
3 made operable, tested at the plant.

4 MR. DENTON: We document the commitments at each
5 of these weekly meetings and it is assigned to DOE
6 engineering division or systems integration to come back
7 with a report and then that report is eventually discussed
8 in the same meeting.

9 COMMISSIONER GILINSKY: Would you know if that had
10 been assigned to anyone?

11 MR. DENTON: Let me ask Gary here.

12 MR. HOLOHAN: In this particular event there was a
13 task interface agreement which I&E and NRR drafted and I
14 believe I&E has assigned it personally in concurrence with
15 NRR. There are assignments in several different areas in
16 both engineering and the reactor systems areas. And that
17 interface agreement is tracked until all the items are
18 completed.

19 MR. MICHELSON: Just as a matter of information,
20 the valve problem is probably typical of the kind of problem
21 that needs to be approached from several different
22 viewpoints. We have been monitoring closely the work done
23 by NRR and I&E in this area and we have our own effort under
24 way looking at not immediate problems that are exemplified
25 by the particular event, but rather a more fundamental

1 problem concerning valve operability, concerning limit
2 switch adjustments, torque switch adjustments, aging effects
3 on valves -- a whole set of questions about, really, would a
4 valve work when it has to since it may never be required to
5 work under that circumstance except during an accident.

6 Therefore, routine testing, routine surveillance
7 simply doesn't give you the answer, so we are looking at
8 that from quite a different viewpoint. This is sort of like
9 a transient pattern study. We go back and search out the
10 experience and then we think about it a little bit and we
11 are trying to work up some material on it now.

12 We have a first report in this area, which is
13 primarily just the results of our looking so far and not
14 necessarily getting into many firm recommendations, but
15 starting to find problem areas already, in a generic sense,
16 that we think need to be addressed.

17 So we are not duplicating what the other people
18 are doing. We are just looking at it from a little
19 different viewpoint.

20 CHAIRMAN PALLADINO: What effort is made to make
21 sure that the utilities that have similar plants are
22 notified in case of these events?

23 MR. JORDAN: The mechanisms -- and that sort of
24 leads right into the products -- would be through
25 dissemination of information notice of the actual event,

1 conveying to the utilities what has actually happened and
2 suggesting the utilities examine this information for
3 applicability to their facilities.

4 And then a subsequent necessary generic
5 correspondence requesting action and requesting a response
6 on the part of the utilities, and that would be a circular
7 or a proposal. For plant-specific problems then it would be
8 an inspection report, a letter from the region to the
9 licensee, or a letter of commitment from the licensee.

10 We also have done telephone surveys to establish
11 whether plants have particular equipment when there is a
12 short time question, to establish how big or how small a
13 particular problem is when that information is not readily
14 available to us.

15 COMMISSIONER AHEARNE: If you are looking -- let's
16 take the pumps, any particular problem, and you see a series
17 of events which leads you to conclude that it is one of the
18 items that you ought to look at harder, you suspect
19 eventually it is going to lead to an information request for
20 further evaluation of the significance.

21 Is there any, at that point is there any
22 coordination between your office and Michelson's office to
23 decide if this is going to be something that requires going
24 back and doing a trend analysis or which of you ought to do
25 it? Or is it, again, a matter of individual office approach?

1 MR. JORDAN: It is between I&E and AEOD. I think
2 it is individual office approach and so I&E feels we have a
3 line responsibility to do that particular act.

4 COMMISSIONER AHEARNE: Now when you have done that
5 analysis and you have reached a conclusion as to what the
6 causes were -- how widespread it was -- and therefore what
7 kind of conclusion might be the appropriate regulatory fix,
8 is AEOD involved in comments on that?

9 MR. JORDAN: Yes. The bulletins or circulars are
10 circulated to all of the offices, AEOD, Research and NRR,
11 for comment and concurrence before issuance and bulletins
12 would go out through the CIGR Committee.

13 In fact, circulars also would go through before
14 issuance.

15 COMMISSIONER AHEARNE: In the 35 people that are
16 listed under I&E in this area -- I&E regional offices --
17 approximately what is the mix between regional --

18 MR. JORDAN: Okay. At headquarters we have five
19 people essentially devoted to events review analysis at this
20 present time, and so the balance of those people are in
21 regional offices. There are fractions of people that are
22 doing support functions -- the expert engineering support in
23 the I&E headquarters -- which is very hard to measure how
24 much of their time is spent directly on events evaluation.

25 So as far as the review products -- I am on page

1 seven -- we can talk about the feedback to the individual
2 licensees by inspection reports. There are also regional
3 meetings -- I'm sorry, the meetings of the regional
4 personnel with the utility. Those are principally in the
5 mode of assessing the licensee's performance.

6 We discussed the commitments of the licensee
7 letter, special inspection reports, identifying, once again,
8 on a plant-specific basis problems. All of those pieces of
9 correspondence are then available for the data pool on that
10 particular event.

11 COMMISSIONER GILINSKY: Could you give an example
12 of some problem that was solved through this mechanism and
13 solution implemented or people informed?

14 MR. JORDAN: In terms of the regional office, a
15 unique problem?

16 COMMISSIONER GILINSKY: I just do not have a feel
17 for what is actually happening.

18 MR. JORDAN: Okay. A specific problem, I suppose,
19 right now is one that occurred at the Palisades facility and
20 this was a case in which the containment was being vented
21 when the temperature was above a tech spec value that would
22 allow venting, and so the region has called the utility in
23 and had a discussion with them -- a meeting about an
24 explanation of what happened.

25 Immediate corrective actions have been taken and

1 the region will release the licensee to resume operations.
2 That is the kind of specific plant event, and they would be
3 considering an elevated enforcement action.

4 COMMISSIONER GILINSKY: That is just a routine
5 enforcement function.

6 MR. JORDAN: That is a routine enforcement
7 function, but it is an event at the plant. It may have had
8 generic aspects.

9 COMMISSIONER GILINSKY: That is what I was looking
10 for. That is something that you picked up and decided it
11 was really pretty significant for a lot of plants and got
12 passed along.

13 COMMISSIONER AHEARNE: The pumps are probably a
14 good example.

15 COMMISSIONER GILINSKY: The pumps?

16 MR. JORDAN: Things like Asiatic clams, that is an
17 item that was picked up at one of our facilities and a
18 bulletin was issued on that matter and it was a matter of
19 AEOD evaluation.

20 COMMISSIONER AHEARNE: You have just done an
21 analysis, I thought, on a class of pumps.

22 MR. JORDAN: Yes, we have had a problem with
23 centrifugal pumps, deep draft pumps. So far this year we
24 have issued some 35 information notices and fifteen
25 circulars on those kinds of issues.

1 COMMISSIONER GILINSKY: Well, I guess the Asiatic
2 clams is one thing. I'm sure it is important.

3 MR. DIRCKS: I think what you are looking for is
4 something that is deep enough and generic enough.

5 COMMISSIONER GILINSKY: I'll tell you what I am
6 trying to get at. You have a system. We are describing a
7 flow of paper, but what I do not have any sense for is what
8 the intellectual content of this is and are people really
9 picking up problems and solving other problems as a result
10 of that?

11 MR. DIRCKS: I think you are looking for something
12 that Carl might want to --

13 COMMISSIONER GILINSKY: In other words, is the
14 system working or not?

15 MR. MICHELSON: I think there are several elements
16 of this system, all of which have to work. The first
17 element, of course, is the inspector himself at the site and
18 then back to the regional office and then back to
19 headquarters.

20 That group does a very good job of detecting and
21 finding problems, pulling the information together,
22 establishing what we know about the problem and in many
23 respects taking the immediate, obvious responsive actions.
24 I think maybe now what you are searching for is, are there
25 more hidden messages than what we see in these particular

1 instances and are those messages perhaps slipping away.

2 That is where AEOD comes in. We try to pick up
3 kind of where I&E leaves off because theirs is the more
4 immediate problems oftentimes -- do you run the plant or
5 not, that sort of thing. But we try to pick up and look at
6 these things more in depth than they have time for and from
7 a different viewpoint and to search out to see what are the
8 real messages, real messages here. What might be the
9 significance in terms of other types of problems.

10 Dirty air systems are a good case in point. When
11 plants have dirty air systems I&E picks up on it right away,
12 get the air systems cleaned up, but if there is an
13 implication on dirty air systems far beyond that particular
14 one --

15 CHAIRMAN PALLADINO: And you pick that up?

16 MR. MICHELSON: We try to pick that up.

17 CHAIRMAN PALLADINO: Well, might I make a
18 suggestion? Let's see if we can go through the other
19 presentations. I do think, though, that is the focus we
20 want to come back on and make sure trends are being picked
21 up and that in truth the precursors are being identified.

22 MR. JORDAN: Then let me just simply summarize. I
23 think we talked about the review products. There are other
24 ways, in addition to the bulletins, circulars and
25 information notices for obtaining and getting a lasting

1 corrective action, and one of them is through inspection
2 procedures whenever we find a generic issue warrants a
3 long-term corrective action.

4 And one that is an example is freezing. We have
5 had problems with heat tracing of piping and every year it
6 gets cold and every year we have problems. So we have now
7 modified inspection procedures so that annually the
8 inspectors will prod the licensees to look for those areas
9 of the plant where heat tracing is no longer functional or
10 insulation has been knocked off as being a long-term
11 correction.

12 Other changes are in terms of technical
13 specifications, license changes. This would be a
14 recommendation we would make to NRR. Rules changes, this
15 would be, likely, environmental qualification where a rules
16 change is an obvious long-term answer, or standard review
17 plan changes where that can be solved in the initial review
18 process.

19 In summary, the regional I&E headquarters actions
20 are generally of a prompt nature directed first to a
21 specific facility that is experiencing the event and then to
22 a group of licensees for the generic action. Program
23 effectiveness is enhanced by combining the hand-on, detailed
24 plant knowledge of a resident inspector, the long-term
25 knowledge of utility performance by the region, plus the

1 expert nuclear steam supplier and engineering support from a
2 national perspective by I&E headquarters.

3 This effectiveness is further enhanced by frequent
4 communications between the resident inspector and the NRR
5 licensing project manager and close coordination between I&E
6 and the NRR engineering staff.

7 And it's time to turn it over to NRR.

8 COMMISSIONER AHEARNE: One last question. In the
9 approximately thirty people that are in the regions, is it
10 unfair to say they are doing their normal inspection effort
11 and as part of that inspection effort these aren't thirty
12 individuals, it is thirty staff years that could be
13 collectively, as you look across all the regional efforts,
14 that is approximately the amount of time you would allocate
15 towards this review of operational data?

16 MR. JORDAN: That is exactly correct.

17 CHAIRMAN PALLADINO: Are they really reviewing the
18 operational data from the standpoint of trying to learn from
19 it, or are they reviewing the data primarily to fix up the
20 situation at hand?

21 In other words, it sounds like the people that are
22 involved in I&E on this activity are acting in the IE
23 capacity and I am not saying that is wrong, but I do not
24 have a good feel for the extent to which they are
25 contributing to the evaluation of operating data.

1 MR. JORDAN: Well, I think that is where a very
2 large amount of the contribution actually occurs and the
3 large majority of the problems are fixed by the inspector,
4 identified by the inspector, perked as a generic issue by
5 the inspector that see it perhaps for the first time.

6 So I really think that is where our basis is at
7 this point, and he is contributing, then, his findings.

8 CHAIRMAN PALLADINO: Even though he fixed it up it
9 is reported back?

10 MR. JORDAN: Yes, indeed.

11 CHAIRMAN PALLADINO: All right. Why don't we let
12 Harold go?

13 MR. DENTON: I'm on the next page. I think we are
14 doing a much better job now of following operating
15 experience. I would say there would be two or three hundred
16 events per year that get a detailed look-at by NRR. The
17 other nine percent we don't catch or keep up with.

18 We are able to see a number of events just
19 naturally bring questions. Do we understand the way the
20 system is performing? Is the frequency of failures
21 correct?

22 But the two to three hundred that we focus on do
23 get reflected back in the system either through standard
24 review plan changes or letters to all licensees, a tech spec
25 change. And I have tried to break out on this chart where

1 our manpower goes.

2 Each LER or each PN is read by a project manager,
3 for example, and his job is to be sure that the problem is
4 understood on his plant and to raise any generic issues he
5 sees that have applicability. The kind of things we would
6 do here, we go back to the BWR scram operation, for example.

7 We reviewed every plant, every GE scram system in
8 detail, wrote safety evaluations for those plants once that
9 problem was flagged as a key one.

10 COMMISSIONER AHEARNE: Could I interrupt for a
11 minute, Harold. I do not mean to imply that the PM should
12 do this, but the program manager is not automatically aware
13 or familiar with the LERs on everybody else's plants.

14 MR. DENTON: Right.

15 COMMISSIONER AHEARNE: So that when you say the
16 program manager has the responsibility to raise if it might
17 be a generic item, that is based upon either total
18 background knowledge or knowledge of that plant, but it
19 really isn't doing a screening across all plants.

20 MR. DENTON: Then we have another branch which
21 used to be headed up by John Oshinsky, which was the
22 operating reactor branch, and he was the one with NRR that
23 put together the agenda of items to consider at each weekly
24 meeting.

25 Let me pass around, Gary, some copies of the

1 agendas for meetings. So that was a group whose job it was
2 in the first instance to look at every LER that came through
3 the system and flag the ones that they thought deserved
4 management's attention because of the uniqueness or generic
5 applicability.

6 COMMISSIONER AHEARNE: You were speaking in the
7 past tense and we are selecting a new branch chief. That is
8 still the branch's function.

9 MR. DENTON: Just so these illustrate the type of
10 events, there is something in back of this I wanted to focus
11 on, but based on that branch's assessment of the most
12 interesting problems which occurred during the past week
13 with the input from I&E and others, we pick out the ones
14 that we think have unique applicability and should be
15 reflected in our process, and we go through those and make
16 assignments, who is going to follow up and do something with
17 them, with the results.

18 I want to show -- I picked out this May 6 one
19 because of the very last page. We had been noticing in
20 these meetings that many of the things that came to our
21 attention had more than one failure involved.

22 CHAIRMAN PALLADINO: What page?

23 MR. DENTON: The very last page of the handout,
24 the multiple failure information. So that branch went back
25 for a period of five or six months and tabulated how many of

1 the 73 events that had risen to our level of attention had
2 had more than one failure. And you see it is not uncommon
3 to have two failures involved. And it was almost one a
4 month.

5 There were two independent failures. And we had a
6 few instances with as many as four independent failures, and
7 it gets reflected back in as we look at independence and
8 single failures. So really that branch within my division
9 of licensing has the primary responsibility in NRR for the
10 agenda.

11 And based on --

12 COMMISSIONER AHEARNE: Now is this information
13 something they put together each week; they will write this
14 kind of summary?

15 MR. DENTON: Then they write a following summary
16 report that assigns responsibilities within NRR for
17 follow-up. In other words, what do we do as a result of
18 this information? Does it require a change in our standard
19 review plan? Does we require all licensees to respond
20 somehow?

21 A good example is this Pilgrim case that we were
22 talking about where the reactor vessel level observations
23 were observed as a result of the dry wall heating up, and we
24 have since met with GE and the GE owners groups over how
25 good is the reactor vessel instrumentation on a generic

1 basis.

2 Let me show you the next example, this interface
3 agreement that I&E and NRR have. That is formal.

4 COMMISSIONER AHEARNE: As long as he's passing it
5 out, let me ask this: Does this particular branch, you say
6 -- do they decide where in NRR?

7 MR. DENTON: No, I decide that at the weekly
8 meeting. In other words, they distill out the events which
9 should be considered by management. Then those decisions
10 are made in the meeting.

11 COMMISSIONER AHEARNE: Is one of those issues
12 addressed in making a decision whether this is an area that
13 AEOD ought to put an effort into, or is that independent?
14 Is NRR's approach that if AEOD wishe to follow it that it is
15 NRR's action?

16 MR. DENTON: It's more independent because of the
17 timing status which we usually have to deal with it faster
18 in time and be prepared to say what does this mean for all
19 other of this class of plants. AEOD is represented in the
20 meeting and gets a copy of all of the correspondence.

21 And eventually, if we know he plans to do
22 something in a time frame that would serve our purpose then
23 we would not take it on.

24 This is just to show a typical task interface
25 agreement to keep us from running toward the ball on every

1 occurrence. We have initiated this device, which I think
2 works well.

3 When I&E has a problem that they need help on,
4 both offices agree as to the scope of NRR actions, so that
5 we don't duplicate each other's work. So I&E and NRR put
6 this together and we agree that we will take on these tasks
7 and we designate people so that on the follow-up for this
8 particular event there is no confusion about who has what
9 role.

10 CHAIRMAN PALLADINO: Does this say who is going to
11 send the material out if it is appropriate to send it out to
12 other utilities?

13 MR. DENTON: I&E almost always sends it unless the
14 license is affected. Now if we need to modify the license
15 we will send it, but if it is -- I think that is the normal
16 breakdown, whether it meets the terms of the license or
17 whether it has modified the license.

18 So the nine manyears I have shown in the first
19 bullet tend to come in the Division of Licensing. The
20 short-term generic impacts tend to come from the other
21 divisions within NRR. This is where the issue is flagged
22 and it needs to be looked at by one of the technical groups.

23 The products I have listed at the bottom of the
24 chart. People need changes in their tech specs because of
25 various equipment failures. We write about 75 of those a

1 year, for example, which allow temporary operation in a
2 degraded state of the plant with compensating safety actions
3 in place during that period of time.

4 And this is an SER that is usually very limited in
5 duration and it is done just for the short-term purposes.

6 We issue a number of generic safety evaluation reports such
7 as the one I mentioned with the GE scram system.

8 We do the task assigned under the interface
9 agreements. What we don't do is attempt to take every PN
10 and LER and track it, and that is something we do count on
11 the AEOD for. We are not tracking the types of events which
12 are occurring which don't rise to our attention. We wait
13 for another group, such as AEOD, to identify the need for
14 action in those areas.

15 I think it's fair to say when we hear hoofbeats we
16 think of horses, not zebras and there are some zebras buried
17 in these LERs and we don't attempt to find them down in the
18 other, say, ninety percent of the LERs that we don't look at.

19 COMMISSIONER AHEARNE: When you say you don't look
20 at, you don't look at in detail?

21 MR. DENTON: That's right. I think every LER is
22 read at least three times by staff, once at LED, I&E and
23 NRR. It is looked at and read by someone, so we have a good
24 chance of catching those that either have significant
25 applicability to a single plant or generic applicability.

1 But there is no guarantee that we are catching them all.

2 Industry reads and screens them all twice
3 independently, also, and we read their reports. But unless
4 there are some questions, that completes my presentation.

5 MR. MICHELSON: I might add one bit of information
6 on the question of screening. Yes, there are a lot of
7 people screening -- INPO and NSIC also have a screening
8 operation and we compare notes with their results to see if
9 they find things that they perceive to be of interest that
10 we don't and vice versa.

11 Now there is a lot of effort going into
12 screening. I will have some words to say later about the
13 problems of screening.

14 COMMISSIONER AHEARNE: And about the difference
15 between screening and integration, drawing trends? Because
16 in the past I recall being told several times when we first
17 started down the path of trying to set up the AEOD's office,
18 there were people not represented here, but people were not
19 too happy with that kind of an approach. And their argument
20 was every LER gets read. It is a question of how well you
21 began integrating and drawing significance out of a lot of
22 these.

23 MR. MICHELSON: I will address that issue
24 specifically. It would take you two or three hours to tell
25 you all that we are doing in the one area alone, but I will

1 give you the ideas if you are interested. We can always
2 pursue it further.

3 CHAIRMAN PALLADINO: Well, maybe we ought to get
4 to that point as rapidly as we can. Let's see. We have two
5 more presentations. Why don't we see how rapidly we can
6 cover those and then whatever questions we might ask.

7 MR. MINOGUE: I will be brief, Mr. Chairman.

8 The basic function of the Office of Research is to
9 reduce the uncertainty of PIA by both improving the data
10 base and improving the methodology, risk assessment and data
11 from these operating plants, particularly from LERs, is an
12 important input in this process.

13 I have two vugraphs. I will talk to each of them
14 in turn. The first of them deals with use of this data base
15 to obtain good failure rate data on a wide range of
16 components. We have done this in two contexts, first by
17 review of the LERs basically back to day one. That is the
18 reports to which Bob Bernaro referred earlier.

19 Six of those have been issued. Three of those are
20 in the course of being revised and brought completely up to
21 date. In addition to that we have a joint program with IEEE
22 which looks at the in-plant logs of eleven operating plants,
23 again in an effort to get a data base on failure rates.

24 Two of those reports are planned, available now in
25 draft, and will be finished very soon. This effort has

1 dealt with things like pumps, valves, diesel generators --
2 components of that type. The current status is we are in
3 the last stages of doing the work.

4 Closely related to this and very much an ongoing
5 future project is the work with the data base which NPRDS
6 provides, a broader base of reliability data. That funding,
7 that project and the funding and personnel associated with
8 it will be transferred to AEOD at the end of fiscal '81.
9 And earlier this year Mr. Michelson undertook a very
10 successful initiative, I think, with INPO to get INPO to
11 become involved in and take over the operation of the
12 collection of that type of reliability data. I think this
13 is a big forward move.

14 The immediate step that AEOD is handling is to
15 work with them to develop protocols for reporting so that we
16 can be sure that reporting is a consistent, coherent set.
17 That, for the kind of use we are putting the product to, is
18 more important than one hundred percent participation
19 because this is basic data. We are basically trying to pull
20 these error bands down on PRA.

21 I can tie this to, for example, the safety goal
22 work as an example, very critical to improve our data base
23 with equipment liability.

24 The second area on the second vugraph is, I think,
25 more closely akin to what you gentlemen have been talking

1 about, and that is the event sequence analysis and our
2 analyses of operating events for trends.

3 This, to us, is basically feedback from the real
4 world of operating plants that we can compare back against
5 the risk assessments that have been done and the safety
6 analyses that have been done -- the Rasmussen-type work --
7 to find defects in the models and to assess our ability to
8 predict important transients.

9 We have been working on this project for just over
10 two years and the first major report is about to be
11 published. The data base is very sparse for this kind of
12 thing if you look just at LERs. I think of LERs as a
13 spotlight that is pointed at a stage full of worms -- or
14 snakes might be a better comparison. So you see the snake
15 that is in the spotlight and there may be a lot of other
16 snakes out there. So there are some real problems there.
17 But the statistics, we see this as something that requires
18 very careful peer review and very careful attention.

19 The total level of resources devoted to this
20 program in RES is, as Mr. Michelson said earlier, roughly \$1
21 million in contract money, split roughly half-and-half
22 between the two broad areas that I have discussed, the major
23 contractors being INEL, and ORNL, with SAI as a
24 subcontractor to them.

25 The in-house staff involved is, of course, quite

1 small. These are basically -- we are users of this data in
2 a sense, so the development of data and the pulling it
3 together in a coherent form that we can fold it into our end
4 use does not require a large in-house staff. It is roughly
5 one manyear per year or even slightly less than that.

6 That is a very brief report, Mr. Chairman, in the
7 interest of time.

8 COMMISSIONER AHEARNE: May I ask two questions?
9 In the charts that came down earlier that were a more
10 extensive version, I notice under the research component and
11 data, the LER failure rate data report, there were five
12 published in 1980 and one in 1981. And I wondered whether
13 that was because you have now completed basically all the
14 areas that you are going to look at.

15 MR. MINOGUE: Yes. I'm sorry this program is
16 nearing an end. If it were not nearing an end we were going
17 to shift it over with the NPRDS, but we are near the end of
18 this program.

19 Now the other work, the trend analysis work, is
20 really an immediate end-use. That is keyed directly to our
21 work on PRA and that is a continuing program. In fact it is
22 an expanding program.

23 COMMISSIONER AHEARNE: But you do not intend to do
24 any more of those?

25 MR. MINOGUE: No, sir. We are finished. It all

1 should be done next year, early next year.

2 COMMISSIONER AHEARNE: Another comment. In your
3 accident sequence precursors chart you had mentioned that
4 one conclusion was that precursors suggest higher frequency
5 of core damage than PRAs. Could you explain that?

6 It says precursors suggest higher frequency of
7 core damage than PRAs.

8 MR. MINOGUE: Let me define core damage as being
9 the sequence at which you begin to see a core with some
10 degraded conditions. It is not necessarily a core melt. I
11 think that is the way the facts are coming out.

12 There were some limitations to the early
13 analyses. It has come out.

14 COMMISSIONER AHEARNE: Are you saying that the
15 more recent analyses, using better data, lead to a higher
16 frequency or greater probability than the earlier analyses,
17 or are you saying that there were some specific events that
18 have occurred that show that even the best analyses we have,
19 the most current, are inadequate?

20 MR. MINOGUE: Let me give you my answer to it and
21 Mr. Bernaro may want to add to that. I think what we have
22 here is the early work looked at a few sequences and tracked
23 them through. What happens when you look at the LERs and
24 trends there you are using these plants as sort of a
25 quasi-prototype and it's the spotlight that happens to hit

1 the stage.

2 But as you do that, inevitably you are going to
3 turn up some sequences that you had not recognized the
4 sequence of. You are going to turn up failure modes you
5 hadn't seen. It's almost inevitable that the probabilities
6 get higher as you get data

7 COMMISSIONER AHEARNE: It depends on how you
8 establish the probabilities to begin with.

9 MR. MINOGUE: Well, the probabilities began with
10 the first Rasmussen study. There were a lot of things that
11 went into that data base that were not based on broadly
12 taking into account the experience at some plants. There
13 was a lot of, I would not call it guesswork, it was informed
14 estimations.

15 Bob, you may want to add a comment to that.

16 MR. BERNARO: First of all, for the moment, core
17 damage and core melt are synonyms here because most PRAs
18 don't distinguish. We are using the actual LER data to
19 deduce from it what is the demand failure rate of feedwater
20 systems in PWR. What is the demand failure rate of
21 emergency power in a PWR, for the AES or whatever, subsystem
22 failures.

23 And then to deduce from those subsystems failures
24 sort of a PRA in reverse. What is the projected probability
25 of core melt based on this data and what that sentence in

1 that previous line referred to was if you calculate the way
2 we do in PRA they come out on the average 1 times 10⁻⁴ .
3 If you do it from the LER data it comes out higher, of
4 course.

5 It suggests we are underestimating the probability.

6 CHAIRMAN PALLADINO: Can we go on?

7 MR. DAVIS: With regard to NMSS, I guess a
8 pertinent remark to begin with is where the events you have
9 been hearing about for reactors may be measured in thousands
10 per year, as we handle on the order of a few hundred reports
11 of operational data.

12 Up until about a year-and-a-half ago the handling
13 of these within NMSS was integrated, normal work of the
14 office. It flowed to the branches that did the licensing
15 work and was viewed as part of the normal work effort of the
16 licensing reviewers for its impact on the work they were
17 doing.

18 Now due to the stability of the staff there was a
19 fair branch memory associated with these events. However,
20 during the last year and a half we have been doing upgrading
21 of our handling of events and other operational data and
22 procedures, interfaces, sources of information,
23 communication flows and responsibilities.

24 We have basically handled two types of operational
25 data, one which would describe a safety environment and the

1 other safeguards. For safety and environment this is the
2 operational information for those activities which come
3 under the jurisdiction of NRC other than reactors.

4 Basically this information is integrated with
5 AEOD. They review it. We get reports from them. We get
6 nudges or memos from them suggesting we look into particular
7 areas and so forth. We run these in close coordination with
8 IE and with regional offices. However, our coordination
9 efforts have not been as formalized as the NRR-I&E
10 coordination efforts by exchanges of memos of this type, but
11 basically by meetings and verbal communications.

12 With regard to safeguards data, however, AEOD does
13 not do the individual review of safeguard event reports.
14 That is done totally within the office, so consequently we
15 are building and maintaining the data base somewhat
16 comparable to what AEOD is maintaining on the safety and
17 environmental reports. We do publish a report that perhaps
18 you are familiar with, the Safeguard Events Report, which
19 comes out. That flows from that data.

20 With regard to the sources of information, most of
21 the reports which we get are results of requirements placed
22 on licensees through the regulations. There is not a long
23 and detailed additional reporting requirements placed on the
24 licensees for license conditions. They are fairly uniform
25 through the regulations, for example in health and safety.

1 The major report is -- the licensees are required to report
2 to us on different time schedules, exceeding limits imposed
3 by Part 20, and a large bulk of our reports come from that.

4 They also report losses of materials. We review
5 PNs and a major element of the information data we do is
6 really feedback from the regional inspectors. We have a
7 fair flow of that.

8 With regard to what comes out of this, on a
9 case-by-case basis you may have an order, an amendment to a
10 license, and here again we have the same cut with I&E of
11 when it's their's and when it's ours. In other words, we
12 handle orders and other communication with licensees when
13 there is changing in the requirements. Then they handle it,
14 if it is failure to meet an existing requirement.

15 We have rule revisions and then we do, of course,
16 evaluations and reports preparatory to the rule revisions.
17 And there are not a large number of these each year. But I
18 would say a fair number.

19 For example, last year we issued an order for
20 teletherapy, rem radiation monitors. We issued an order
21 concerned with the breakthrough molybdenum-99 and medical
22 application generators. We have orders out for some
23 shipping cask contamination cases and this type thing.

24 But basically these will eventually culminate in
25 changes in the rules and of course it takes two or three

1 years to culminate in that, but they feed into that.

2 Again, we are working right now on a relook at
3 this, particularly in association with Carl and with I&E for
4 kickback for interface with the regions in these occasions,
5 and that's about all I have.

6 CHAIRMAN PALLADINO: What do you mean by
7 coordinated but not integrated? Do you inform them or --

8 MR. DAVIS: Coordination generally means when we
9 bring an action we talk to the appropriate other office so
10 they know what we are doing and we know what they are doing.

11 CHAIRMAN PALLADINO: That is what you mean by
12 coordination?

13 MR. DAVIS: Coordination. Integrated -- I used
14 the term principally with Carl's people in that we feed.
15 They handle the data base and we feed off the data base.
16 Now they do that for our safety and environmental events but
17 not for our safeguard events. They do not review our
18 safeguard events.

19 CHAIRMAN PALLADINO: But it is in their data base?

20 MR. DAVIS: It is not in their data base.

21 CHAIRMAN PALLADINO: Where it is?

22 MR. DAVIS: It is in our own data base.

23 COMMISSIONER AHEARNE: That is because it is
24 classified?

25 MR. DAVIS: It does have some classified aspects,

1 plus, Carl was overwhelmed with the safety problems, I
2 think, when he first started out and this was an easy piece
3 to carve out.

4 CHAIRMAN PALLADINO: Okay, we'll go ahead now to
5 AEOD.

6 MR. MICHELSON: Yes. Well, as your final speaker
7 I would like to give a brief status report on the activities
8 of AEOD. About 21 months ago I came before you to discuss
9 my plans and at that time I used a slide similar to that
10 shown on page 14 of your handout.

11 The slide on page 14 identifies the purposes and
12 goals of the office. It is the same slide I used before
13 except I have expanded the scope in a few areas to make it
14 clearer and more reflecting of our current operations.

15 I think purposes and goals have essentially
16 remained unchanged. Nothing has happened to change, just a
17 few items to expand. The only significant new wrinkles have
18 been to extent the scope in two important areas -- one area
19 in the development of the data storage and retrieval
20 capabilities needed for trend and patterns analysis and the
21 second area was improved screening techniques for
22 significant event determination.

23 Now these two areas required much greater
24 attention than I had foreseen in March of 1980. My goal is
25 to achieve a steady-state operation for AEOD by January of

1 1983 and I believe we are essentially on schedule to get to
2 that point.

3 COMMISSIONER AHEARNE: Carl, when you say
4 steady-state operation you mean no new tasks being added or
5 that the setting up the operation is now basically complete?

6 MR. MICHELSON: The latter really, the setting up
7 of the operation complete. The data processing techniques
8 needed to do our jobs will be complete. The systems will be
9 in place and we can then transfer resources devoted to those
10 kinds of activities into the analysis and evaluation of
11 information.

12 So the heart of our program really is the second
13 item on this slide, so I would like to focus on it just a
14 little bit with a few comments.

15 For instance, the first subitem is identifying
16 needed operational data and propose and maintain data
17 reporting methods and systems. Now this need to propose
18 data reporting methods recently involved AEOD in a
19 redefinition of reporting requirements through rulemaking
20 processes. This activity alone has been a significant work
21 effort and was not foreseen in March of 1980 as being quite
22 so labor intensive.

23 Another item under this, another point under this
24 same subitem is that we are now deeply involved in the
25 development of a new data storage and retrieval system for

1 LER information. This activity has been going on now for
2 about the last 15 months. The system is called the sequence
3 coding and search system and it is designed to store the LER
4 information in a computer-readable format for precision
5 retrieval and for computerized manipulation.

6 Now this is quite different than what we have
7 today when we say we have computerized the information
8 bank. What we have simply done so far is to put the
9 information into a computer, put a few key words into the
10 computer and a few data fields and then we try to search out
11 what is in the LER from that information.

12 Clearly that is difficult to do if you want
13 precise searching or if you want to do manipulations. For
14 instance, a given event may involve several different
15 components, several different systems. Key words simply
16 tell you that the component is somewhere in the event. The
17 system is somewhere in the event. But it doesn't tell you
18 which components went with which systems.

19 That is what we are working now in the sequence
20 coding.

21 COMMISSIONER AHEARNE: What is your -- is that
22 also part of your '83 goal?

23 MR. MICHELSON: Oh, yes, yes. I will give you the
24 story as we go along. And so I would like to outline
25 briefly just how sequence coding works.

1 The system is based on the idea that each reported
2 event is made up of a sequence of discrete occurrences. In
3 other words, an event may report that several things
4 happened and it will even state the order in which they
5 happened, and each one of those steps is an occurrence.
6 Several different occurrences then make up a sequence of what
7 they report in an event report.

8 Now each occurrence involves a system and a
9 component and has a cause and it results in an effect. In
10 addition, each occurrence is related to certain other
11 occurrences within a given sequence. Now the sequence
12 coding and search system will uniquely define the system,
13 the component, the cause and the effect for each discrete
14 occurrence and it will describe the relationship of each
15 occurrence to any other occurrence in the sequence.

16 Now by storing this level of systematized detail
17 it is possible to search uniquely for the occurrences which
18 make up every sequence in the coded data base. In other
19 words, we can search around for combinations of steps. We
20 can search around for combinations of components in given
21 systems with a particular cause for the occurrence, or with
22 a particular effect of the occurrence or whatever you really
23 want to search for.

24 COMMISSIONER AHEARNE: It sounds, though, like you
25 are going to have to require recoding of all past LERs.

1 MR. MICHELSON: That is correct. You cannot get
2 this kind of information without sitting down, reading the
3 document and arranging in a matrix.

4 COMMISSIONER AHEARNE: And how many thousands is
5 that?

6 MR. MICHELSON: I think what we have to deal with
7 is the question of do we want to backfit and to what extent
8 do we want to backfit.

9 COMMISSIONER AHEARNE: I see. That decision
10 hasn't been made yet.

11 MR. MICHELSON: The system is really being
12 designed to provide better control of the future information
13 rather than, necessarily, the past. However, we are
14 developing the system using only past LERs simply to show
15 that even with the level of information we get today that
16 this indeed can be done.

17 COMMISSIONER AHEARNE: Now as you pointed out
18 earlier, we are in the process of going through rulemaking
19 and revising and one of the things that may end up being
20 revised is the LER approach.

21 MR. MICHELSON: That is correct.

22 COMMISSIONER AHEARNE: The sequence coding you are
23 developing, though, would be compatible to various
24 approaches?

25 MR. MICHELSON: That is correct. It is

1 essentially compatible with any freeform text. The same
2 technique can be used to code an inspector's report or any
3 type of report involving a number of systems, a number of
4 components and some type of step-wise or sequential
5 happening within the report.

6 It essentially can code any story, not just the
7 LERs, but we are developing it for LERs.

8 COMMISSIONER AHEARNE: It sounds quite useful. I
9 was suddenly taken with the idea that if you are going to
10 have to go back and recode anywhere from ten to thirty
11 thousand past LERs it would be a mammoth undertaking.

12 MR. MICHELSON: I think what we intend to do is go
13 through and selectively pick, for instance, all of the LERs
14 that were selected under the significant precursor study.
15 In other words, they have already been hand-sorted to find
16 the particular ones of interest.

17 We will code those now and use sequence coding as
18 a more powerful tool to examine the various events and
19 perhaps see trends and patterns that were not perceptible by
20 simply reading and tabulating as they went through the
21 reports. So yes, we would certainly want to be selective.
22 In the future we will be receiving fewer reports of more
23 complexity under the new rulemaking proposal and, therefore,
24 the job may be about the same magnitude as now.

25 But it will become essential because of the

1 complexity of what is reported.

2 CHAIRMAN PALLADINO: In these coding sequences are
3 we breaking new ground?

4 MR. MICHELSON: Almost entirely. It is a system
5 that does not exist anywhere. We had to develop descriptors
6 for all causes and effects and components and systems and so
7 forth.

8 CHAIRMAN PALLADINO: There is no other system?

9 MR. MICHELSON: Nothing that does this. We used
10 basically systems that were started. At least we started
11 by, for instance, using TVA's unit system to make up our
12 identifiers, but toward the end of the game, for systems at
13 least, we ended up inventing our own identifier system
14 because our unique problem forced us into doing our own
15 thing.

16 Okay, so what I am really saying is we can store
17 such information. Now this system is now in the final stage
18 of development and we will go routine with it next spring.
19 We are -- in February we are getting with INPO and NSIC to
20 start doing some trial use of the system to try to work the
21 final bugs out that we may have become blind to by being too
22 close to it for too long.

23 And so we anticipate by the end of April of next
24 year to have a workshop within industry and open up the
25 system to their use.

1 Now the anticipation is that this be on a
2 computer. They have such a computer at Oak Ridge, and that
3 the users simply use telephone lines with local terminals to
4 work the data base. There would be a on-line working of the
5 data base to do searches and to quickly get the various
6 storage.

7 COMMISSIONER AHEARNE: And you say the systems is
8 almost finished?

9 MR. MICHELSON: That's right.

10 COMMISSIONER AHEARNE: So at this stage you do not
11 see any large bugs?

12 MR. MICHELSON: What we did is we went through
13 about a year of development. We worked our bugs out as we
14 went, but we held a lot of the bugs until the end to see
15 what all the problems were and then we went back and made a
16 complete change of the system to put it into operation. We
17 incorporated all of our thoughts that we learned along the
18 way and we are now in the process of cleaning up the system
19 to get these new thoughts and to get the new descriptors in
20 and now to go in to build a data base and start using it.

21 Now, of course, the data base we will have in
22 April will be just a 1981 data base and, you know, it will
23 be just one year of information on the data base. The next
24 decision we would have to make then is are we going to work
25 backwards a little bit or just forward and a lot will depend

1 on how useful we find it.

2 COMMISSIONER AHEARNE: I also imagine it will
3 depend on how much it will cost.

4 MR. MICHELSON: That's right. We have some rough
5 estimates of cost and they approximate about \$100 per LER on
6 the average, but that is considering the complex LERs.
7 Whether or not that will shift, there is a learning process,
8 but there is also -- more complex LERs take longer.

9 But it's been running about \$100 per LER. That
10 sounds like a lot of money, but think of how many times
11 people have read the LERs, searching and searching. And if
12 you have got a difficult trends and patterns job you may
13 have to read 2,000 LERs, and if you start doing that by hand
14 you are talking about many manweeks of effort, even with
15 computer-assisted. With key words it is helpful, but
16 unfortunately key words are missing a lot of information
17 because of the way the whole system is set up.

18 COMMISSIONER AHEARNE: Yes.

19 MR. MICHELSON: Now we believe that this will be
20 an invaluable tool for our searches for trends and patterns
21 and in our searches for common cause vulnerabilities because
22 this gives us a new insight into causes and effects which we
23 simply have not had before.

24 Now without such a system trends and patterns
25 studies involving large data bases would be very

1 labor-intensive and significantly limited in the scope and
2 depth that they can go to by hand. And, of course, they are
3 also vulnerable to errors in the results because of the
4 incompleteness of finding all the information when there are
5 so many reports to go through and that are of a limited
6 capability when you do it by hand.

7 COMMISSIONER AHEARNE: Is all of this coding being
8 done by people on your staff or did you hire a contractor?

9 MR. MICHELSON: No, the contractor does the
10 coding. The people on the staff have worked out the basic
11 system, provided the framework for the system. Oak Ridge is
12 providing the software, the computerizing of it, and doing
13 the coding of the LERs.

14 CHAIRMAN PALLADINO: When do you think all of this
15 coding will be done, or have you answered that?

16 MR. MICHELSON: Yes, well, we will have the system
17 in operation next April with one year in the data base. To
18 backfit the data base would require a number -- a year or
19 two, depending on how far you want to go back.

20 CHAIRMAN PALLADINO: How far do you think we
21 should go back?

22 MR. MICHELSON: We haven't reached a final
23 judgment on that. I would rather wait to see how well the
24 system works. I believe the system will sell itself. If it
25 works as I think it will work, people will be asking that it

1 be backfitted. I won't need to make the decision.

2 COMMISSIONER AHEARNE: A lot of people ask but
3 they don't bring money.

4 MR. MICHELSON: Well, that makes it different. If
5 they don't bring money that makes it difficult because we
6 have not budgeted for backfitting on any extensive basis.
7 We have budgeted for selective backfitting, not for
8 comprehensive backfitting.

9 I would also like to direct your attention to the
10 second item on page 14, the identified potentially
11 significant events for further studies, and I have a couple
12 of remarks on that item.

13 Now this is an area in which AEOD has expended
14 considerable resources but with somewhat limited success.
15 Screening operational information for significance has
16 turned out to be a rather timeconsuming undertaking and
17 heavily dependent on the availability of experienced
18 personnel and their perceptions.

19 We have made several changes in this program
20 hoping to improve its effectiveness, but our main attempt
21 now is to work on a continuous system in the screening
22 process which will use sequence coding and which I will tell
23 you about in just a minute.

24 COMMISSIONER AHEARNE: So far, is that where I
25 would look to see something called trends?

1 MR. MICHELSON: Yes. You will hear more about it
2 as we go.

3 COMMISSIONER AHEARNE: But that bullet would be
4 along with the next, would be trends -- both read together?

5 MR. MICHELSON: Yes. Let me finish a couple more
6 comments here and we will get on to it, I think. We are
7 just about there.

8 Now computer screening may be possible because
9 many of the selection criteria for significance are based on
10 rather simple observations. For example, a commonly used
11 criterion might be does the event involve three or more
12 failures occurring during the same event, perhaps in the
13 same system, perhaps in alternate systems. Such simple
14 questions can be very easily computerized if you have all
15 the information concerning the event already in a matrix of
16 information that is organized by systems and components and
17 causes and effects and so forth, which is what sequence
18 coding does.

19 So we can now use sequence coding and prepare
20 software surveillance equipment which will survey the data
21 base as it is building and spot these kinds of events and
22 tell you here is one to look at. And that is what I want to
23 get to in just a moment.

24 COMMISSIONER AHEARNE: Carl, when you say identify
25 potentially significant events I gather you are drawing a

1 distinction between a trend and identification.

2 MR. MICHELSON: Yes.

3 COMMISSIONER AHEARNE: So this is something that
4 might end up being a trend, or is it a particular event that
5 might have underlying some more serious cause?

6 MR. MICHELSON: Well, let me talk about page 15
7 and then after that, if you still have a problem, let me
8 search it. Page 15 is a roadmap of what we are doing now
9 and what we also intend to do in the future. It is our
10 analysis and evaluation program and it has two roads on it
11 -- a high road and a low road.

12 We are at this time, we are essentially at this
13 time on the high road of this map. We receive operational
14 information. We sit down and do a hand-screening of it,
15 which I have described essentially the same as other people
16 are doing. We are looking now for the potential
17 significance of the event. We are also looking to see if it
18 might be potentially an abnormal occurrence or whether it
19 might be of interest to the NEA system in Europe.

20 But on that high road mostly come out immediately
21 significant events. We can't do much trends and patterns
22 when you are looking at a piece at a time. You might catch
23 some things; you might not. But it is not very effective to
24 do manual surveillance of experience and at the same time
25 try to pull out recall from the computer with key words to

1 see if this thing might fit some kind of a trend or pattern.

2 It can be done. It is labor-intensive. We do
3 some of this, but we have, we think, a better way of doing
4 it in the future. But basically, then, we are on the high
5 road at the moment.

6 When we find a potentially significant event we do
7 a quick engineering evaluation of the event to determine
8 whether or not it is really worthy of any further in-depth
9 study

10 COMMISSIONER AHEARNE: At the moment, then, really
11 it is a subjective judgment?

12 MR. MICHELSON: That's right. Oh, yes, very much
13 so. This whole business of screening is a subjective
14 judgment. You are using information to help the person make
15 the judgment. That is all it does at this time. It does
16 not make it for you.

17 Some things jump out at you. You don't need much
18 understanding to know that if control rods don't go into a
19 reactor there is something seriously wrong. So those jump
20 out at you and you don't have to have screening to catch
21 those. The telephone will tell you that. You will hear
22 about it before you hardly have a chance to think about it.

23 This is the next level down, not quite jumping out
24 at you but not very subtle either. Manual means cannot
25 catch the truly subtle ones unless you have highly trained

1 people, and you can't keep highly trained people happy doing
2 too much of this.

3 So at any rate, though, those significant events
4 receive engineering evaluations. We put out little
5 memorandums or reports depending on how much we dug into the
6 problem. However, if, as a result of the engineering
7 evaluation we feel that a full-blown case study is needed,
8 then we proceed on to a case study, which is a several
9 manmonths effort and it requires a pretty deep digging.

10 Now a case study can be an event or it can be a
11 trends and patterns analysis, and we have both going at the
12 present time under case study.

13 Now I would also like to emphasize in order to get
14 the engineering evaluation and case study work done, it is
15 necessary to go back and do on-site visits to get much more
16 engineering information than we normally have and even on
17 occasion to get some probabilistic or risk assessment work.
18 Now that is the high road. That is the one we are
19 essentially on and that is the road we are trying to get off
20 from and pick our alternative, which is the low road.

21 Now on the low road we have to have sequence
22 coding. That is the first step and since we haven't got it
23 quite done it's clear we are not very far yet. But this is
24 the one that we are putting our real hopes on in terms of an
25 effective screening, an effective trends and patterns

1 analysis, but we could not push ahead of getting the
2 sequence coding work done and that has been one of our top
3 priorities.

4 Now when we can code the information and put it
5 into the computer, then we can compare strategies within the
6 computer and the thought here is that each time a new event
7 comes in it is coded. It is fed to the computer and the
8 computer will check that event against every strategy that
9 has been stored in the computer and we might have one
10 hundred or two hundred strategies in the computer, and all
11 they do is go back and look.

12 Does this particular event match any of those
13 strategies? If it does, it pops it out in the appropriate
14 hopper, which is a watch list number. This is all done by
15 numerically identifying these events as they come in. And
16 the computer applies watch list numbers. When it finds a
17 match it is a strategy because sometimes a given event might
18 match six strategies. Six different things happen, all of
19 which are of particular interest.

20 Now the real trick of doing it this way, of
21 course, is you have got to dream up what you should be
22 looking for. Somebody has to develop the watch list and
23 what the strategy is associated with the watch list in order
24 for you to go back and search each event. So that is one
25 approach. I think it can be done.

1 You know yourself the kinds of things you might
2 want to worry about and if it ever happened you would want
3 to hear about it. That is what this does. Okay, you tell
4 me what you are worried about. You had a little strategy
5 and every event is checked against that strategy and if it
6 matches it it pops it out in a hopper called "Ahearne" and
7 it is sent to you and you look at it right away.

8 Now when you get a stack of these out there and
9 you can see them, search the entire data base for these, the
10 same strategy. After you get a stack of these you can
11 immediately see whether there is a trend and pattern in the
12 problem area you are worried about and that is our purpose.

13 COMMISSIONER AHEARNE: Hopefully.

14 MR. MICHELSON: Hopefully, yes. I am the first to
15 admit that that could be a problem.

16 COMMISSIONER AHEARNE: I hope your optimism is
17 justified. It sounds like you are really counting a great
18 deal on the sequence coding coming through. And then after
19 that, I think, at least the near-term value will have to
20 depend on doing some going back and backcoding.

21 MR. MICHELSON: Yes. We undoubtedly -- the
22 backcoding is being held in abeyance to see how well this
23 works.

24 COMMISSIONER AHEARNE: Of course, we will have to
25 redo it if it doesn't work.

1 MR. MICHELSON: And if the system works very well
2 I think we will find the money because it is so much more
3 efficient than what we are trying to do now.

4 Now there is a second way of looking for trends
5 and patterns, still using the computer, still using all of
6 the information coded but now instead of having a watch
7 list, a predetermined strategy, we go in and develop a
8 strategy somewhat as we go.

9 You get on the keyboard of the computer and you
10 start asking questions. You start looking for certain
11 things. You start seeing a few bits of information that
12 match and you start searching and the first thing you know
13 you can search out a trend, and that is done without a watch
14 list by simply querying the computer and asking it for
15 various information and starting to correlate a story, match
16 it up

17 And then you develop a trend and pattern. You can
18 do this on a computer and search an entire data base in a
19 matter of a day or so that would take you months of reading
20 to ever figure out, and you'd probably never get too far on
21 it, but you have to have all the information on the computer
22 stored in this format first.

23 CHAIRMAN PALLADINO: Carl, I am now in conflict
24 with my next meeting. Do you have any final words?

25 COMMISSIONER AHEARNE: I have a couple of

1 questions.

2 MR. MICHELSON: Let me leave -- the review
3 products are obvious. The organizational chart I need to
4 spend a moment on because that is a manpower question which
5 I think you have been asking a little bit.

6 Now this is the organization chart as it stands
7 for FY 82. We have here authorized 33 positions. Only
8 three of these position remain to be filled. Our most
9 critical need is for the branch chief for the Reactors
10 Operations Analysis. I am presenting acting in that
11 position but it needs a lot more attention than I can give
12 it along with the other things that I have to do.

13 Now this position requires a very high level
14 technical understanding and it involves the direct
15 supervision of six GS-15 lead systems engineers and nine
16 support engineers, so it's a very challenging position. Now
17 this will be a very difficult position to fill properly even
18 if we can get an SES grade allocated to this position. So
19 that is our most critical need at the moment, is finding a
20 branch chief to run that type of an operation because nearly
21 all of our efforts in the future are going to be focused on
22 the Reactors Operations Analysis.

23 COMMISSIONER AHEARNE: You have 33 in your '82
24 budget. In your previous chart that came down you also had
25 the FY 83-84 number and the AEOD ceiling was also 33 and

1 there was above the ceiling seven, for a 40 total.

2 MR. MICHELSON: I think that is just pointing up
3 the difference between what we asked for and what we got,
4 but we have been --

5 COMMISSIONER AHEARNE: 33 is the '83 number also?

6 MR. MICHELSON: We don't know yet.

7 MR. DIRCKS: I think 33 is the '83 number and I
8 think again we are caught in a recruiting bind and if we can
9 recruit we will improve.

10 COMMISSIONER AHEARNE: Well, then, let me ask this
11 specific question. 33 is the number in the chart. This is
12 the chart that comes out. In that 33 there is 1/10 of a
13 staff year for evaluating trends and patterns data.

14 MR. MICHELSON: Let me clarify that.

15 COMMISSIONER AHEARNE: Please do.

16 MR. MICHELSON: Unfortunately that was a poor way
17 of labeling it. What that is is the effort required to do
18 the software development on the previous slide on page 15.
19 Those predetermined strategies as they relate to trends and
20 patterns, we were going to do some software development.
21 That was that small amount of manpower.

22 A trend and pattern study is no different than a
23 significant event study. It all comes under case studies,
24 of which you will find several manyears.

25 COMMISSIONER AHEARNE: You have got a lot under

1 case studies, but I am trying to draw the distinction.

2 Perhaps it isn't there in the budget breakdown.

3 Currently you have got a lot of case studies and
4 in fact you have a list of the case studies you have done.
5 Those are Crystal River, for example, and Brown's Ferry and
6 so forth. I was looking for where is the effort on trend
7 analysis?

8 Now what I have heard this afternoon is that that
9 sort of is waiting for the development of the sequence
10 coding and putting in the information so it can be analyzed.

11 MR. MICHELSON: Not at all. We are only saying
12 sequence coding will be the far more efficient of starting
13 to search out the more subtle ones. We are searching now in
14 our written reports -- well, for instance, I consider the
15 Asiatic clam problem to be a trend and pattern study. This
16 was not picked up necessarily by one of them. We were
17 working on that kind of a problem earlier.

18 It happened to show up nicely in Arkansas.

19 COMMISSIONER AHEARNE: From an analyst's point of
20 view, too, it showed up nicely.

21 MR. MICHELSON: So we have similar studies, for
22 example, on dirty air systems as a trend and pattern
23 experience. I think maybe even the previous handout had a
24 list of the kinds of things we were looking on to show you.

25 These are ongoing now. These are not for the

1 future, but we call those case studies. There is no
2 difference between an event study and a trend and pattern
3 study. If it is a full, in-depth case study it comes under
4 the same account.

5 COMMISSIONER AHEARNE: Yes, but I am concerned
6 about the staff years that will be allocated to that initial
7 -- on that one I don't want to use the word "screening", but
8 the initial review of the body of the data to find out
9 whether there are trends there. At some point after you
10 identify yes, there is a trend there, then if it looks
11 sufficiently significant then you do a case study. It is
12 the previous step that I'm worried about.

13 MR. MICHELSON: That's a very labor-intensive
14 step, the screening, I think is what you are saying. We are
15 spending a lot of resources for screening the information.
16 If that is the case you are quite right. We are spending a
17 great deal of effort on screening.

18 COMMISSIONER AHEARNE: And is that --

19 MR. MICHELSON: That is on there also.

20 COMMISSIONER AHEARNE: 2.2 screening of
21 operational reports.

22 MR. MICHELSON: Yes. We also had some pie charts
23 that we were going to hand out. It got to be a matter of
24 how much do you want to see, but the original handout had a
25 pie chart in it which showed how we spent it, but on here

1 you will not see any difference between evaluations of
2 significant events and evaluations of trends and patterns.

3 Again, we don't try to pick that out. We do not
4 know how to pick that out ahead of time, ahead of the fact.
5 We don't know what is going to come up. We do know that
6 there were certain software developments needed and so that
7 is why you found that line item for software development, but
8 it has nothing to do with the actual trends and patterns
9 studies that are ongoing now.

10 CHAIRMAN PALLADINO: Are the trends and patterns
11 intended for you to pick the precursors of accidents? Is
12 that what you are looking for?

13 MR. MICHELSON: Well, depending on how you define
14 words. I define, really, three things -- trends, which are
15 looking at and extrapolating information, patterns, which
16 are not necessarily extrapolatable but they fit somehow
17 together, and then there are what I call significant
18 precursors, which is a third type.

19 And you meld all these together in trying to see
20 if there is really a problem. Sometimes a significant
21 precursor doesn't become significant until you have done
22 some trends and patterns work and then all of a sudden one
23 of those dots in your data is a big one, but it wasn't
24 apparent until you fit it together with some trends.

25 COMMISSIONER AHEARNE: This may be completely a

1 wrong conclusion, but my concern has been particularly
2 looking at where some of the effort was focused, that you
3 were being forced, either forced to or by desire, you were
4 looking at the more obviously significant events.

5 Now obviously if it is really obviously
6 significant someone has to look at it, but we have been
7 hearing that NRR and I&E put a lot of effort into these what
8 I would call obviously significant, near-term, immediate
9 problems.

10 At least for myself one of the concerns that led
11 me to work with the other Commissioners who were trying to
12 build this kind of office was that there wasn't any obvious
13 place in the agency where the less obvious, less immediate
14 problems would be found.

15 MR. MICHELSON: I think I'm with you completely.

16 COMMISSIONER AHEARNE: And when I looked at many
17 of the reports that came out they still were focused on the
18 immediately obvious problem.

19 MR. MICHELSON: And for some very good reasons.
20 The first reason is that to do good trends and patterns work
21 you have to kind of get your people accustomed to thinking
22 safety from the viewpoint that I would like to have them
23 think from. We have to start cutting our teeth on problems
24 and so we naturally gravitate into the early-on, immediately
25 significant events, but not in an attempt to duplicate it.

1 I don't think that you will find that what we have
2 done will ever duplicate what other people have done, but
3 rather that we said, okay, if you take a different view of
4 this event, what would you come up with. That is good
5 training because they came up with some things that they
6 might not have otherwise seen.

7 COMMISSIONER AHEARNE: Once they are now
8 well-trained are they now going to move on?

9 MR. MICHELSON: Yes. Now in the meantime, while
10 we were trying to get them accustomed to thinking this way,
11 we said well, gee, you know, we can't do this by hand in the
12 future. Trends and patterns are not something you can get
13 by reading 20,000 documents. We have got to have methods of
14 handling the mass of information and quickly finding out
15 what is in there.

16 So we said, okay, we have got to have a better
17 data processing so while the people are worrying about
18 events and another group is saying now how can we develop
19 such a data processing system. So that came along.

20 COMMISSIONER AHEARNE: The sequence coding is
21 going to be critical.

22 MR. MICHELSON: It is very important to do it
23 effectively, no doubt. If it does not work then it is going
24 to be very labor-intensive to do good trends and patterns
25 work, no doubt.

1 However, I have every confidence it is going to
2 work. It is only a question of how well will it work -- as
3 well, I think, or even better. I hope it's going to work
4 even better, but I'm convinced as to its usefulness.

5 So now we've got to the point where we are getting
6 the tools together and we are working over the trends and
7 patterns more. Now along the way we worked into trends and
8 patterns.

9 We are doing a lot of thinking about valves, for
10 instance, and we have got some work going in that area and
11 that is a lot of bits and pieces, but there are a few
12 critical aspects of the valves that we are trying to focus
13 on, and the Asiatic clams.

14 Some of these are trends and patterns, but once
15 that data base is in place we can go in now with statistical
16 tools, with fault tree tools, because we are trying to
17 devise means of matching this technique to fault trees,
18 because, after all, we are just drawing on a portion of
19 fault trees.

20 So there is a lot of tricks we think are going to
21 be useful and that is what I tried to put on the last page.
22 And I think we have just simply run out of time.

23 But the last page is self-evident. We are pushing
24 out in these various areas and particularly
25 computer-assisted screening of potentially significant

1 events and computer-assisted searches for trends and
2 patterns. This has been my story all along. Nothing has
3 changed.

4 I wrote a paper last April and sent it to
5 Gatlinburg in which I think I made an extremely important
6 point of how much this --

7 COMMISSIONER AHEARNE: Well, I think I recognize
8 that, Carl. Perhaps I am just expressing some sense of
9 impatience that it is a long process.

10 CHAIRMAN PALLADINO: And you'd like something to
11 change?

12 COMMISSIONER AHEARNE: Yes, and I do not want the
13 AEOD's office to end up being the principal place that we
14 turn when we need a report done on a high priority problem
15 because we've got other offices that do that.

16 MR. MICHELSON: I am also impatience, but I am
17 always uncomfortable. I probably always will be
18 uncomfortable that we perhaps are not doing enough, but we
19 are moving along, I think.

20 When I look back to where we were then I am very
21 pleased. When I look ahead I am still not too pleased.

22 CHAIRMAN PALLADINO: Carl, one thing I would look
23 to is having the system identify the precursors of possible
24 major accidents. How confident are you that we can do that
25 at the present time?

1 MR. MICHELSON: At the present time? Today?
2 Honestly? Not real confident.

3 CHAIRMAN PALLADINO: How will you feel after you
4 have this coding system in?

5 MR. MICHELSON: I will feel more comfortable then,
6 but it will depend heavily, of course, on how well we use
7 it, in other words, how much resource we put into doing this.

8 COMMISSIONER AHEARNE: And the data you put into
9 it?

10 MR. MICHELSON: But it sure will be efficient
11 compared to what we try to do today.

12 CHAIRMAN PALLADINO: I would like see it used.
13 Maybe I need a little more guidance on how it can be used so
14 that we do take advantage of it and maybe I'll get together
15 with you to just try to get a better feel.

16 MR. MICHELSON: We would like to give you a
17 briefing any time on it. Or a demonstration. We will put
18 you on the computer, if you'd like, and you can play with it
19 yourself -- whatever you like.

20 CHAIRMAN PALLADINO: You might get me interested.

21 MR. MICHELSON: We are quite pleased. Maybe in a
22 couple or three months you would like a demonstration.

23 CHAIRMAN PALLADINO: Maybe we can emphasize a
24 little more how we can take advantage of it.

25 MR. MICHELSON: We are thinking about that

1 seriously now, to understand all of the possible avenues and
2 decide well, who can do it.

3 One final parting note. This system is not being
4 developed for AEOD. This is developed for the agency and
5 for the industry and we are trying to solicit industry
6 interest as well as other parts of the agency, and I think
7 there are a number of people in the agency quite interested
8 but still waiting, of course, until we get it to where they
9 can start to use it.

10 COMMISSIONER AHEARNE: Is there a good way the
11 industry can express an interest?

12 MR. MICHELSON: That part is a little harder to
13 come by.

14 CHAIRMAN PALLADINO: All right, thank you. I know
15 we have kept you a long time. We will stand adjourned.

16 (Whereupon, at 4:17 o'clock p.m., the meeting was
17 adjourned.)

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NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the
COMMISSION MEETING

the matter of: DISCUSSION OF OPERATIONAL DATA EVALUATION

Date of Proceeding: December 21, 1981

Docket Number: _____

Place of Proceeding: Washington, D. C.

were held as herein appears, and that this is the original transcript thereof for the file of the Commission.

Alfred H. Ward

Official Reporter (Typed)

Alfred H. Ward

Official Reporter (Signature)