Transcript of Proceedings

UNITED STATES OF AMERICA

PRESIDENT'S COMMISSION ON THE ACCIDENT AT
THREE MILE ISLAND

DEPOSITION OF: JOHN F. AHEARNE

Washington, D.C.

August 29, 1979

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DEPOSITION OF: JOHN F. AHEARNE

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

August 29, 1979
10:00 a.m.

APPEARANCES:

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JD/DP

C O N T E N T S

Witness	Direct
John F. Ahearne	3

E X H I B I T S

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JD/DF

PROCEEDINGS

Whereupon,

JOHN F. AHEARNE

having been first duly sworn, was called as a witness herein and was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KANE:

Q Would you state your full name for the record, please?

A John Francis Ahearne.

Q Mr. Ahearne, have you ever had your deposition taken before?

A Yes.

Q Let me briefly remind you what we are doing here today. You have been sworn and although we are sitting in the relative informality of your office, you should have in mind that your testimony has the same force and solemnity that it would if you were testifying in a court of law.

My questions and your answers are being taken down by the device here and will be reduced later on to a booklet form by the reporter. You will be given a copy of the booklet and an opportunity to read it and an opportunity to make any corrections you deem necessary.

However, it is important to avoid the necessity for corrections by being as accurate now as you can. If at

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any point you don't understand a question or you feel a response needs some clarification or amendment, please say so and we will stop at that point and make the change on the record.

Lastly, let me remind you of the two basic ground rules in a deposition. One is that you permit me to finish my question prior to responding even if you know what the question is going to be because the record becomes confused if there are two of us attempting to speak at the same time.

Secondly, that you respond audibly to my question since the device cannot take down a gesture or nod of the head. Do you understand all of that?

A Yes, I do.

Q All right. You began a five-year term as a member of the NRC on July 31st, 1978, did you not?

A I thought it was August 1st.

Q All right, fine, we won't quibble about one day. Could you describe your duties as a member of the NRC?

A Do you mean other than would be described in the sense as being a commissioner or do you mean what does a commissioner do?

Q I mean what does a commissioner do, what do you do as a commissioner in general terms?

A I see. I would almost have to answer that as pre-3-Mile Island and post-3-Mile Island.

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Q Why don't we do that, pre-3-Mile Island?

A Pre-3-Mile Island, I would say the primary effort was to act as a member of a collegial body addressing such issues as come to the Commission for vote, whether they are matters regarding policies of the NRC or export licenses or reviews from the appeal board of license board decisions.

The emphasis I am trying to make there is that a more formal process of a member of a five-member group. Most, I would say most of the work in that, which I would guess would be about eight months, seem to be focused in that form of behavior. The caveat I have is that that was an eight month period which may or may not have been typical of the normal operation of the NRC.

Post-3-Mile Island, there has been much more of an attempt to explore what the Commission's -- the staff has been doing with respect to their response to the accident, with respect to changes they may be proposing, with respect to how is the organization structured. We have spent much less time since the accident in that more formal collegial fashion.

Q The pre-TMI type activity of the NRC Commission, would you characterize that primarily as a reactive function, that is to sit and wait for problems to be brought to the Commission rather than going out and seeking out any difficulties that might exist?

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A No.

Q There was some activity prior to TMI that involved the commissioners actually seeking out problems?

A As I can recall, I think that is correct. I don't recall having felt that I was in a primary reactive mode. Most of my experience prior to coming here has been in executive agencies so I was much more used to situations where I was trying to run organizations and there it is much more of an active mode.

I don't recall in the first eight months feeling that there was a substantial difference and that this was reactive. Of course, I do have the caveat that during many of those months I was trying to familiarize myself with the agency and with the people in the agency and the procedures and problems they had.

In that way, I was spending a lot of time going out to Bethesda and talking to various members of the staff. I did not feel that it was primarily a reactive mode. I would say the more substantive difference from the type of background I was familiar with was trying to get used to this collegial aspect, getting at least three or perhaps five people to agree to something is a much slower process than a single person.

Q In terms of going out to Bethesda as you say to familiarize yourself with the agency, were you spending time

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talking to Harold Denton, for example, about the licensing process?

A I talked to every director and Harold was one of them. I talked with most of the second level people and I had meetings with groups of the others.

Q So you spoke with Roger Matson, for example, Director of the Division of Systems Safety?

A That's right, to the extent that I could and I did not have a checklist and so I can't check off names but to the extent I could, I spoke with everyone on the senior and middle level management.

Q Did you speak with the Director of the Office of Inspection and Enforcement about how I&E functions?

A The Acting Director, John Davidson, because ~~Paul~~ Vigoll left just prior to my arriving or around the time I arrived so it was the acting director.

Q During the course of familiarizing yourself with the functioning of the agency, did you perceive any items which you regarded as deficiencies in the way the licensing process or inspection enforcement process works?

A I would say it was more that there were numbers of questions that I had. For me it is difficult to form immediate judgments based on one or even two discussions with someone. I would say that I was compiling lists of questions and I was not completely sure I understood the

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answers to or particularly satisfied with, say the procedures or the way things seemed to be operating.

It was more or less an agenda of items that I would expect to get back to after I had developed a better understanding and also a better understanding of how a single commissioner operated in this mode. One of the major questions I had in my mind and still have in my mind is what is the ability of a single commissioner who is not the chairman to influence the agency and what is the appropriateness of a single commissioner attempting to influence the agency other than going through the collegial body?

Q That has never been made clear one way or the other for you, has it?

A No, it has not.

Q There is no official NRC position on the matter?

A I would say to put it differently, there is ambiguous congressional position on that matter.

Q How do you understand the congressional position on that matter?

A Well, the statute has two sections in it, one which gives -- one which, as I understand it, is a longer term piece that was set in place in the earlier days of the AEC, which essentially says all commissioners are equivalent, and then a second section, which was soon after

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the formation of the NRC, which carried over that all commissioners are equivalent, which says that the chairman is the chief operating officer, but in making that section, they did not eliminate the first section, and so you have these two sections, one of which says all are equivalent for all major actions and the other says the chairman is the chief officer. One or the other would be a lot clearer and both together mean it is ambiguous.

Q Is the chairman of the NRC in fact the chief operating officer?

A What do you mean by that?

Q In terms of how he functions from day to day in your observation?

A He can't be, the law does not -- because of that difference, the law does not permit him to be.

Q The difference between --

A With the section that says on all major actions of the Commission, including the hiring and firing of major officers, that it is a collegial decision and he is not the chief operating officer. If you, for example, then compare his authorities with those of say Charlie Curtis, the head of FERC, Federal Energy Regulatory Commission, who has very clearly the authority to make those kinds of decisions.

Q The chairman of the NRC does not?

A No.

Q Is the chairman of the NRC or was the chairman of the NRC, prior to the TMI-2 accident actively involved in the daily operation of the NRC?

A I would guess for an accurate answer of that, you would really have to ask him.

Q I want your observations.

A My opinion was that to the extent he could in this atmosphere where there are -- the five commissioners are very concerned with their individual rights under the law and to the extent he could, he was attempting to, yes.

Q He was attempting to be involved in daily operations. Was it your observation he was succeeding in that regard?

A To the extent possible under this confused management structure, yes.

Q How would you characterize the relationship between the staff of the NRC and the Commission itself? Is it a close working relationship?

A Now again, I will have to answer that based upon what is relatively limited experience. I don't really view the post-3-Mile Island as necessarily a valid set of data because that is such -- there have been so many stresses, strains and differences but based upon the previous eight months, I would say no.

Q There is not a close relationship between the

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staff and the Commission?

A I would say there really -- again, it is a short term perspective because after all, you can -- I think you could get a much better understanding from Dick Kennedy or Vic Gilinsky Dick ~~Gilenski~~ who have been here from the beginning, Henry ~~[illegible]~~ who has also been on the staff for a longer period of time.

My perspective in the shorter period of time was that there really seemed to be a number of reasons and a number of separations, the physical one being the most obvious and that is with almost all of the staff ten miles away or put it more realistically, between half an hour and an hour away.

Q In Bethesda?

A In Bethesda, Rockville, Silver Spring. They have a number of offices where they are scattered around. So they are separated from us by a substantial time between us. There is also the difficulty, as I mentioned, with five commissioners and the office directors.

It is, I think, difficult for them -- I've tried many times to think if I were an office director, how would I try to relate, having five somewhat equivalent bosses makes it very difficult to decide how do you interact with them and I think it is more or less easy to decide not to and that probably is another reason.

I think another reason, NRC as a whole, this is

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perhaps typical of regulatory commissions, but I'm not sure, but in the case of the NRC, it does not have the kind of integrated overall program plan guidance that I think would be essential to get a stronger link between the Commission and the staff, which would be a kind of plan or document which would have the Commission saying here are the major approaches we believe the staff should be following, the major philosophies, guidelines expected to be followed, major goals we expect to achieve, that kind of guidance.

The staff has a clear framework in which to work and I think you can get a better link. But for a variety of reasons, it really seemed to me that it was -- there was a very poor working relationship between the Commission and the staff.

Q As a result of the poor working relationship, was it true that prior to the 3-Mile Island accident, the NRC Commission had very little involvement with the actual work of plant licensing?

A When you say the work of plant licensing --

Q I mean the actual process, submission of the preliminary safety analysis report, the review of that report, the preparation of a safety evaluation report by the NRC, scheduling of hearings for obtaining a construction permit, the actual conduct of the hearings, the review of the various issues raised at those hearings?

A There are two aspects of that I think. One aspect is that a number of the items you mentioned are those of a party in a set of hearings. The staff and its role as one of the parties and the licensing board hearing. In that sense, you have a group who are a party to a case at which one at some stage will come to us and we will serve as a review board, an adjudicatory body on it.

There are a series of items on a specific licensing case that it is my understanding the way the process works, and I believe it is the way the law requires, that we are precluded from being involved with the staff on that because they have now become a party.

Q And it is recognized at some point the case may come to the Commission in an adjudicatory sense?

A Yes, it will, because the license goes to the appeals board and the appeals board -- it goes to us automatically. To that extent, there is a required exclusion. To the extent that involvement in the specifics of the guidelines and the generic policy aspects, I think there was an involvement.

I know prior to the time I came, Harold Denton had done a review of the licensing process at the Commission's directions and had made recommendations to the Commission for a series of changes in the licensing process and the Commission endorsed a number of those and told him to go

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off and do it. So in that generic sense, there had been an involvement in the licensing process.

Q In that particular regard?

A In that particular regard. One of the issues, as I recall, that we were spending a fair amount of time debating in the fall were reports, preliminary reports on the siting task forces which were again addressing the question of siting policy, generic issues with respect to licensing.

We did have many meetings, lengthy meetings on should we be recommending changes to the licensing process and these went on up through February and early March, that is Commission meetings addressing, with Denton and Shapar who was the ~~assistant~~ Executive Legal Director, addressing how does the licensing process work, what changes might be useful to be made in it to improve it.

Q Were any specific recommendations made prior to the 3-Mile Island accident, in connection with changing plant licensing?

A I don't recall us ever reaching a conclusion on that.

Q All right. Do you recall any specific meeting in which unresolved generic safety issues were addressed by the Commission?

A Yes, we had several meetings on that. There was

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a list of 133 items that were unresolved issues and we had -- I can't recall whether it was two or three days, many hours each day going through item by item trying to understand what the issue was, what was the status of the review, ought it be a first priority or second priority item, how much resources are to be allocated to it.

Q Was there any discussion within the NRC in that regard as to whether or not the NRC should be continuing to license plants while these generic safety issues were outstanding?

A I think Peter would probably be able to answer that question.

Q Peter Bradford?

A Yes, I seem to recall that he raised the question of were any of those issues of sufficiently serious magnitude as to require not having the plants continue to be operated. The ACRS does address each time in its review that specific question, given the unresolved questions pertinent to that plant, are the staff's proposed solutions to them such as to allow that plant to be licensed.

Q To the extent the ACRS does raise those types of issues, who is responsible for obtaining an answer?

A That is one of the problems that seemed to be -- that was bothering me and -- the ACRS comes and briefs the Commission periodically and after one of those I sent a

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series of requests to the staff trying to find out what were they actually doing with the ACRS responses. Because from the ACRS, I was picking up the idea that they tended -- they were beginning to feel that they put comments or criticisms out and nothing ever happened to them, that it was a one-way channel of communication.

Q You say you sent a memorandum to the staff concerning that matter?

A As I recall, the particular set of questions I was asking as a test case to see what would happen was with regard to Davis-Besse.

Q Davis-Besse ACRS questions?

A Yes.

Q Do you have a copy of that memorandum somewhere?

A I am sure we do.

Q Could we take a few minutes and see if we can't find that, could that be something you could locate? Why don't we take a short break?

(Whereupon, a short break was taken.)

MR. KANE: Back on the record.

BY MR. KANE:

Q Mr. Ahearne, you have provided me with a pack of documents here relating to ACRS recommendations and NRC staff response to those recommendations. You specifically directed my attention to a memorandum dated November 3, 1978,

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a memorandum for the executive director for operations from you concerning NRC staff response to ACRS recommendations.

I see you specifically refer in Paragraph 1 to a January 14, 1977 report to the Commission on the operation of Davis-Besse Unit 1 in which the ACRS made nine specific recommendations and by the time of August 25, 1978 report, action had recently begun on four and only preliminary work had been started on the other five.

Was your thought in writing this memorandum that that type of delay in responding to ACRS recommendations was not acceptable in your view?

A Not acceptable implies I had already reached a conclusion as to how the staff did respond. At this stage, which was November, a few months after I had got here, I was still trying to develop an understanding of what role did the ACRS play and how did the staff interact with them.

It certainly seemed to me that that was a very slow response to their questions. The ACRS obviously was sufficiently concerned about it to raise it to us. I felt that the right thing for me to do was to see if I could not find out from the staff what their side of that was and that's really the purpose of that.

Q I see that I also have here a memorandum dated December 20, 1978 for you through the executive director for operations from Harold Denton. Was this memorandum

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the response to your memorandum of November 3?

A Yes.

Q Rather than taking the time to go through what appears to be a fairly lengthy document, I see it does attach responses by the staff action on ACRS recommendations on Davis-Besse Unit 1 licensing. What did Harold Denton's response amount to? Did he indicate there had been a timely response?

A Well, since I have not looked at that response --

Q Did you want to look at it -- sure.

A The impression I had was that they were slower than I would have liked to response but they had addressed a number of the issues. One of the problems was that they had not cycled back to the ACRS and told them what they were doing in a couple of cases.

The ACRS had made their comments and the staff was now taking many of them into account but had not gone back to the ACRS and said -- had the meeting which would have explained what they were doing.

Q I note that your memorandum of November 3, 1978 is directed to the executive director of operations?

A Correct.

Q Why did you send that to the executive director for operations?

A Because the executive director for operations, in

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the structure, the law has applied for NRC, is the nominal head of the major staff officers for allocation of staff resources efforts.

Q I am curious -- I am interested that you used the word "nominal head" because I have to depose Mr. Gossick who is the executive director for operations and my impression is that he does not become very heavily involved in the technical aspects of the licensing process, is that correct?

A I believe that is absolutely correct. On the other hand, on occasions when I have gone directly to the office directors, Mr. Gossick has pointed out to me that that is really going around him and I should be going through him and that's another part of the confusing organizational structure of the NRC.

Q I am curious about that. I spent some time last night reading a transcript of a speech you gave on June 24, 1979 to the National Energy Resources Organization and I did want to ask you about one portion of it. At one point, you cited a staff study done by the Joint Committee for Atomic Energy in 1976 where the statement appeared in that study that the chairman of the Commission would not appear to have the time to administer the Commission on a daily basis, even if he did, he is much too removed and isolated from the day to day problems by layer upon layer of management in the organizational structure.

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The executive director for operations could not perform as an effective manager of the Commission's officers because the major officers can bypass him and go directly to the Commission. No one is in a position to manage effectively the Commission's organization and no one is so doing.

Then the transcript reflects you making the statement, in 1976, I don't think it has changed. Is that true that it has not changed?

A That I said that, yes, and it is my opinion, yes.

Q That would suggest the executive director for operations is really bypassed quite frequently by office heads?

A There is another portion of the statute which requires or gives the responsibility to the office directors to report directly to the Commission. This had gotten to the point where the office directors, I believe prior to a year and a half ago or so, they were at the stage where they were really treating the executive director as another member of the Commission staff, like the general counsel or public affairs office or congressional affairs and he was another staff officer and they were operating independently of any coordination by the EDO, going to the Commission.

There was one fairly major episode with respect to classified briefings where the EDO was not involved and led

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to a number of other problems. I believe as a result of many of those there then ended up being a legislative provision put in the law which required them to at least keep the EDO informed when they were going to the Commission.

In addition to this issue of five commissioners and the office directors, there is to me an ill-defined individual in the middle, the executive director and what his relationship is to the office directors is not very well defined. What his relationship to the commissioners is, if not really very well defined. From an organizational standpoint, I think it is a mess.

Q You did say your impression from receiving this memorandum of December 20, 1978 from Mr. Denton was that the ACRS comments or questions were being followed up on, although not quite as rapidly as you might have preferred. I see you have also provided me with another memorandum from Ken Peterson dated December 27, 1978 which comments that Harold Denton's memorandum of December 20 had responded to your prior memorandum.

It also states that by way of further background, you might be interested in a study of this general subject, an OPE-led task force performed for the Commission last year and it encloses a copy of a study entitled, "Follow-Up on ACRS Letters, Office of Policy Evaluation, November 1977".

Was it your understanding that this study by the

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Office of Policy Evaluation constituted an official policy by the NRC in connection with following up on ACRS comments?

A Without an endorsement as a major -- as an NRC position or Commission position, no, I didn't. I viewed it -- as it says, the Commission asked for a paper to examine what was the follow-up.

Q I notice also that included in this packet is a letter dated April 20, 1978 from Mr. Gossick, Executive Director for Operations and a number of other individuals from Samuel J. Chilk, Secretary to the Commission. The subject is implementation of recommendations on follow-up on ACRS letters and it reflects that NRR is requested to proceed with implementation of the recommendations dealing with NRC staff practices and specifically pages Roman numerals small v and small vi.

I did take a look on page V and it does have a number of recommendations for NRC follow-up on ACRS comments. If I might look at page V for just a moment, there was one reference I wanted to ask you about. Looking at page Roman Numeral V under possible NRC staff practice improvements, there is a comment, "Developing improved system for documenting follow-up on ACRS advice concerning operating plants".

Was it your observation that that type of system was being implemented by Mr. Denton's office within the NRC?

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A I can't recall really seeing that.

Q The reason I ask these questions is as you may be aware, there has been a good deal of testimony and documents already uncovered during the course of this investigation concerning the Pebble Springs licensing and specifically concerning a question which was prepared by Jesse Ebersohl of the ACRS based upon concerns raised by Carl Michaelson in a report he provided to Mr. Ebersohl, specifically Question No. 6 in the Pebble Springs licensing process propounded by the ACRS and prepared by Mr. Ebersohl concerned what the applicant proposed to do with regard to an operator's possible reliance on an aberrant or misleading pressurizer level.

That portion was never answered by the applicant although written responses were submitted and the question comes up, who is responsible for pursuing a response to an ACRS question? In questioning Mr. Denton on this subject -- excuse me, Mr. Matson on this subject, he indicated that in his view, the questions related to matters that went beyond the specific requirements of the standard review plan, the regulatory guide or the regulatory body that the licensing process uses.

Therefore, unless specifically requested by the ACRS to follow-up on a question of that nature, the NRC would not do so because this went beyond its formalized regulatory requirements. Is that your understanding of

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what responsibility of the NRC is with regard to ACRS comments and questions?

A I don't have a very clear picture of the role of the ACRS in its review process. I know that -- my impression was that they asked a substantial amount of questions of the applicants in order for them to reach their final conclusion, on which they then provided a formal piece of advice to us by way of a letter saying that either this was acceptable or was not acceptable or it was acceptable given these changes being made or it was acceptable provided that the following conditions are met.

As far as specific questions they might ask in the process which were not answered, I would have assumed that if they believed there were serious issues that they felt had to be followed up on, they would then in that letter formally tell us that here is a series of questions that were not answered and which we believe must be addressed.

Q Who should have the responsibility, where the applicant makes a written response to an ACRS question, who should have the responsibility for evaluating the technical adequacy of that response? Should that be an NRC responsibility or ACRS responsibility?

A I would fundamentally say it is an ACRS

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responsibility and if they conclude in their staff that they have, their professional members and their consultants, if they do not have the professional talent available, they could formally ask us to do that.

Q The recommendations again or the study you provided us with, a follow-up on ACRS letters prepared by the Office of Policy Evaluation, again on Roman Numeral V, that page, is refers to possible NRC staff practice improvements, including establishing priority for generic resolution of ACRS identified generic issues that is consistent with schedules for construction permits and operating licenses for specific plants, etc.

That paragraph would suggest that it was the thought that the NRC should have some responsibility in following up to resolve generic issues that would be raised by the ACRS?

A That gets back to my point. On those issues that the ACRS believes that we should take action, that they would formally say so. My understanding of an ACRS identified generic issue is such a case, that they formally tell us. Certainly in the time since I have been here, we have a number of times received letters from the ACRS following their meeting saying here are some issues that should be addressed.

Q I see. Those have been followed up by the NRC

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then?

A We have then pushed into the staff to have that done. Much of the ACRS involvement that I am more familiar with is of course following 3-Mile Island in which case I think that is probably an anomalous involvement of the staff and the ACRS, there has been a much closer working iterative process, review of many steps.

I am not sure whether that is a method which the staff and the ACRS have now concluded is one they want to implement as a direct style or what. I know from listening to ACRS members, many do have a concern that there is -- which I think is a concern that consultants in any form of life feel.

That they themselves don't have the time to spend to completely go through the whole issue. They examine an issue, raise some questions and then provide that information to the organization for whom they are consulting. What the organization does with it ofttimes does not end up keeping the consultant abreast of what the work has been and that is a failing I have seen in many other places.

Q It is my understanding the ACRS meets only three days a month, is that right?

A When you say a formal meeting, ACRS members have sub meetings. There is a large body of professional staff who work for the ACRS and of course, there are also

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consultants which they hire, like Carl Michaelson who do a lot of the staff work and staff preparation. I think the formal meetings are not very frequent.

Q It is at formal meetings that the ACRS has a body would formulate questions to be propounded in a licensing procedure, isn't that right?

A That I am not sure of. I don't know if that is when they would propound the questions or whether they would vote on the questions or present the questions. I would expect that the experts in a given field would be relied on to have thought of most of the important questions asked outside of any meeting.

Q ACRS is composed of 15 members I believe, is that right?

A I don't know the exact number.

Q In any event, it is more than the number of NRC commissioners?

A Oh, yes.

Q So your comments before about the collegial problems in regulating through the kind of body you have with the NRC commissioners would be probably even more the case with regard to ACRS, wouldn't it?

A I'm not sure. The reason I hesitate in answering that question, I have been a member or participated in a number of task forces and worked on science advisory boards.

The understanding a member has when they go on that board to a large extent determines their willingness to work towards a collegial solution and what they think is an appropriate collegial position. I am not sure, never having been an ACRS member. I don't know what level of difficulty the chairman of the ACRS has in getting to a collegial position.

It also, I think, depends on how unusual the issue is. I would suspect on many of the licensing applications they have reviewed, many of the issues they address are ones that are familiar to most of the members. On the other hand, I notice in the 3-Mile Island situation where there were many new, or at least new issues being raised or issues being raised in ways that they apparently had not really addressed before, there were several cases where I detected the sense that the ACRS itself as a body was not able to reach a position -- and in a number of cases we would get in the hearings we held, Max Carbon, the current chairman saying that the ACRS as a group had not yet reached a position on this.

He was willing to offer his personal opinion and other members could offer theirs, but the group itself had not reached one. I don't know if that is representative of a scientific group trying to be very balanced before reaching a conclusion or the difficulty in getting a collegial position.

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Q Is my understanding correct that most of the members of the ACRS are heavily committed elsewhere in terms of full-time employment? Either on an academic basis -- for example, Carl Michaelson is with TVA and he is a consultant.

A Certainly, many are. There are a number who are retired. That does not necessarily mean that they are not heavily committed on a consultant basis elsewhere. It is clear that they are part-time members and that's what the ACRS is, a typical scientific advisory board of people chosen for their ability and knowledge in a particular area with the concept that because of their expert status on that, that by spending a relatively short period of time, they can address issues and give expert opinion. They then have a reasonable size staff to dig into staff papers and that kind of material for them.

Q To the extent you would want to place responsibility for following up on questions posed to an applicant during a license process, would someone or some office which has continuing ongoing daily responsibility in that area, you would not place that with the ACRS, would you?

A It depends upon the question. When you are sitting down with someone and asking him about how this machine of his works or what he has thought about it, you may very well ask him every question you can possibly think about that might be germane to the operating of that machine.

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Some of the questions may be have you done this kind of an analysis, have you thought of what would happen if this happened? Some of the questions may be to attempt to address how deep is the technical talent of the licensee. Some may be to address how much thought have they given to off-normal behavior.

This is just a guess because I have not gone through the list of the kinds of questions but I would guess there are several categories of questions, some of which the questioner is vitally interested in the answer and believes it is critical and crucial and if it is not answered, it must be followed up.

Some of which are ones that are of a type and there are categories of questions. Although some might not be answered, others are, and it would be nice to have them all but the body of them being answered satisifies the questioner.

I really expected the ACRS, if they had felt there were significant issues unresolved and cannot be resolved by them and their people to then tell us formally, here is a list.

Q On the specific case of the Pebble Springs situation, I gather the explanation that has been provided to us for why the question was not followed up on is indicative of the loose organization within ACRS. According

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to Mr. Ebersohl, he had health and family problems at about the time the answers were submitted by the applicant and therefore he was not very active in ACRS workings at that time to follow-up himself.

As he explains it to us, the ACRS is a situation where if a particular member has particular interests and he writes questions, that's fine, but if he is not there to follow-up on it, it probably won't be followed up by anyone else within the ACRS. The point is it was not followed up within the NRC either as far as we can tell.

A My answer is that unless the ACRS had identified some questions they wanted followed up by us, I would not expect us to do that.

Q Even though at least one of the questions was not responded to in any fashion at all, any portion of it. You would not expect the NRC to follow-up on it?

A Unless the ACRS said that the questions we asked are ones that must be followed up on.

Q Would the ACRS normally pose questions that did not need following up on to get some kind of response?

A I would not be surprised, just based upon experience with many scientific advisory bodies that there would be many questions that are not crucial or are not even critical. If a man is interested in an area, he may ask many questions.

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The answer that you give from the way the ACRS interpretation -- the flavor I got from what you said was they tended to view it as personal interest on that individual's part which is not an uncommon mode for an advisory group to view questions of an individual.

Q I guess it was an unfortunate circumstance in that the questions related to Carl Michaelson's concerns and with post-TMI hindsight, it is obvious that those concerns were of some significance. In any event, I take it your point would be that to the extent that an ACRS question is posed to an applicant and the ACRS does not indicate to the NRC that it regards this question as crucial and must be answered and followed up on to have properly evaluate the licensing process, unless that kind of caveat is put on the question, the NRC would not take it on itself to follow-up on the question?

A Slightly different. I think unless the ACRS formally says here are some questions we believe should be followed up, I would not place it on the crucial, critical, must and all of that. I would view it the ACRS responsibility to tell us, here are questions that have not been answered.

Q After they submitted the previous questions and the answers have come back?

A An alternative form that I don't think they have

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proposed is to have us monitor all of their questions. If they are not answered automatically, pursue them.

Q It's interesting because once again, this memorandum that I made reference to before, this OPE study does talk about developing an improved system for documenting follow-up on ACRS advice for operating plants. It refers to advice and not questions but it appears to reflect some perception that there must be a better system within the NRC on following up to ACRS contributions to the licensing process.

A That's right and my impression is that the concern there was -- and certainly in talking to Steve Larocol and other members at the time that led me to write that, it was that when they provided formal advice, a written document of some kind, there was an inadequate follow-up.

Q When you say inadequate follow-up, what do you mean, they were simply put into the file and nothing being done?

A This is now many months ago and my impression as best I can recall was that their concern was that either they were never told what happened or else nothing was happening. They were not necessarily sure nothing was happening but they were certainly never told anything was happening.

Q The idea behind the system for follow-up was to report back to the ACRS to let them know their concerns were being addressed in some fashion?

A I'm not sure what the OPE -- George Sagge is still here who wrote that report.

MR. KANE: Let's have these documents marked as exhibits to the deposition. I don't want to disturb the integrity of your files but I would like to get copies of these as exhibits.

THE WITNESS: Absolutely.

BY MR. KANE:

Q Would there be any problem marking these?

A No, as long as I can keep copies of them.

Q We will make copies of them and have them provided to you.

MR. CHOPKO: Would you prefer to have us make copies and send them to you?

MR. KANE: Yes, but we can mark them now for purposes of identification.

THE WITNESS: As long as you don't take them away.

MR. KANE: Let's have marked as Exhibit 1 to the deposition the memorandum of November 3, 1978 from Mr. Ahearne to the Executive Director of Operations concerning NRC staff response to ACRS recommendations.

(Whereupon, the document referred to was marked Ahearne Deposition Exhibit No. 1 for identification.)

MR. KANE: As Exhibit 2 to the deposition, we will have marked the letter of December 20, 1978 -- the memorandum of December 20, 1978 for Commissioner Ahearne through the Executive Director of Operations from Harold Denton which attaches to it the staff action on ACRS recommendations of January 14, 1977 concerning Davis-Besse Unit No. 1.

(Whereupon, the document referred to was marked Ahearne Deposition Exhibit No. 2 for identification.)

MR. CHOPKO: We will stipulate that it's Exhibit 2 without the handwritten comments, since they are not the commissioner's. Otherwise, we will object.

MR. KANE: I'm glad you brought it up, I did not notice that.

Mr. Ahearne, I notice on Page 3 of this document we have marked as Exhibit 2, there is some handwriting in pencil at the lower right-hand corner. Is that your handwriting?

THE WITNESS: No.

BY MR. KANE:

Q Do you know whose handwriting it is?

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A I think it is my assistant's.

Q What is your assistant's name?

A Harding.

Q His first name?

A Her, Vicki.

Q Vicki Harding. This seems to be a comment she has written in pencil here.

MR. CHOPKO: I would like it not read into the record.

MR. KANE: I want to ask him what she means by this. Let's go off the record for a moment.

(Discussion off the record.)

MR. KANE: Back on the record.

BY MR. KANE:

Q Mr. Ahearne, at your counsel's response, request, I will not make reference to this little note written on Page 3. We would want it included, however, in our copy of this exhibit in case we want to make reference to it later on.

Let me just ask you whether or not it has been your experience that the response of the staff to ACRS questions is often overly documented and excessive in length?

A I would say in general, I find that the staff tends to respond to almost any question with excessive

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length and has a tendency, which is not uncommon of engineers, to stay away from terseness.

Q Do you think that is simply a situation that is a function of the engineering nature of the Nuclear Reactor Regulation office?

A Yes -- of the Nuclear Regulatory Commission. I don't think it is solely restricted to NRR.

Q I am interested in that at Page 6 of the attachment to the document marked as Exhibit No. 6, there is an ACRS comment relating to instrumentation to follow the course of an accident. The committee -- I take it was a committee of the ACRS recommends that prior to commercial power operation of Davis-Besse Unit No. 1, additional means of evaluating the cause -- I take it the word should be course -- no, it is cause, that cause and likely course of various accidents including those of low probability should be at hand in order to provide improved bases for timely provisions of possible off-site emergency measures. The committee wishes to be kept informed.

The status of the response refers to the implementation of Regulatory Guide 1.97 and concludes by saying that at some time as a decision is made regarding implementation of that guide at operating plants, we will implement that on Davis-Besse 1.

Is it your understanding that instrumentation to

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adequately follow the course of an accident was installed at Davis-Besse 1?

A My impression is that we don't have instrumentation to adequately follow the course of an accident in most plants.

Q Why is that?

A I think as you have read my speech, you understand my philosophy of why that is.

Q I am trying to recall, I read your speech fairly late last night.

A I believe there is an overriding philosophy that has imbued all elements of the nuclear community that accidents can't happen.

Q You feel that has permeated the regulatory philosophy of the NRC?

A I feel it has permeated the regulatory philosophy of the NRC, the Congress, the nuclear industry, the utilities.

Q What is your feeling or understanding as to why that has occurred? After all, the function of the NRC is safety and therefore the NRC should be thinking about accidents, right?

A Yes, I believe that is certainly so, although I think fundamentally they should be thinking about how to prevent accidents. I would imagine that a fundamental purpose of a safety organization is not necessarily to concentrate on responding to the accident but rather to

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prevent the accident.

As a secondary, it ought to be able to respond to the accident. I think that over the many years the people who have spent their lives in designing, building, operating, regulating reactors gradually believed they had built them to such a level of safety that accidents really could not happen.

If you look at it from that point of view, then you can begin -- at least I found I could begin to understand a number of things. For example, why aren't there instruments available to handle accident level releases.

The instruments available in general are ones that treat and can handle releases around the normal operating level, and so alert the operators if they are approaching the limits of operation, technical specifications so they can bring a plant down to fix minor leaks.

Those kinds of instrumentations are there. Large-scale accident releases, small in respect to the size that might come from a major accident, say where you have a split in containment and a large amount of radiation spilling out but large in the extent of the kind released at 3-Mile Island, swamped the instruments, they went off scale and there were no instruments to handle that level. Why is that?

I think the reason is that the whole system really

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believed accidents couldn't happen. Same reason for, I think, the lack of a device to measure the water level in a reactor vessel. If you are absolutely convinced that accident won't happen, then having something in there to measure what is the water level as the water drops below the core, you would not consider it as being something essential and on the other hand if you have the philosophy that accidents can happen, then you would concentrate on those kinds of things.

Q Is it your observation also that the concept within the NRC has been that certain accidents can happen but they will involve single failures that will be designed against and that has been the approach within the licensing process?

A Certainly the single failure approach seems to be the dominant approach. But I am trying to draw sweeping conclusions based upon limited experience. That is why it is more a belief that I have, a feeling as I went through those eight months prior and the five months since trying to understand things. I do believe that there was over many years built up this major weakness in the system.

Q What is your understanding for the justification of single failure type of analysis?

A That, that was the conclusion that the people who analyzed cause and effect concluded that they could design to such an extent with a low probability of a multiple

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failure that the single failure analysis would provide that level of protection that was ~~provided.~~ needed

Q Was there a recognition in evolving this concept and applying it in the licensing process that if you did not contemplate single failure analysis, then the degree of analysis was potentially infinite in scope? What I mean by that is obviously if you come off the single failure idea and go to multiple failures, how many multiple failures are you going to deal with? It could obviously go on forever.

A I am sure there is a consideration of that. As I recall, either the discussions or the reading -- we went through a Lewis review of Wash 1400 and there were many meetings on Wash 1400 and discussions on it and meetings with Hal Lewis and his group and as I recall some of the discussions addressed that particular issue.

The general position seemed to be of all the technical people, including Hal Lewis' group for the most part, that adequately addressing single failures did provide the level of protection but there had to be a greater consideration of common cause which leads to multiple -- Lewis' point was that a common cause failure were not adequately addressed, for example, an earthquake which takes out many things at once or a major fire which takes out many things at once. That's not quite the multiple you are addressing, it's a different type of multiple.

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Q Right, -- and there is -- the multiple, as I understand TMI-2 accident, it would fall more under the category of a multiple failure accident rather than a common cause failure accident. What I am thinking of specifically --

A It certainly would not be a common cause, that's correct.

Q What I'm thinking about is the aberrant pressurizer level followed up by a unit error interrupting the flow of the injection. We have a design failure followed up by a human failure. Obviously in light of the TMI-2 accident, the single failure analysis needs some improvement.

What I am fascinated with is the question of where you draw the line? If you are now going to go to multiple failure analysis of some kind, where do you stop that progression? I believe Mr. Eisenhutt once suggested to me, for example, you could carry it out to the point of saying feed water for the plant is safety related matter and you have a dam up river which provides the water and are we now going to make the dam safety related in terms of the analysis NRC gives to these matters? Where do you draw the line once you come off single failure analysis?

A May I address that in a slightly broader context? As you pointed out, TMI comes under the situation where you have equipment failure and human interaction. I am not yet ready to use the word failure because that has many

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connotations and I'm not sure I really understand in the context of what the operators did but certainly there was a lot of human interaction which in some cases undoubtedly led to exacerbation of the accident.

As Lewis had pointed out in his review, one of the major weaknesses we have in our understanding of accidents is the human interaction. This then has -- I think this is borne out as we reviewed 3-Mile Island. It's not only a weakness in understanding of human interaction but a weakness in the consideration of how the operators are to respond and how do you design equipment to help them respond so that the human involvement side of it has not been very well handled in the past.

That is one element that a lot greater effort would have to be devoted to. That's not where you draw the line point and I'm trying to point out that that is an element that I think we are learning from 3-Mile Island. It will take a lot more work before we fully understand what has to be done to take that into consideration.

Where you draw the line, I don't know. Certainly that is one of the questions that people like yourselves and our review have to try to address.

MR. KANE: To finish off the documents we have been marking as exhibits, let's have marked as Exhibit No. 3 a letter dated December -- a memorandum dated December 27,

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1978 from Ken Peterson to you, the subject being NRC staff response to ACRS recommendations.

It encloses with it a memorandum for Mr. Gossick from Mr. Chilk dated April 20, 1978, the subject being implementation of recommendations on follow-up on ACRS letters and a study we have been referring to entitled, "Follow-Up on ACRS Letters" apparently prepared by the Office of Policy Evaluation and dated November 1977.

Let's have that marked collectively as Exhibit No. 3.

(Whereupon, the documents referred to were marked Ahearne Deposition Exhibit No. 3 for identification.)

MR. CHOPKO: To complete the record, at this point we have a standing objection on inclusion of the handwritten comments in Exhibit No. 2 which may be resolved by talking to the originator of the notes. So when we provide you with copies, we hope to provide you with an answer.

MR. KANE: So I can be clear, what is the objection?

MR. CHOPKO: The objection is privilege.

MR. KANE: Privilege?

MR. CHOPKO: Yes, Mr. Ahearne's advisors, to provide him with comments freely.

MR. KANE: This was your legal assistance?

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MR. CHOPKO: Yes.

MR. KANE: Oh, I see, there's some question of attorney-client privilege, all right, fine.

THE WITNESS: So we can take these?

MR. KANE: Yes, please, and you can make copies and if you determine you have to exclude that, you can give me a cover letter on that.

MR. CHOPKO: That's right.

BY MR. KANE:

Q Mr. Ahearne, we have been talking about the potential involvement of NRC Commission in plant licensing work of the staff. Before TMI-2, did the NRC Commission have much involvement in the analysis of safety problems at existing and currently operating plants in the United States?

A I'm sorry, would you repeat the question?

Q Let me rephrase it. Did the NRC Commission have much involvement with the analysis of safety problems at existing currently operating plants in the United States prior to TMI-2?

A Well, we did certainly spend a lot of time -- when I say -- my answer is going to be based upon from August 1978 up until TMI. I can't really address what they might have done prior to that time.

Q Yes.

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A They might have done a great amount, very little, I don't know. Given that, there is that window I am addressing, we did spend a fair amount of time addressing those unresolved issues, the generic issues, trying to decide how serious were they, which ones were truly safety questions, which ones were significantly serious safety questions that they ought to have a very high degree of emphasis on the part of the staff in order to resolve them.

We also spent a reasonably large amount of time debating the question of the impact of earthquakes on existing operating plants as a result of the questions that came up with regard to those five plants in particular. That was a very direct safety question on operating plants.

Q There were five plants on which there was an earthquake question?

A Yes, which we ended up shutting down because of the question of doubt whether they were designed adequately to be safe under the possible earthquakes they might be affected by. That also took a fair amount of time. Those are two specific things that come to mind.

There were probably others, I can recall having meetings with the staff, calling the staff up, that's more personal meetings and discussing such things as the base plate problems the staff was finding.

Q Was there any discussion with you by any of the

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staff prior to TMI-2 about safety problems involving the B&W design?

A The only really related ones would be -- that I can recall was Jim Cresswell. That was more Davis-Besse than the B&W design that he was concerned about. I can't recall B&W design per se being raised as a safety issue prior to 3-Mile Island.

Q Let's come to Mr. Cresswell because he has mentioned your name in the past and we have taken his deposition and spent some time with him finding out what his concerns were. If I understand Mr. Cresswell's testimony, he contacted Commissioner Bradford about the middle of February 1979. Did he contact you around that time as well?

A I have a chronology.

Q Mr. Ahearne, you have handed me a document of some three pages which is handwritten pages and it is entitled, "Cresswell Chronology" and it reflects that about March 1st, Cresswell contacts Commissioner Bradford under open-door policy and expresses general concerns about safety at Davis-Besse. I take it he did not contact you at that time?

A No.

Q Rather than working our way through this chronology, why don't you give me your recollection of

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what occurred and you can refer to this as you need to?

A As I recall, the first that I knew of this was on the 12th of March. I got a memo from Hugh Thompson to Commissioner Bradford's technical assistant. They briefly described the fact that Cresswell contacted their office and advised me that Cresswell would like to contact me and he sent some material he had received from Mr. Cresswell.

On the 13th of March, he called my office, talked to my secretary and said he would like to meet with me. Mary Rose is indicated there as my secretary, Mrs. Lidstrom, informed him that Thompson had forwarded copies of the material and a meeting would be arranged.

On the 14th of March, we got additional information from Cresswell and I turned the material over to my technical assistant for review and for my technical assistant to talk with Mr. Thompson. On the 21st of March, Mr. Cresswell did meet with myself, Mr. Bradford, Mr. Thompson and Mr. Sauter.

Q Did Mr. Cresswell indicate to you at that time or prior to that time why he had chosen to speak to you and Commissioner Bradford?

A No, he did not indicate that and that was not the question that I asked him.

Q Did Mr. Cresswell during this meeting explain to you the attempts he had made to bring these matters that he was concerned about to other people's attention within the

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NRC?

A He said he attempted to raise the questions within his region. Obviously he was taking, which was a fairly significant step on his regard to go many elements above his normal line, coming to us under the open-door policy because he felt frustrated in being able to raise those issues.

Q Was it your impression he was justified in feeling frustrated?

A Justification means that I at that time would have reached a conclusion as to the merits of the issue. Having at that point only heard from Mr. Cresswell and receive the documents he had given, I was not able to reach the conclusion that he was justified. Certainly it was obvious that he felt frustrated.

Q Based on what you know today, was Mr. Cresswell justified in feeling frustrated and not being able to get his concerns evaluated?

A Yes.

Q Based on what you know today, were Mr. Cresswell's concerns properly evaluated within the NRC prior to his coming to you and Commissioner Bradford?

A I don't think so.

Q Have you looked into that matter and made some determination on that?

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A Well, I have asked -- we started pushing -- as a result of Cresswell's request, Commissioner Bradford and I started to examine what was the status of Davis-Besse and what had been happening. Since 3-Mile Island, a number of other people have become aware of those problems and both your people and our task force are addressing specifically what did happen with that process.

I would think that a major examination has to be made of that and I have confidence that our people are doing it and I assume you people are also. Here is an example of an individual raising a serious issue and the system unable to respond adequately to it.

Q Based on what you know today, why were Mr. Cresswell's concerns not properly evaluated within the NRC before he got to your level? What's wrong?

A I have to reserve judgment on that until I see the results. Once we started the task force, I really concluded that I ought to let them reach those conclusions. To adequately assess that, one not only has to talk to Mr. Cresswell and see what Mr. Cresswell raised, one has to talk to -- I guess Streeter is the guy he works for and he has to talk to Keppler and understand what the process was.

He has to talk to -- I think it's -- I was thinking of the fellow in I&E headquarters -- Norm Mosley who signed out the response to the boards. One has to track through

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all of those steps to find out why people did what they did and what did they do.

Q I am by no means certain that we have at any point nailed down all the steps but I am familiar with some of the steps. It is my understanding that a memorandum was sent to Mr. Mosley approximately January 19, 1979 requesting that Mr. Cresswell's concerns be transmitted to the licensing boards. In fact, the memorandum transmitting those concerns did not materialize until the day of the TMI-2 accident, March 28, 1979.

I would like to ask you whether or not you consider that a timely processing of a request for transmission of safety concerns to a licensing board?

A No.

Q You do not consider that timely?

A No.

Q What would you consider a timely processing of those kinds of concerns?

A I think a week would be a timely processing.

Q Why did that kind of delay occur here?

A That is obviously one of the things I am hoping these reviews will find out.

Q You are not aware of any reason at this time?

A No, because I am really relying upon the review to do the examination that has to be done and therefore I

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did not do it.

Q After Mr. Cresswell spoke to you on March 21st and before the accident on March 28th, was any attempt made to contact Mr. Cresswell's superiors and find out what the problem was?

A In talking to Mr. Cresswell, he came to us on the open-door policy, one of the grave -- certainly the concerns I had and you will be talking to Mr. Bradford so you can check with his views, was not to jeopardize Mr. Cresswell. He had come raising some issues under the open-door policy which has as its fundamental aspect that the person is not going to be harmed by doing any of these things.

My impression at the time, and I can't recall whether it was a direct request to him, my impression at the time was that he did not want to have surface the fact that he was involved in raising these issues. I know we did spend some time to try to figure out now how can we address the issues he was raising without surfacing the fact that we were using information he raised to us.

We came up with an approach which we thought would work. We recognized that at some point it might definitely have to be that Jim would have to surface.

Q Did you question him at all as to why he had not taken these concerns to others more senior and more technically oriented persons within the NRC such as Roger

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Mattson or Harold Denton?

A I think that would have been a challenge of the open-door policy. I think that would really have been saying to him, you have come to us, we don't want to talk to you. He really wasn't coming to us in the line, he was coming under this particular policy which says an individual has the right to go to anyone in the agency. Our conclusion is that it would be better for us to go and that is what led us to ask Denton and Davis, what about Davis-Besse.

Q You spoke to Mr. Denton and Mr. Davis about that?

A On March 29th, I ended up sending a memo which Hugh Thompson wrote asking for a status report on Davis-Besse.

Q I think we have that here.

MR. CHOPKO: That was an exhibit to Denton.

MR. KANE: I have here a memorandum dated March 29, 1979 to Harold Denton and John Davis of I&E from you, Mr. Ahearne, and the subject is status report on Davis-Besse Unit 1 and it has a cover page which appears to be some type of routing slip. Let me ask you if that's the memorandum you just referred to?

THE WITNESS: Yes, with the attachment.

MR. CHOPKO: And without the routing slip.

MR. KANE: And without the routing slip, okay.

BY MR. KANE:

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Q I see there is an attachment to this memorandum which reflects your questions concerning Davis-Besse. Question No. 4 is, in view of the recent 3-Mile Island accident, are there any plant systems related to the safe operation of a plant that have experienced specific difficulties? In particular, please provide me with the licensing staff's analysis of the September 24, 1977 event and all major subsequent events that have occurred at the plant.

Was the reason you were focusing on this September 24, 1977 event because of what Mr. Cresswell had told you?

A This memo was result of the Cresswell meeting. The memo when Bradford and I met and Thompson and Sauter, we tried to figure out how do we address these questions. The conclusion we reached is that -- if we would -- we would take the following set of steps and this was on the 27th of March, Bradford, Thompson, Sauter and myself.

I would request a status report on Davis-Besse from NRR and I&E. As you can see, what I used was -- I start out by saying the December 20th memo to me discussing the actions and that's the answer you already have as one of the exhibits. That was the answer to my questions on the ACRS.

The questions I asked on the ACRS as a matter of

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coincidence happened to be on Davis-Besse. Since I already expressed an interest in Davis-Besse, we concluded that I could ask for this report on Davis-Besse and link it back to the other. We were trying to find a way not to surface Cresswell.

Then my technical assistant would go and ask Mr. Thornberg, who is in I&E in charge of a special team that goes out to essentially inspect inspectors, to go out and inspect Davis-Besse to see what about the management of Davis-Besse and before -- in order to do that, we concluded -- we recognized there was going to have to be a significant shifting of the schedule that these PAT teams were on and at that stage, we concluded we would have to tell the other commissioners that we were doing this because of the Cresswell situation.

Q PAT members are --

A T is a team, what it is is a selected set of senior inspectors and the theory is they would go out and spend one week to two weeks reviewing a licensee and the licensee's performance and our performance in inspecting them and provide sort of an inspector general type review of that process.

It was a new concept which apparently the NRC had approved sometime in '77 or '78 and the first inspections were going to be starting in the spring of this year. What

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we were going to be asking is, amongst those first inspections, to put Davis-Besse in. We felt that was another way that -- Mr. Cresswell's major concerns seemed to be that the managers and operators at Davis-Besse really were weak. We thought perhaps we could send that group in to address that.

The status report on Davis-Besse was as a result of Cresswell's concerns and that's why the attachment addresses those specifically.

MR. KANE: Let's have this Cresswell chronology handwritten document marked as Exhibit No. 4 to the deposition and we will mark my copy of the March 29th memorandum to Harold Denton from you that we have been discussing plus this buck slip or transmittal -- as Exhibit No. 5 to this deposition.

MR. CHOPKO: Why don't you pull the buck slip off?

MR. KANE: I'd rather keep it intact but let me ask you, this buck slip appears to be dated 4/1979, April 1979 from you, Commissioner Ahearne --

THE WITNESS: I think this is identifying that it is from me and it's probably somewhere down in the EDO

MR. KANE: All right, let's have it marked as No. 5.

(Whereupon, the documents referred to were marked Ahearne Deposition Exhibits No. 4 and 5 for identification.)

BY MR. KANE:

Q Mr. Ahearne, I also have here a memorandum dated June 11, 1979 addressed to all of the commissioners including yourself from Mr. Hartfield, Chief of the Licensee Operations Evaluation Branch and the subject is distribution of operating experience documents, Metropolitan Edison GPU and it specifically refers to the September 24, 1977 event at Davis-Besse. Do you recall receiving that memorandum?

A Yes.

Q That memorandum appears to reflect a determination by Mr. Hartfield that he should transmit to the NRC commissioners a written explanation of the dissemination of information to operators around the country, specifically Metropolitan Edison, of the details related to the September 24, 1977, transient, at Davis-Besse, is that correct?

A That is certainly what it appears to be.

Q Do you know why Mr. Hartfield felt it was necessary to put this information in writing to the commissioners? Had anyone requested it?

A I don't know it personally. I can read from the

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first sentence.

Q He makes reference to a number of individuals having requested it?

A He says on several occasions in the past few weeks, Messrs. Guibert, Office of the Commission and Maher, Office of the Commission, etc., have separately asked for information on -- I believe it useful to document this information, unquote.

Q Were you concerned at that time about dissemination of information on the September 24, 1977 transient to other operators?

A By June I believe there was -- certainly even prior to that after 3-Mile Island, the significance of Davis-Besse, the similarity was then understood by a lot more people. The question by then had come up I am sure several places as to why had not at least Met Ed known about it? As I recall, the Met Ed people said they had not known about it and that appeared to have been an attempt -- some people had been trying to go back into our system and track, all right, what kind of information had been provided to them and that was Hartfield's response.

Q Did you review this response?

A I read it.

Q Did you determine whether or not it adequately documented the dissemination of information on that transient

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to licensees before the TMI-2 accidents?

A Is your question whether it was an accurate explanation?

Q Let me rephrase it. Based on what Mr. Hartfield had to say, did you conclude that prior to the TMI-2 accident, adequate information on the September 1977 transient at Davis-Besse had in fact been transmitted to licensees by the NRC?

A I concluded prior to that, that it did not, so it didn't really require that.

Q On what basis did you make that determination?

A The fact that people at Met Ed were claiming apparently -- the operators were claiming they really had not known about it.

Q That might be the fault of the operators.

A But your question was, was the information adequately disseminated and clearly it was not because the people who should have known about it did not know about it. So it had broken down.

Q Did you make any determination as to whether the NRC had made every reasonable effort to disseminate the information regardless of whether or not it might have gotten through to the understanding of specific operators?

A To step back and address the more general question, Hal Lewis had raised last fall outside of the

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context of his review the question, do we handle licensee event reports which are serious accident types or serious events, abnormal occurrences, do we handle those accurately and adequately? He concluded we do not.

As a result of some of the proposals he made, we ended up asking ACRS to form a subcommittee to review the LER's, to examine whether or not we handle them adequately and how could we better do it. Just from the general discussions of those issues, I think all of us had reached the conclusion that the system right now was not handling them appropriately and some of the discussions I had -- for example, with some of the people at NRR, it was clear that they had so many LER's that they had looked at, they had no mechanism to integrate them, they had no system which tried to see, now is something showing up in here, is there a pattern, if it's a very serious issue, how do we handle this, how do we incorporate this in the licensing and operating?

All of this has ended up with our recent decision to form a group that would do that specifically. So the concept that we were handling those kinds of events inadequately was gradually being understood. I don't think that that -- if that had said here is how we handled it and we wrote a clear explanation of it and we made sure each operator understood it, that would have been as surprising.

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That was not.

Q In fact, this memorandum I am looking at dated June 11, 1979 does document a number of steps taken by NRC to inform licensees of this transient. I am informed by testimony we have had from Dr. Mattson that this transient was considered significant by his office and in fact his office conducted some investigation and had someone go out there and kind of look over the matter and report on it and had a discussion in his office about it.

I&E under Mr. Carl Safer was to follow-up in the evaluation of that transient. It's not as if this transient was missed from what I understand, in fact there seems to be a lot of documentation related to it.

A My interpretation is that it is imbedded in the midst of many other things. There is no mechanism to screen. The fact that it's on a computer listing, for example, of all events. That requires someone else to screen it out.

Q The document we have here, this June 11, 1979 memo, makes reference to a lot of things. It refers to the preliminary notification, the PN submitted by Davis-Besse on the accident. It also refers to the formal report that followed up that PN.

It also refers to the computer printout you mentioned that goes to Davis-Besse. It also refers to a document called "Current Events Power Reactors" which

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I gather is some sort of newsletter put out by NRC on the accident.

All of those items would appear to be directed in some form or another to Metropolitan Edison. Given all that documentation, why would you feel that Metropolitan Edison would not have been adequately informed of the nature of that transient?

A Well --

Q And how else could you inform Metropolitan Edison?

A I guess I focused more on what have we done inadequately than what has the licensee done inadequately. I think that one of the issues that our task force is studying, and I imagine your's is also, is the licensee's response to information.

I still believe that we don't raise items really significant to some way out of the forest of material that flows. I suspect that licensees get volumes of material from us, a constant flow. In a normal operating organization, there has to be some way of weeding out what is really significant and what is just a continuous flow.

I did not detect after 3-Mile Island and Davis-Besse being discussed, either the flavor in the staff or the flavor of the industry representatives or in the flavor of a number of utility people involved up in Harrisburg or

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who came to meetings here, I don't recall ever running into people saying, oh, boy, Met Ed was really stupid.

We knew that, we had seen it in the Davis-Besse report and we understood the significance, why didn't they. Maybe Met Ed was at fault and I assume in going through these chronologies, not only what did we do, what did Met Ed do, I know our people are looking at that.

That will then come out, if they really missed up, if their system was very poor. I suspect it is more a general attitude.

Q Do you think it was an attitude or do you think it was deficiencies in the actual reporting of the event itself?

A There are two kinds of reporting of events. One is, here is the event that occurred and a description of what happened. What I was focusing on there was, I would hope that there would be a system which collects -- in talking to one of Denton's deputies, he mentioned something like 3,000 of these events that flow across his desk in a year.

Our system or a system has to be able to screen those 3,000 and elevate some of them to items of immediate significance. So that's part of it. The rest of it, of course, the identification of how significant it was, that gets back to Cresswell's problem.

He felt it really showed something which

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obviously B&W's report, at least to the licensee, didn't and the licensee's report to his I&E bosses didn't.

Q In terms of indicating it was significant?

A Yes. That falls back again on the NRC failure.

Q In what category as far as you are concerned does the Davis-Besse incident reporting fall? Is it a question of not recognizing the significance or not reporting it in the way it should have been reported in the first place?

A I believe the more serious failure is not recognizing the significance.

Q It was put into Current Events Power Reactors which is a selected grouping of transients, as I understand it. That would indicate some significance, wouldn't it?

A But there aren't that many major events. When I say the significance, I view it more in the term of the potential hazard associated with it, sort of Michaelson's type association.

Q It was your recognition that it was simply not recognized as significant enough. Otherwise, it was adequately reported?

A It was reported. I am trying to stress the fact that I suspect that the licensees -- and I know NRR staff are not dissimilar from that desk over there. There are volumes of papers that flow through. Just as a licensee ought to identify and make sure that their operators

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understand when a significant event occurs.

I would not be surprised if the reviews underway conclude that Met Ed should have alerted its operators to this event because it was an event in a plant of similar design to their plant. It was not a Westinghouse plant, it was not a Combustion Engineering plant, it was not a GE plant, it was a subset like their's.

I would not be surprised that that comes out but I have not dug into what Met Ed did so I can't reach that conclusion yet. I assume the Commission who reviews yours and ours will tell me. I know internal to the NRC, the way we handle these license event reports is inadequate.

Q What I wanted to come to was let's assume you are correct, let's assume it comes out that Met Ed should have known of the Davis-Besse transient and should have advised its operators of it. The question still becomes what would they have known of the Davis-Besse transient?

If I understand all of your testimony here, you are under the impression that if all the documents that existed within NRC concerning the Davis-Besse transient had been made available to Met Ed prior to TMI-2 and someone said this packet of documents I am giving you is significant and raises significant safety problems for your B&W plant and that word had gone out to the appropriate people at Met Ed, presumably Met Ed would

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have learned the lessons it should have learned from the Davis-Besse transient. Is that right?

A No, because that addresses the second question, did we recognize the significance of it?

Q What I'm saying is let's assume you had?

A Had we recognized the significance, had Cresswell's concerns been addressed --

Q Let me back up further. Roger Mattson has told me within his office that the Davis-Besse September 24, 1977 transient was recognized as significant. Gerald Masides, from his office went to the Davis-Besse site and held a meeting with representatives, some 32 people at the meeting, to talk about the transient and come back to his office with a trip report he prepared.

They discussed it in Mr. Mattson's office and it was for I&E to follow-up. There's no question that it was significant.

A That's news to me.

Q Within Mr. Mattson's office, there appears to be no question that it was recognized as significant. Presumably as far as we know, it has not been followed up on because Mr. Safer of I&E never got back to Mr. Mattson as far as he can recall and we deposed Mr. Safer and he does not recall that it went any further than his office either in a report that was prepared.

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A When was this?

Q This meeting would have been in the early part of October of '77, perhaps two weeks after the transient of September 24th, '77 at Davis-Besse.

MR. CHOPKO: I think the record should reflect that Mr. Mattson's concern expressed in his deposition and the reason he sent Mr. Masides out there was that the transient occurred soon after Davis-Besse began operations and there was some concern that maybe they missed something in the licensing review or that they had licensed Davis-Besse 1 too soon. Their concern started from that point.

MR. KANE: That's right. He is quite unequivocal in his recognition that the transient was regarded as significant. Let me come to the point I am trying to reach, Mr. Ahearne. I have gone through the documentation related to the Davis-Besse transient and I have most of it here with me and you are welcome to examine it.

But let me tell you the preliminary notification dated September 26, 1977 does not mention in any fashion operator error based upon or related to interruption or termination of the high pressure injection. The LER that follows that of October 7, 1977 also makes no mention of operator error concerning high pressure injection termination.

The supplement to the LER prepared by the licensee dated November 14th, '77 is 59 pages long and again, no

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mention of error in any termination of high pressure injection. It states on Page 2 of that document operator action was timely and proper throughout the sequence of events.

Then there is an I&E report prepared by the NRC on the incident and again it's dated November 22, 1977 and no mention of error concerning HPI termination. The only reference appears on Page 5 as part of a detailed chronology and the reference is that HPI pumps were shut down at this time as pressurizer level was normal.

The LER monthly report or monthly output during November 1977, that's that computer printout and Page 13 refers to that September 24th, '77 transient but I think it makes the point you made, it is a summary description and makes no reference to operator error.

The Current Events Power Reactors refer to Mr. Hartfield's memorandum published in December '77 begins with the heading, "Operator Error", but that's not the transient of September 24th, '77 that it describes. It's another transient at some other place and it places the description of the Davis-Besse September 24th, '77 transient under valve malfunctions and makes no mention of any operator error concerning HPI termination.

The ironic thing is that we have received a letter dated May 13, 1979 to the NRC from Toledo Edison enclosing

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its evaluation of the September 24th, '77 Davis-Besse transient which acknowledges in the documentation as far as I can see for the first time that they did understand there was some error involved in the operator terminating HPI and they did some retraining at the Davis-Besse plant to provide that.

The question I have, in light of all this documentation, does it not indicate to you that this was a matter of improperly reporting this transient rather than failing to appreciate its significance? It seems to me that the one crucial fact that would have helped TMI operator error based on HPI termination is left out of all this documentation.

THE WITNESS: There were several crucial facts. There was the pressurizer level problem which was a crucial fact. Operator error certainly would have been a crucial fact.

BY MR. KANE:

Q But the interruption of the high pressure injection is the thing not mentioned again and again in this documentation. How do you prevent that kind of thing from happening in the reporting of these transients?

A You mean how do you prevent an inadequate description of the transient?

Q Yes.

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A I would guess -- I have not focused on that particular aspect of that. Addressing that specific one, I can't really answer, but in general the whole regulatory framework has to be very tough. When there is a major mistake made, one has to demonstrate regulatory toughness.

Q Okay, and specifically in terms of this entire system, obviously the NRC looks to and has to look to the licensee to report these events. Is that true?

A I think the NRC looks to the licensee to identify that the event occurred. I think we ought to be more heavily involved in the summary of what actually did occur.

Q For example, take the situation like the Davis-Besse transient. The LER is turned in and does not mention any operator error or any termination of HPI. I take it there are utility records which would indicate that during the transient, there was an interruption in the flow of the HPI but that's not included in the LER.

How is the NRC supposed to know? Is NRC going to be called upon to go out and independently investigate every LER to determine whether or not the salient facts related to that transient have been reported in that LER?

A It might be required to do it on at least an audit basis with very significant penalties if it turns out --

Q On an audit basis, in fact I&E does go out and check out reports of transients on an audit basis, doesn't it?

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It's my understanding that very often in the case of inspections, normal inspections at a plant, LER's and transients reported previously are followed up just to find out what has been happening.

A It is my understanding that it is not a from scratch review of the entire episode. Sort of in the context of the IRS reviewing a submission to see whether or not it's accurate.

Q I see. It's just a matter of checking out what has been reported --

A That's my understanding.

MR. KANE: Let's have this memorandum dated June 11, 1979 from Mr. Hartfield to the NRC commissioners on the distribution of operating experience documents to Metropolitan Edison marked as Exhibit 6 to the deposition.

(Whereupon, the document referred to was marked Ahearne Deposition Exhibit No. 6 for identification.)

BY MR. KANE:

Q One thing you mentioned before, Mr. Ahearne, in connection with pre-TMI work of the NRC Commission was export licenses. We spent some time talking with Mr. La Fleur of the International Programs Office of the NRC and one fact that came up in his testimony was that NRC has never in the past required as condition of granting an

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export license for the sale of a reactor abroad that the country receiving the reactor agreed to share information relating to operating experience on the reactor.

Instead what has been done, the export license has been issued, sales made, and after the fact the NRC has made efforts, with some considerable success, to get countries to agree to information sharing as to the reactor facilities they have.

Does that strike you as a prudent way to proceed with regard to making sales abroad or do you feel there should be some effort made to obtain those type of agreements before a sale is made to a country that wants a reactor?

A Certainly I would think in the agreements for cooperation which we have with a vast number of countries, and certainly the ones that I have seen since I have been here seem to have as their major element the sharing of information on reactor experience. So I would think they ought to be essential in these agreements that are struck.

Q Do you think, for example, a sale to a country that does not currently have an information sharing agreement should be conditioned upon their executing such an agreement?

A When you say should, are you asking if the law allows it, should it, or if the law does not allow it, should we ask the law to be changed to allow it?

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Q The second, since I really don't want to call upon you to interpret what the law currently is. I am more interested in getting your regulatory philosophy as an NRC commissioner.

A You are going to get both anyway because at least my understanding of a regulatory commissioner is that we are constrained to operate within the laws as they are written and many times this is a constraint that we may not wish to be in but nevertheless those are the constraints we have.

My understanding at the present time is that the law -- it is very hard for us to place requirements on another country.

Q Surely, and you wouldn't be, would you? You would be telling a domestic vendor such as Westinghouse that they cannot have an export license to sell a reactor to Pakistan unless Pakistan agrees to an information sharing agreement?

A And I would suspect we would have to have some legal justification. The law is written for what are the ground rules upon which we can deny export licensees seem to be fairly explicitly addressed to national security and nonproliferation aspects.

We have a current debate which we have been running for many months as to what extent can we place health and safety type requirements on exports. My guess

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is that we could probably nevertheless work out an arrangement with those countries to get that information.

Q What I am curious about, my understanding from Mr. La Fleur is that to date that attempt has not been made in conjunction with an export license. It has been done on a separate basis and I come to the question again, do you feel that is a prudent way to proceed or should it be changed?

A Until the recent episode with the Swiss reactor, I had thought that we had good working relations with other countries and were getting the information. Certainly the ones I was familiar with were situations where we had been dealing with two specific countries on pipe cracks and certain safety weaknesses in reactors and it appeared we had excellent working relationships and were getting very good information on an extremely timely basis.

The impression I had was that this was uniform across the world with the definite exception of the Soviet Russia and its countries where we have great difficulty getting information. The Swiss incident indicated that that is not really the case and I was surprised.

Q I was interested in the Swiss transient as well because I was interested in why it had not been reported to the NRC by Westinghouse at least if not by the Swiss Government. The best understanding I have of why it was

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not reported by Westinghouse was that there was no recognition by Westinghouse at the time they evaluated the transient that it posed a generic safety issue.

Since I am looking at it with hindsight and some knowledge of the 3-Mile Island accident, it is difficult to see how that conclusion was come to. But assuming it was the case, doesn't it point up a basic weakness in the reporting system that if the licensee does not perceive a generic safety issue or a safety issue as such, they will not report it to the NRC and NRC will not find out about that? Isn't that the case?

A As you probably know, we have an investigation underway of that particular incident with respect to -- one of you guys will have to tell me if it was Part 20 or Part 21.

MR. CHOPKO: 21.

THE WITNESS: So whether or not that should have been reported is a matter I don't want to address because we are investigating that issue.

BY MR. KANE:

Q Okay, let's not address that specific issue but let me ask you the general question, doesn't the reporting process currently used by the NRC place heavy reliance on the licensee's ability to recognize and report what is or is not a safety issue?

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A Until that case -- my understanding had been, and I really based it upon as I said, the working relationships with two other countries, my understanding was that we had these very good working relationships with the countries themselves and we were getting that information. This indicates that is not the case and there is a weakness in that system.

Q Let's take it out of the context of international problems and put it in the domestic situation. Let's assume that plant had been in the United States, the situation would have been the same, Westinghouse would not have reported it to the NRC presumably because it said it did not recognize it as a safety problem.

A But the utility would have reported that.

Q I suppose that is a possibility so in the domestic scene, you do have that difference where you don't in an international program. I see but the question still arises --

A As to whether Westinghouse would, depending upon our investigation of the two cases, it was or was not a safety issue and if it was a safety issue, they should have reported it. That's a Westinghouse issue but in this country, the utility would have reported it.

Q Obviously an awful lot has been said about the licensing and training of reactor operators in connection with the TMI-2 accident. What involvement has NRC had with

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licensing and training of operators?

A Three periods. Prior to August 1st, 1978, prior to 3-Mile Island and post-3-Mile Island. Prior to August 1st, 1978, I can't answer because I have not gone back to review what kind of involvement the Commission had in setting up the regulations that NRR then puts in place.

NRR is the office that regulates -- has the basic set of requirements and I&E goes out and inspects against them. To the extent the Commission was involved in setting them up, I don't know. Between August 1st, '78 and the 3-Mile Island accident, I can't recall the issue of operator qualification or training coming up. It may have but I don't recall it.

Clearly after 3-Mile Island, it has been a major issue and we've had several meetings and a lot of effort put on it.

Q As a matter of fact, one of the major efforts made by the Office of Inspection and Enforcement has been an investigation into the accident. That has now come out as a new reg, 0600, this month, August of 1979. I see you have a copy. Have you had an opportunity to read NUREG-0600?

A I have not read the entire document. I have read the beginning portions and I listened to the briefing and asked questions at the briefing. As you mentioned, it is a document of some two inches thick. A lot of it is a

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chronology in sequence and the chronology in sequence, I did ask are there any substantive changes from previous sequences and I was told no.

Q Is it fair to say that in part at least, NUREG-0600 strongly suggests that operator error and failure to follow established procedures by the operators was the cause of the 3-Mile Island accident?

A Repeat the question again, please?

Q Let me see if I can rephrase it. Based on your reading of NUREG-0600, do you think it is fair to say that NUREG-0600 strongly suggests that the cause of the accident at 3-Mile Island was operator failure to follow established procedures and operator error?

A I think it is fair to conclude that a reader of the document would probably reach the conclusion that the operator actions were the principal problems with having the accident reach the level that it did. Clearly, the stuck-open valve, the fact the valve stuck open was a fact that was independent of the operator but it does focus a primary emphasis on operator action as being the major causes.

Q Does it also focus on operator failure to follow established procedures?

A I did not come away with that as the impression. The impression I came away with -- of course, by the time I read this, I have now sat through many, many briefings on

this. I read volumes of material and gone through many, many chronologies. It is not approaching this with a fresh eye.

My conclusion as to what the document says are really more here is the impression I got in looking at the document, listening to Vic Stello and his people and talking to Stello. It's that package and I can't say that it is the document that leads me to this conclusion.

The impression I have from all of that is that at least there is a substantial body of opinion among Stello and his people that the operators could have acted significantly better and would have significantly reduced the severity of the accident.

Q Do you think the operators failed to follow the procedures they have available to them?

A Now you're asking my opinion, is that correct?

Q Your understanding.

MR. CHOPKO: I don't think that might be a proper subject for interrogation, assuming that inspection and enforcement people take some action, it might be reviewed by the Commission.

MR. KANE: We don't have any reason to believe that will happen one way or the other; do we? I would like to have Mr. Ahearne's understanding of whether or not the operators of TMI-2 failed to follow the procedures made available to them.

Off the record.

(Discussion off the record.)

MR. KANE: On the record.

THE WITNESS: I suspect you will not be completely satisfied with the answer. One of the major questions I have had with respect to the operators, and this has not resolved it for me, is, first, what did they really do?

And, second, what were the procedures in place for them, what action should they take? And, third, for those issues, those situations which were arising which were outside the set of procedures -- of situations for which they had procedures.

Then you have to look back upon what would the seasoned operator be expected to do. There are sort of three elements there. I have not yet reached a conclusion, because I have not seen a sufficiently careful development of those three aspects.

In other words, what did they actually do, of what they did, which was following procedures they had, which were not following procedures,and which were the

situations that were outside.

Part of the difficulties with procedures, obviously, are going to have to be -- were actions taken following procedures written for a different set of operating circumstances?

Was the reactor at the stage they were following a certain set of procedures in a mode different from the one that the procedures were written for?

That requires a greater level of review of operator involvement than I have done yet. Perhaps after I have gone through this, on my second and third reading, and then reviewed the operator training study that has been recently finished or proposed, and then listened and reviewed what your group and Mr. Rogovin's group did, then I can address your question.

At the moment I am not sure.

BY MR. KANE:

Q I see. Maybe I can raise a few questions with you that you can put in that category of "not sure". At Page Roman Numeral I-II-19, the statement is made in the middle of the page, "The failure to follow procedures", and it references the specific procedures, "and trip the reactor coolant pumps at 1200 PSIG, as required, is under consideration as a potential item of non-compliance pursuant to Technical Specification 6.8.1A."

I take it the reactor coolant pumps should have been tripped at that particular PSI, and I believe the information I have heard is that this would help in connection with natural circulation and further cooling of the core.

What I am curious about is that I and E Bulletin 75 that went out on April 5, '79, a few days after the accident and Paragraph 4(c) of that document indicates that "Licensees should review the actions directed by the operating procedures and training instructions to assure that operating procedures currently or are revised to specify in the event of HPI initiation with reactor coolant pumps operating at least one RCP, reactor coolant pump, per loop shall remain operating."

In other words, this direction would not provide for any cutting off of those reactor coolant pumps at all under those circumstances once HPI is initiated.

That would appear to contradict the suggestion here, that the operator should have, in fact, terminated the operation of that pump, at least as I understand it.

A It may, on a superficial reading. What one would have to do is look at the procedures they have here, and the technical steps, and then examine to see whether or not those conditions match up with the conditions that the Bulletin refers to.

Q I see; okay. That may well be the explanation.

Something else I was curious about. At Page Roman Numeral I-IV-13, the NUREG 0600 does state that, "Technical Specification 3.4 --", it states that, "Technical Specification --" let me see if I can find that reference, I-IV-13.

It's right at the top of the page and states, "Technical Specification 3.4.4 requires that the pressurizer level be maintained between 85 and 380 inches." In fact, it is 385 inches in Modes 1, 2 and 3, Mode 3 being hot stand-by which is the mode the operator was in at the time he went over and turned off his high-pressure injection.

Again, it seems he was obeying the technical specification which required that he keep that far below 385 inches, and, in fact, it had gone off-scale at that point, and he was attempting to recover it.

It seems that the very action that the operator took, which was a serious error in light of the accident, was called for by the technical specification.

A Again, that may be the case. What one would really have to look at is whether or not he should have understood, based upon other indications he had, whether he had an accurate reading of what the pressurizer level was really telling him, what he thought it was telling him.

Q The technical specifications are a legal requirement for the operator; aren't they? He is supposed to follow those?

A That is true. But without having read that description, I am not sure whether it is the pressurizer level interpreting what the actual water volume is in the core.

As you know, the real problem ended up being with respect to the pressurizer level being high was not telling him what he thought it was telling him.

Q Sure, but the technical specification referred to, 3.4.4 states, "The pressurizer shall be operable with, A, a steam bubble; B, water volume between 240 and 1330 cubic feet (45 and 385 inches). Applicability is Modes 1, 2 and 3."

And what the operator is instructed, with the pressurizer inoperable under these conditions, he should be in at least hot stand-by with the control rod drive trip breakers operable within 12 hours.

In order to keep the pressurizer operable, the operator was called upon to get the water level between 45 and 385 inches.

It appears that that is what he was attempting to do in turning off the HPI. Once again, the point is that one of the crucial errors by the operators in the course of that accident appears to have been called for by the technical specifications.

A It may well be.

As I said, there are three pieces, and one of which is whether the procedures he was directed to follow were

written for other than the case that the accident was.

Q Your reaction to my comments and questions suggests to me that this is not a subject you previously focused on.

A That is not correct. The subject I previously focused on was whether or not the operators were really to blame.

Q You have not come to any conclusion on that?

A No, because I think we are still at some stage from really understanding what happened to the machine during the process of the accident. I think we are really at some stage -- at least I am, from what I have seen, of what the operators had available to them, of the circumstances they were in when they had that information available to them, and what they, then, did, and, therefore, what they should have done.

It's very easy, and I don't mean this as a criticism of you. It's very easy to take pieces of information at a given stage of a review and conclude, "Now we know everything", and then reach the conclusion.

I, once this accident had occurred, had a very strong belief that there would be a lot of people rapidly reaching the conclusion that we know what had happened. I think in most cases that would be a premature conclusion.

At this stage perhaps you people, having been much more heavily involved in some of this, are able to reach that

stage.

My reaction to this implication in this report, aha, it is the operators. I am reluctant to go that far. I have talked to a number of the operators up there, and I have talked to the people and I have looked at their records.

And, basically, as far as operators go across the country, they are a good, solid group of people. It is not yet clear to me that they did not do what they had been trained to do.

Q Does the absence of the operators' understanding during the accident at TMI-2 suggest to you that this might involve a problem with more than just the Met Ed operators?

A I think it certainly does. I think it probably involves a problem with design control rooms, for example.

Q There was something I wanted to ask you about in terms of competency of operators. I recently received an Order and Notice of Hearing from NRC dated -- it was docketed August 9, 1979, concerning Three Mile Island Unit Number 1.

Are you familiar with this Order and Notice of Hearing?

A Yes.

Q On Page 5 of this Order, it refers to a number of things that the TMI Unit 1 personnel will be required to do before the reopening of Unit 1 would be considered. Paragraph 1-E on Page 5 at the bottom refers to augmenting

the retraining of all reactor operators and senior reactor operators assigned to the control room.

It says, "All operators will receive training at the B and W simulator, and the licensee will conduct a 100 percent reexamination of all operators in these areas," covered, presumably, by the simulator training, and other training mentioned in the paragraph.

The last sentence is that, "NRC will administer complete examinations to all licensed personnel in accordance with 10 CFR 55.20-23." Does that mean NRC will reexamine all of the operators at TMI-Unit 1?

A Well, it certainly says in the statement that all operators will have a reexamination in the areas of the TMI-2 accident.

Q Why is NRC doing that? Why not simply allow the utility to test them, the way it is done in the requalification program.

A As far as 100 percent requalification, it says, "The licensee will conduct".

Q Right, and then it says, "NRC will administer complete examinations."

A Right at the moment I don't recall what the significance of that sentence is. Do you have 55.20.23 --

Q Is that the general licensing section?

A Yes. I must admit, I don't recall the reason for

that sentence being there.

Q I gather the purport of the whole paragraph is that TMI-1 operators will be retrained, retested by the licensee, and then retested or tested by NRC?

A Certainly all operators on B and W have been retrained, we require that of all operators in plants that have B and W plants. I just have to pass; I don't recall that last sentence.

Q It does appear to reflect that the NRC does intend to administer reexaminations or complete examinations to all TMI Unit 1 operators; is that right? As far as I understand it, that's what it appears to say.

A That's what it does appear to say.

Q Is that being done as far as you know, because it is felt that the NRC should make a determination independent from Metropolitan Edison as to the competence of the TMI Unit 1 operators at this time?

A Since I have said I don't recall why that sentence is there, I can't answer that question. I really don't recall that.

Q Do you recall that right after the TMI Unit 2 accident, all of the B and W unit reactors were closed?

A Soon after; not immediately.

Q That came to the Commission for a vote; did it not?

A Yes.

Q What was your position on that particular question? Did you feel it should be closed?

A When we did close them, I think we all voted to close them.

Q Fine, so you did feel they should be closed.

A At the stage -- I did not review those discussions recently. But at the stage that we did -- I recall what we first did was issue a lot of orders. There were a lot of bulletins going out.

There was some point that we did close them all. That was at the stage where we were really issuing so many-- at least my own personal concern was that I felt we were getting to the point that we were overloading the system of the people able to respond to what ought they do.

That would put it in the position where I felt it was an unsafe situation.

Q Did you also feel that B and W operators should also undergo retraining?

A We did do that; we did require that.

Q I am asking you whether or not you felt they should.

A Yes.

Q Fine.

A To make sure they understood the TMI sequence of events.

Q As I understand it, the B and W operators -- the operators of B and W plants were sent to the B and W simulator to have the TMI-2 accident recreated for them, and to be trained in how to handle that transient.

At the end of that one-week program, as I understand it, each of the utilities administered an examination to each of these operators to assure their understanding of the retraining they had.

A That's right.

Q Did the NRC then require these operators to undergo an examination --

A A separate examination?

Q Yes, a separate examination administered by NRC?

A Not to my knowledge.

Q Why not?

A As I recall, what we usually do, we examine the tests going to be given by the licensees, verify the adequacy of the tests, and then verify the audit of the test scores of the tests.

At least in one case we were not happy with the approach the utility was taking. As I recall, it required them to get an outside consultant to improve their training program.

Q Specifically this training program?

A This training program, with respect to getting

their operators able to respond to TMI-2.

Q Were you able to ascertain whether or not during the one-week training program B and W had given for these operators whether or not B and W had taught the test the operators were to take at the end of the one week?

A The question of whether the tests are being taught has come up several times in the discussion on how do we go about monitoring licensing. Each time that question has been raised it has been answered that they are sure it is not.

They examine the tests, they take a look at the courses. I don't recall the specific question of that one week. I do recall several times that question being raised as a potential danger, and the staff adamant that that's not a problem.

Q Mr. Paul Collins, of the Operator Licensing Branch, has testified in a deposition and also in live hearing testimony before the Commission. He indicated last week in his testimony that his initial recommendation in connection with this retraining after TMI-2 was that the NRC administer new examinations to each of these operators, to assure they had the understanding necessary to deal with that accident.

His testimony was that that recommendation, on his part, was overruled by persons higher up. Were you aware of Mr. Collins' recommendations in that regard?

A Not that I can recall, which doesn't mean that I was not at some time aware of it. I don't recall.

Q Was it discussed at all by the Commission as to whether or not it should be required that the NRC reexamine itself on a separate basis from the utility, each and every one of these operators that have been retrained?

A Without going back over the transcripts of those meetings, I can't be positive. I don't think so, but the transcripts would show whether or not that was an issue being debated.

Q Did you feel at any time the NRC should examine on a separate basis each of these operators at B and W plants to be sure they had understood the retraining they received?

A I don't recall feeling that way. It was more a concern that there was an adequate training program. I think the logic would be that if we concluded that we could not rely upon the procedures for retraining in this case, then I guess we would really say why could you rely on it in any case?

And that, perhaps, one ought to give all of the exams. I have not reached that position, so I don't think I concluded we ought to be testing all of them.

Q Do you have any concern today that there may be operators at B and W plants who have had this retraining and don't understand it and NRC does not know about it because

they did not spot check that particular individual's exam?

A I think I am more concerned about the overall question of, Do we provide adequate set of requirements on operators than I am on that specific one. My concern, I think, is broader.

I suspect, and that is one of the things we are in the process of having studies done on and staff looking at and proposals raised. I suspect that we have not applied a sufficient level of requirement on both the competence of the operators and the requirements to understand off-normal behavior.

Probably something closer to the way the Navy goes about training its operators is something we should have required.

Q What about specifically the question of whether you have operators out there at B and W plants who don't really understand, now, today, how to deal with TMI-2 type of accidents?

A I don't have that as a major concern. I have less concern that the operators out there don't understand what we understand than I do, do we understand what are the ways to deal with that type of accident.

Q Again, it is my understanding that the only NRC involvement in this reexamination process in terms of assuring that the operators understood the accident was to spot

check the reexaminations or examinations given by the utilities.

A I would expect that to be the case, since that is the normal process we use.

Q I still have to ask you, how could you be certain, based on a spot-checking procedure only, that there are not operators at B and W plants that went through this program and still, today, do not know how to understand the TMI type accident? How can you be certain?

A You can't be any more certain or less certain than you can for operators in any plant understand how to operate their plant. The basic approach used on that training was the same approach used on training all of them.

Q Can't you be a little bit more certain about that question, however, by requiring that those operators take an NRC-administered and created and graded examination?

A Certainly, you could. I would be really surprised if it turned out, if you did that, that you would find they did not understand it. I would think of all the probable problems that a B and W plant could have, or any plant, that the TMI-type accident sequence is the one that operators now understand.

Q That's going to be from reading newspapers and hearing TV reports and learning whatever their utility tells them.

A No, I would guess it is because of the stress the utilities and B and W and everyone else has put on it.

Q Again, the NRC reliance in this regard is upon performance of the utility and the vendor in this regard, except for the spot check?

A That is the basic way that we have regulated across the whole spectrum; that's right.

Q That's what makes me curious. I don't want to be argumentative, but it strikes me as an interesting question. You have testified before that you feel that the type of errors to which the TMI-2 operators were prone are probably not untypical of the kind of understanding prior to TMI that many operators at B and W plants around the country had.

A I don't think I used the phrase "errors are prone".

Q That is a paraphrase on my part, but I had the impression from your testimony that you felt the lack of understanding operators had during the TMI-2 accident is not peculiar to Metropolitan Edison operators; is that right?

A I think the lack of understanding of what was happening is not peculiar. I don't necessarily conclude that's an operator problem; it may well be an instrumentation problem.

And, certainly, in some cases it is an instrumentation problem.

Q But the lack of understanding of how to deal with

TMI accident as it occurred is not peculiar or unique to Metropolitan Edison?

A I think that is probably correct.

Q We have other plants around the country who may have operators that, prior to TMI-2, were subject to the same failure in understanding, possibly, and presumably that failure in understanding has been remedied by retraining.

But NRC does not know for certain, because NRC did not examine each one of those individuals.

A That's correct, we did not examine each one of those individuals, just as we don't examine every individual that operates all the other plants.

Q All right. You mentioned before your concern with the NRC attitude that accidents don't happen, and you mentioned the fact that in your speech of June 24, 1979, you did make reference to that fact.

I think the reference I have is, "Accidents don't happen, but can't happen is just as good." You made that point that that attitude can no longer prevail, and, instead, we have to adopt the philosophy of someone like Admiral Rickover in the nuclear Navy.

The Commission was very interested in Admiral Rickover's approach to training, etcetera, and we had Admiral Rickover testify before the Commission. He described what I think you would have to concede is a very different

system from the system for commercial nuclear power generation. Testifying before the Presidential Commission on July 23, '79, he emphasized what he saw as the key features of the Navy Nuclear Program, and they included a strong central technical control over design, manufacture, assembly, testing, operation, maintenance, the whole gamut.

Technical competence to a very high degree. Admiral Rickover's words were a deep sense of responsibility and a dedication to excellence. Design conservatism, which included a "forgiving design", his words, one that would come back from an operator's error.

Reliance on direct control by trained operators, rather than automatic control. Allowing a reasonable time for the operator to control the plant during a transient before requiring corrective action.

He also mentioned compliance with detailed operating procedures, and the fact that the operator would always be expected to follow his procedures until instructed otherwise.

If he felt it was wrong, the operator's function was to report that, but under no circumstances to not follow procedures until instructed otherwise by higher-ups.

The last point he made was, "Don't live with deficiencies." If there is a problem with the plant, something wrong, you fix it. You don't simply keep operating and keep

the feature.

Each one of those points gives me a great deal of trouble in terms of trying to analogize --

A. Those were the only points he made?

Q. No, there were others. Many others. He has extensive testimony submitted in written form. But these specific features I am concerned with, because I have a great deal of trouble seeing how they can relate to this current status of commercial nuclear power generation.

Insofar as that might be desirable to emulate a Rickover-type system, it seems to me you would have to deal with these factors. Strong, central technical control. That does not exist in the current nuclear power industry; does it?

The commercial nuclear power industry.

A. As a preface to it, I want to at least point out on the record that the testimony I read of Rickover to the Congress covered many other points.

A lot of emphasis upon the quality of the individuals, the requirement that everybody having anything to do with the plant gets training and extensive training, a much more thorough understanding of what a nuclear plant is and how it operates.

Q. I want to come to that, too.

A. But with respect to the strong technical control,

it certainly does not exist at the moment.

I would guess that the industry response to Three Mile Island is a movement in that direction. For example, the effort the industry now has to try to form a group which addresses nuclear safety problems.

I think there is much more of an understanding of the necessity, both on the part of the industry and of ourselves to have the ability to bring additional technical talent rapidly available.

Q Is there strong central technical control over design within the nuclear power industry?

A Not to the extent the Admiral is talking about. I believe what Admiral Rickover is talking about is, for example, a single-type plant, until there is a need for a larger type of plant, a larger ship, for example.

The most analogous situation would be the effort under way -- I guess it started with the AEC and NRC, to some extent, to get a standardized plant. That's analogous to that.

Q My impression, from speaking with Dr. Mattson and Dr. Denton and a few others, that that attempt has not been very successful. In fact, in Dr. Mattson's words there are no two plants in this country that are really alike.

A I think that's correct.

Q So we have some 70-odd operating plants, all of

which are, in some sense or another, substantially different from the others. So the strong central technical control over design does not exist or has not been implemented in any successful way.

A That is correct; it might have to be.

Q Okay, strong central technical control over manufacture also does not exist; does it? We have a number of different vendors, architects --

A Four vendors.

Q That's primary system vendors, and you have engineers dealing with the balance of the system in the plant.

A The technical control there is more a question of quality control, particularly when you get to additional vendors. Also, that probably has been less rigid than the Admiral's system, and I am not sure that the Admiral's system is not better and might not be required.

Q Selection and training of personnel is something else under that heading. That is left entirely to each individual utility; isn't it? In terms of selecting personnel.

A Oh, yes.

Q And in terms of training personnel, as I understand it, except for the examination function at the end of the training. Training is left almost entirely to the utility and vendor.

A Yes. And my own personal opinion is that that is probably not correct.

Q But that has not existed and would require a major change in the way the regulatory scheme is set up?

A Oh, yes.

Q Technical competence is something the Admiral kept mentioning, and you mentioned it, the quality of individuals used. I suppose the point is, no matter how deficient a system may be, if you have a good enough operator, unless it is an outrageous situation, he can probably handle it.

The Admiral mentioned a deep sense of responsibility and dedication to excellence. Is there any move by NRC to seek that type of goal for operator qualifications?

A Let me step back a minute. I think at that stage I did not read the Admiral's testimony. I have heard the Admiral and read his statement in many places. He certainly has had, over the years, a firm dedication to excellence throughout his program.

That's just not operators; that's everybody in his program. I would have expected, if someone asked me what he meant by that quote, that he would really be covering the whole spectrum of everyone involved in the program has to be of high competence, excellent.

Now let me shift over to what kind of movement is there here. There certainly is a growing interest in placing

additional requirements, not only on operators but an examination placing requirements on other people in the plant. The maintenance people and also to management. There is a questioning of the issue of, Is there a minimum size utility that can really operate a nuclear plant? Which, again, gets to the question of the excellence of the organization and competence throughout the organization.

We certainly have not reached any conclusions, and I think it would probably be premature until these various reviews are under way, which are addressing questions of the industry in general.

But I think, pre and post-Three Mile Island, pre-Three Mile Island there was probably no interest in that, and post-Three Mile Island there is a substantially heightened interest.

Q As a matter of fact, there has already been a suggestion made by the lessons learned task force within the NRC -- the name has changed several times, but a senior technical person who would have like a Bachelor's degree in engineering.

I was curious about that concept, because when Roger Mattson described it to me in his deposition he pointed out that this would be the person who would have been expected to have learned about the Davis-Besse transient, appreciated its significance in terms of possible

operator error and seen that changes were made in operating procedures at the plant, and seen to it that the procedures were followed by the operator.

The question I had for Dr. Mattson and I have for you is that Dr. Mattson has a BA, an MS and a PhD in engineering. Also, the Division of System Safety he heads up, it is my impression or understanding they are a highly competent technical organization.

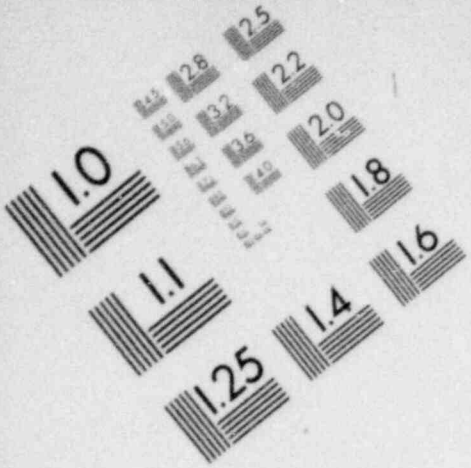
The Davis-Besse transient was reported to them and there was no follow-up and no changes made. What makes the NRC think that this fellow in the control room who will be a senior safety engineer or senior technical advisor will do any better than the entire Division of System Safety and Roger Mattson himself?

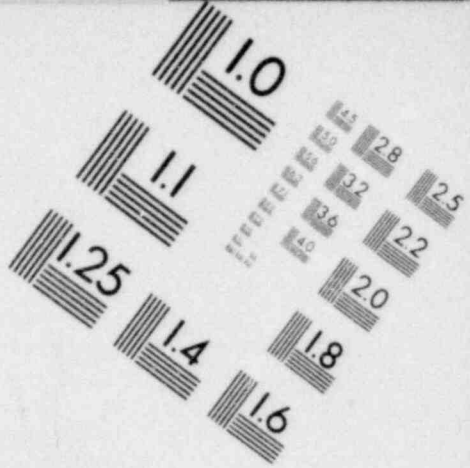
A You leapt from Roger Mattson to the NRC. If your question is, Why does Roger Mattson -- you have to ask him.

Q Let me back up from that. It is also my understanding from a decision made last week by Harold Denton and then rescinded that it was his intent to implement the short-term lessons learned, including that particular suggestion for the senior safety engineer or safety operator, whatever.

And it was, therefore, going to become NRC procedure, that that would be done and the senior safety people would be put in these plants.

A I don't think that's quite right, in the following





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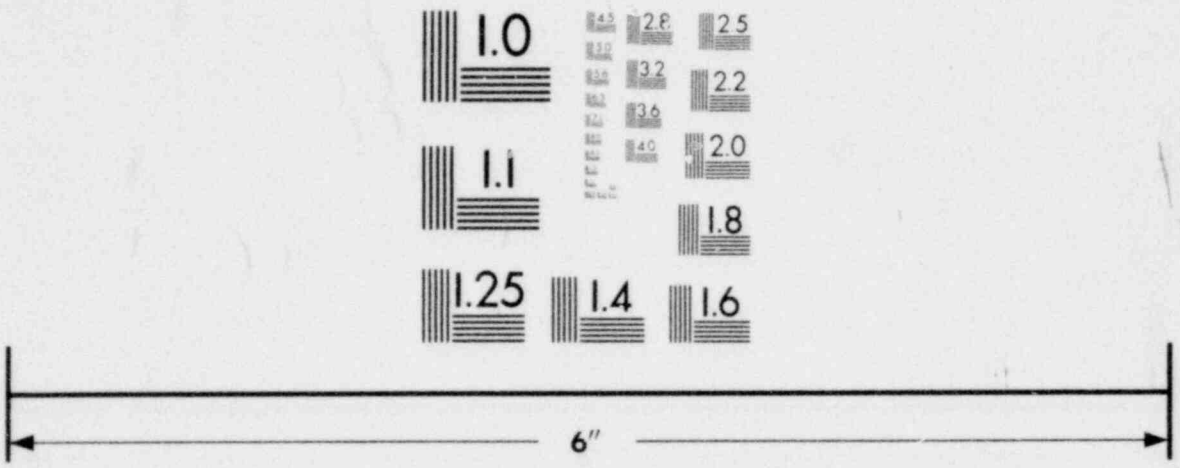

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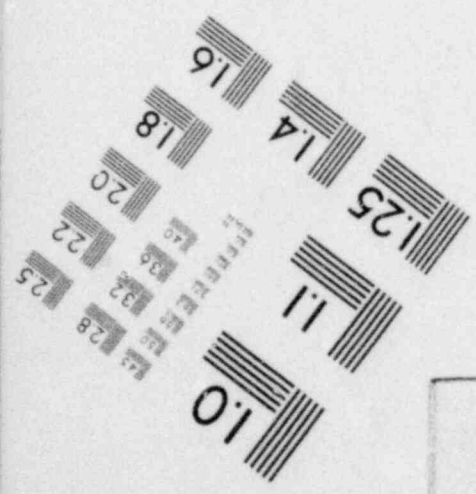

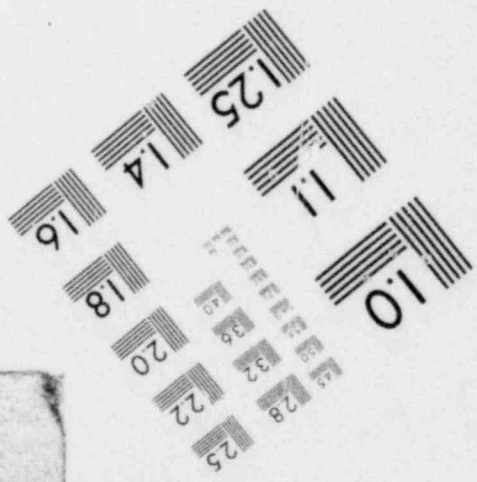

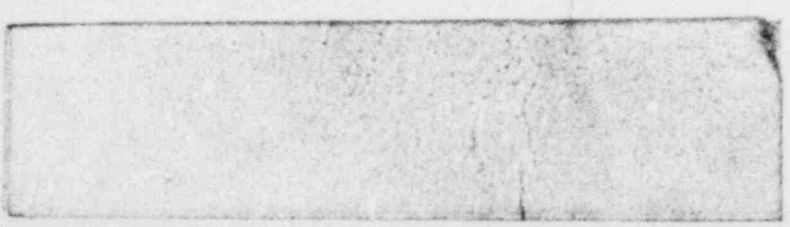

sense. As I recall reading, Harold was accepting a modification of that, and I don't recall whether it was his modification or the ACRS proposed which was to go out to licensees and say, "We need two additional features. We need a strong technical individual responsible during times of operation, accident situations.

"And, second, we need some way to have an individual or perhaps an organization responsible for reviewing the safety conditions of the plant or impacts upon safety," and ask how could that be accomplished.

Saying one way you could accomplish this is by having this kind of individual; what other ways? That was the first thing and I don't think Harold accepted directly Roger's recommendation, I think it was a modification.

The second, it is Harold's position -- I know the Commission has not reached a conclusion on it. I, myself, do not feel that that would be adequate.

I think in the areas we have been given recommendations of what we ought to do, I think one very weak area is in the question of the operating personnel,and the personnel of the plants.

I was taking exception, though, to your going from Mattson to the NRC, because I don't think we've reached that position.

Q You have doubts --

A Some major doubts -- the idea of having a strong technical person there may be a good idea, but I think it would be a bad idea if the conclusion were, therefore, we have now fixed up all the problems associated with operators and operating plant management.

Q How else do you go about achieving dedication to excellence or deep sense of responsibility among operators that Admiral Rickover was talking about?

The senior safety engineer is the one suggestion I am aware of. What do you do? How do you make people have a deep sense of responsibility and dedication to excellence?

A The flavor I get from the nuclear Navy is that you are much more careful in the way that you screen people. You also make it obvious to them that they are doing something that is very important and very significant, and one of the ways in the commercial world that that is shown is by the sal ries you are paying the people.

Q You think raising salaries would add something positive?

A I would expect that would have to be one of the results. It's a very difficult question. I really have not become clear on what are the solutions. I think there are a number of factors that will have to go into it, some of which will be being much tougher on the entrance requirements and who gets in, what kind of qualifications you have to have to

get in.

I think raising the salaries, the idea of guaranteeing that if you do well -- right now my impression is that an operator or people on that side of the plant more or less have as a future becoming a senior operator or a shift supervisor of some kind.

The converse, with the Admiral's system, is that the more responsible people you take in, you take in a person who has the potential of rising all the way up through the organization.

One of the issues raised is how can you take a very highly trained, very bright individual and expect him to spend the rest of his life acting as an operator? And the answer is: You don't.

The conclusion of people who raise that objection says that, therefore, you can never interest him in being an operator, and I question that being the right conclusion. It depends upon the rest of the career that you can offer him in that organization.

There are a number of changes that I think have to be made.

Q That brings an interesting reminder for me about a conversation I had with Paul Collins about the concept of a senior reactor operator, SRO. He told me that originally it was thought they would call that person a supervisorial

reactor operator because his primary function was to supervise other reactor operators.

But the union objected to that terminology and it had to be changed, because it smacks, somehow, of management. The SROs would end up in college-educated white-collar workers and union members coming up through the ranks as auxiliary operators.

And reactor operators would not have a shot at the SRO position because that is a management function. What you are talking about sounds like the same thing. To the extent you offer an individual the opportunity to rise up through the ranks you are offering him the opportunity to leave the ranks of union labor and join management.

A That's true.

Q Design conservatism is something that Admiral Rickover referred to and he referred to the concept of safety also requires that the plant be designed to accommodate, insofar as practicable, operator errors that may occur, that it be "forgiving".

I am interested in that concept, because we deposed Denny Ross, a member of the Division of System Safety, and in his deposition he was asked about the impact of B and W steam generator design on the ability of the operator to timely respond to an accident.

And he responded along these lines: "There is a

direct correlation between the time you do nothing and when you should be doing something or to undo something you should have done.

"The Westinghouse system is more forgiving. You can have a system of nonfeasance or malfeasance and recover, so the B and W would be less forgiving." I asked Mr. Mattson if he thought Mr. Ross was correct in that statement, and my recollection is that Roger Mattson thought that Mr. Ross was correct.

However, Mr. Mattson was unsure about the next question, which is the most important one to me: "Shouldn't the goal of the NRC, particularly in light of the comments by Admiral Rickover, be reactor designs that are more forgiving rather than less forgiving under these circumstances?

A Yes.

Q To that extent it would indicate that the B and W steam generator design, as it currently exists, should not have been licensed and should not continue to be licensed.

A I am not sure of the conclusion, because what you are addressing is Denny Ross' conclusion that this plant is less forgiving and Roger's concurrence that, yes, it is less forgiving.

Whether that makes it to the threshold of unacceptable, I don't know.

Q Yes, that was the question.

A That was your real question, and that's the technical examination which, so far, we have not reached. The issues that I know our task force is addressing is that question.

Q I am concerned with it more on a theoretical basis because, yes, exactly, I believe Roger Mattson made that distinction, that it may be less forgiving, but the standard after all that the NRC is called upon to apply is undue risk, and it may or may not involve undue risk, even if it is less forgiving.

I guess the concept I wanted to get to was under all circumstances where the design of the reactor being proposed is less forgiving, shouldn't the NRC have a standard that to the extent it is less forgiving it is unacceptable, because it is an undue risk for that reason alone?

A Except that less is not a scale; it is a ranking. You can have a scale of zero to a million and one can be 999,999 and the other can be one unit below, and it is less.

On the other hand, you can have a scale of one to ten, and one can be a nine and one can be two, and it is also less. There is a vast difference between the magnitude of less, and that's where one has to address the technical issue of how much less is less?

Q It is my understanding that NRC is doing that, and we took the issue to Asha Didoni, who is currently

designing Westinghouse plans.

He has provided a draft of a report, with a table that shows the boil-out time for steam generators in Westinghouse plants around the country, and the loss of all feedwater.

The shortest time on that ranking was 13 and a half minutes, and the longest was 40 minutes. The average time on the OTSG, the Once Through Steam Generator used by B and W, according to Mr. Didoni, and a number of other departments we have talked to, is two minutes before TMI.

Now it's a modification, and it's as much as five. Taking the TMI-2 situation, we are looking at the difference between two minutes and as little as 13 and a half, as much as 40 minutes in the other design we are comparing it to.

Doesn't that indicate a substantial difference in terms of reactor -- operator reaction time?

A To the extent that that is the dominant factor, yes. But what you are really addressing is a much more complex question, I think, of whether this reactor -- when one says it is less forgiving, is it at that stage of less forgiving that it falls under a threshold?

It's clearly one of the issues the Commission will be addressing as a major issue. We have not reached a conclusion.

Q There is no question that it is a major issue to be

addressed?

A. Absolutely.

Q. My next question is, Why was that not recognized as a major issue to be addressed before TMI-2? Why did it take TMI-2 to bring that out?

A. It almost sounds like a pat answer, I'm afraid, but I think it falls back into the other philosophy, the general conclusion of the people involved in the whole system was that systems were designed well enough, sufficiently tightly that they were really safe.

And the fact that one system was termed "less forgiving" did not mean in any way that it was unsafe. Now let me give you a comparison from another system of operations.

There is an airplane called the F-5 and an airplane called the F-4. They are both major fighter aircraft, the Air Force and Navy has a lot of F-4s and the Air Force has a lot of F-5s and the United States has sold F-4s and F-5s all around the world.

The F-4 is a much less forgiving airplane. If you put the F-4 into a 6G turn or 5G turn and make a mistake, you are in real trouble. If you put an F-5 into that and make a mistake, you are not.

It's a very forgiving airplane. However, the F-4 is a much better airplane for a lot of other reasons. Both

airplanes are used by many armed forces and meet the needs of a lot of people because their basic level of performance, forgiveness, is easily adequate for a well-trained pilot.

It is not necessarily a strong analogy, but I am trying to get across the point that because something is less forgiving than another it does not mean the other is, therefore, automatically unacceptable.

Q. I guess the additional factor added in is the nature and level of training of the person operating it. You take the example of the Air Force, the example of the Navy, and you are talking about people with a high degree of competence and a sense of professionalism, dedication to excellence, whatever phraseology you want to use.

The concern is, obviously, that people out in the control rooms of commercial reactor facilities around the country do not come up to those standards, apparently, in some cases.

A. And the other people in the system also; I think that's correct, and it gets back to my concern about personnel.

Q. Given that reality, doesn't it make more sense to not permit reactor designs to be placed in the hands of these people that are less forgiving rather than more forgiving?

Given that reality.

A In hindsight, certainly true, if you have a situation where you are saying, Here are two reactors that can go into the site; which one do you want to put in? You put in the one, obviously, that is more forgiving.

But the question we are really trying to address, given that you have a number of reactors which are of the second type, the less forgiving type, are they sufficiently less forgiving that they should not be allowed?

That's a different question. It follows from the first, but it's a different question, and it is the one we are addressing, and we have not reached a conclusion.

Q Which relates back to what we were discussing before, retraining of operators at B and W plants, and whether they really do, in fact, understand how to handle a TMI-2 accident.

And that's something the NRC does not know at this point, because it did not reexamine every one of those people.

A Yes, and as I also mentioned, it is a similar type of uncertainty we have of any operator handling any type of abnormal occurrence for all of the tests we give any operator.

Q The other factors mentioned by the Admiral, reliance on direct control by trained operators, rather than automatic control. To your observation, is that a

philosophy followed in commercial nuclear reactors?

A That's an interesting issue. That's one where I am not sure where I come out and I am not sure where the industry and our people come out.

There is a major difference, a sharp difference of philosophy. There are some European plants, for example, that are definitely going towards the requirement that the plant must be able to operate for X minutes after any kind of a transient without the operator touching controls.

And operators are trained not to do that, not to touch it at all. The Admiral is on the other end of that spectrum.

I am not yet sure whether that's something --the general idea that I think he has in there, you very well understand, that is the people involved in the design, the building, the operation of the plant very well understand the plant.

You understand it sufficiently well that you then describe what has to be done with it in these various circumstances, and you make sure the people you put running it know what to do in those circumstances.

That part of the philosophy is a very sound one. The next set of the question is, Are our commercial plants sufficiently more complex and difficult to handle than our military nuclear plants that you have to go beyond relying

upon a person and have to go to relying upon equipment, computer controls and such?

That's one of the open issues.

Q As a matter of fact, the TMI-2 accident illustrates a situation in which it would have been far better for the operator to have done nothing, rather than attempted to take control of what the reactor was doing at that point; doesn't it?

A At the moment, apparently.

Q Based upon our current understanding of the accident.

A Yes. You see, I am hesitant to reach that final conclusion yet. Things keep changing on what is our current understanding.

Q Okay. I am basing that on a statement made to me by a lot of people, including Mr. Stello, I believe, that if the operator had just gone off and gotten a cup of coffee and come back in 15 minutes or so and then tried to figure out what to do, instead of immediately trying to take command, the entire accident would have come to a much happier conclusion.

A That might well be the final result. I will hold that open until some of these reviews that are digging in more depth into what happened.

Q The other aspect of design conservatism the

Admiral mentioned was allowing reasonable time for the operator to control the plant during a transient before requiring automative protective action.

Again, doesn't that come back to the forgiving design nature?

A Yes, it does.

Q To the extent it is less forgiving, he will have less time?

A Absolutely.

Q "Don't live with deficiencies" was something the Admiral stressed. Do you feel the current state of NRC regulations and the current state of the nuclear power industry follows that concept?

A It requires a little bit broader answer than "Yes" or "No". I am sure that most people in the system would say "Absolutely follow that". They don't live with deficiency, because in their mind they have a certain understanding of what is a deficiency.

I suspect that from what the nuclear Navy views as "Don't live with deficiencies", our system doesn't.

Q That is, it does have deficiencies?

A I think from their standpoint, the nuclear Navy's approach, it does. I think to implement that approach really requires a much tighter view of quality control -- for example, a nuclear Navy is well known in other branches

of the military that when a person makes a mistake which is a significant mistake, it doesn't make much difference whether or not that person had a big logical explanation of why they made it; the person is relieved.

Q Sure, just like that.

A That gets across the message very well, that you are responsible for your actions, and people pay a lot of attention. Particularly, after the message is brought home. A fellow named General LeMay, when he ran the Strategic Air Command in the Air Force did the same thing.

There is a tradition going back for many centuries of military people using that kind of approach. There are some corporations that have used that style. Deficiencies don't necessarily mean technical deficiency; it is a spectrum of deficiencies.

And I think we have to be a lot tighter.

Q That was something I wanted to ask you. Are you familiar with any private industry, private profit-oriented industry in which that philosophy is followed?

The military, Curtis LeMay-type philosophy?

A That they don't live with deficiencies? Not initially, but I am not that familiar with commercial industries. In the back of my mind I seem to recall reading -- as I recall the guy who built General Motors, I forget his name now, their President and Chairman of the Board for 20 or 30

years --Alfred Sloane.

As I recall, that was his philosophy, and I think he implemented it in his own organizations.

Q Do you think General Motors reflects that philosophy today?

A I am not familiar with their management structure today. I am reflecting on having read the history of his life and what he did.

Q I am only curious because the bottom line question in responding to anything Admiral Rickover has to say is, Is his approach a practical one in a private, profit-oriented industry?

A You have to put another phrase in there that you didn't put in. It is a private regulated industry. That is different, and it might be.

Q I guess a sub-question is, Is it practical for NRC to even consider trying to force the nuclear power industry, private nuclear power industry in this country to come up to the standards of Admiral Rickover in the nuclear Navy?

A That describes it almost in a quantum system. You have one level and another level and the question is which level you are at. I don't think that's the situation.

I think there is a big spectrum. I think it is practical and appropriate for us to force the system to approach more the standards of excellence that the Admiral

has placed in the nuclear Navy.

There is, certainly, a number of points at which they are probably inappropriate, and some which are probably not practical. For example, one of the things the nuclear Navy does is build a prototype, an operating prototype of that reactor, and then train people on that.

It's not a simulator, but an operating prototype of that reactor. That's not -- of a variety of reactor types, if we went to a system with a couple of reactors and those are the types, then it might be practical.

Given the current situation of looking retrospectively at what it is, there are, undoubtedly, a number of other things that are not practical. But the general philosophy of safety concentration and responsibility, I think it is a goal we can practically require the system to work, to move towards.

Q Let's take a look at that in connection with, "Don't live with deficiencies". Are you familiar with the practice of issuing operating licenses for reactors that have open items in connection with safety standards in relation to their license?

A When you say "the practice" --

Q I am told that is a common practice in licensing processes for NRC. An OL will be issued that has a number of open items attached to it.

A A number of open items -- I am sure you said open safety items.

Q Yes, relating to the safety analysis to be done in connection with the plant. Are you familiar with that?

A I think I am aware of the fact that when the operating licenses are issued there are additional things that still have to be done. The judgment is reached on the staff, if it's a licensing board, and the ACRS in making their recommendation that at that stage the plant is safe to operate.

Q Is that a common practice? That OLs are issued with open items?

A I would not be surprised.

Q Why wouldn't you be surprised?

A Since I have been here there have been very few OLs issued, and it has nothing to do with me. It's just that there are very few plants ready for OLs. Given the large list of items the licensess have to respond to and the work they have to perform, I am not surprised that there are still other items asked for.

I would be surprised if the staff had reached a conclusion -- the ACRS had reached a conclusion that here is a significant item that must be done before the plant can operate, and nevertheless it went ahead and issued the license.

Q Would you be surprised if I told you that the TMI-2 OL was issued with 14 open items, including deficiencies in such areas as the RCS over-pressure protection system, fire protection and small break LOCA analysis?

A I would not be surprised. I think the question would be, How serious were those? As far as fire protection goes, we have a lot of plants under requirements to improve their fire protection and they are all on various schedules.

None of them are automatic and have to be in place or else the plant could not continue to operate. I would not be surprised if a plant receiving its operating license in that time period would have had fire protection work still to be done.

As far as the small break LOCA analysis, I would expect there are a large variety of analyses that have to be done, and the fact that some of them were not finished when the plant was given its operating license would ordinarily indicate that the staff had reached the conclusion, and the ACRS also, that that need not be finished prior to operation.

Q What occurred, apparently, was the Division of Project Management issued an Order for a modification of the license on May 26, 1978, requiring operation in accordance with defined procedures at a lowered power level, not exceeding 2568 megawatts, rather than the higher level of

megawattage that would otherwise be permitted.

That is, 2772 megawatts. The solution at least over the short term appeared to lowering the megawattage, while the small break LOCA analysis was reevaluated and done in a proper fashion.

A Do you know what the ACRS recommended? Ofttimes they will make that kind of recommendation, that operation at this level until such things are done.

Q I don't see the reference here. It indicates it was further concluded that operating up to 2568 megawatts in accordance with appropriate operating procedures will assure that ECCS will conform to the performance criteria -- it goes on to talk about peak temperatures as well.

But the point I wanted to make is that there were these 14 open items on the TMI-2 OL, and I wanted to ask you if that falls in the rubric of living with your deficiencies rather than remedying them before you go ahead?

A Possibly not surprisingly, because, again, deficiencies -- I think in the nuclear Navy context, are items which definitely ought to be fixed, and ought to be fixed immediately.

I would not be surprised if nuclear ships get commissioned and receive their commissioning with a number of things that still have to be fixed, a number of items of repairs or tuning of systems.

It's a large spectrum of items and there is some point that you draw a line and say, "Here are the things that absolutely must be done, and here are the things that must be done on a given schedule."

Some of which, until they are done, you have restricted operation. Some of which, on balance, the conclusion is: Must be done by a given date.

Q Why do it this way, Mr. Ahearne? Whose interests are served by licensing a plant that has open items?

A Two cases. Case 1, the open items are significant ones that represent a safety hazard. Then, nobody's interests. Case 2, the items are items which must be corrected but the conclusion is that they are not significant safety items.

Then, since the laws we operate under say we provide protection and safety, keeping those down when those are met, I guess the interests are served of the people who get electricity from the plant.

Q Are you aware that the practice of issuing OLs with numbers of open items on them frustrates the ability of the NRC to closely and carefully regulate the plant once it gets its OL?

A No.

Q Specifically, what I am referring to, we have had testimony from a number of individuals about the transfer

of a plant from the Division of Project Management to the Division of Operating Reactors, and we have had testimony that the proliferation of these open items on an OL when it is issued creates a reluctance by the Division of Operating Reactors under certain circumstances to accept the project from the Division of Project Management.

In fact, TMI-2 was not accepted by DOR throughout 1978 and up until the time of the accident it was still under the Division of Project Management.

On the other hand, the Division of Project Management's view is that it has essentially finished its work and the plant is licensed and should go to DOR. I believe it was Mr. Stello who described for us the fact that this leads to a situation where the plant is betwixt and between.

It's not really under Project Management and it is definitely not under Operating Reactors. And that leads to a situation where there is a lessening of regulatory intensity in terms of looking at the plant.

Are you aware of any of this?

A I was not aware of any of that. In the discussions I have had with them they never raised that point.

Q Aside from that point, do you think it is a wise or prudent approach to issue OLs for plants that have open items on them?

A Once again, it depends on how significant the

open items are. The difficulty of saying that you will only issue a license when all open items are closed may be a counter-pressure to what really one wants to accomplish, which is to have as well run and safe a plant as possible.

In theory, you only ask for those things really necessary. In practice, really necessary is probably a grey area, so you ask for a number of things, some of which are probably necessary.

In sum, when you put them all together, they lead to the confidence that this is now what you want done. Because of the grey area on the edge, I think it has been hard to draw a sharp line and say, "Here is the sharp line. On this side the plant does not get a license, and on that side it can."

I would like to move to the mode where the line was that sharp.

Q. I am curious about the grey area. It is my understanding, from the education I have tried to get over the last three months, that the primary focus of the NRC is safety.

NRC is not interested in any other aspect of the power plant except that it is safe; is that correct?

A. No, that can't be correct, because NEPA requires us to be interested in its location.

Q. For environmental purposes?

A That's right. Not safety.

Q Let me take it back --

A We just turned down Green County, because of impact upon the scenic Hudson Valley.

Q Let me broaden it to state the focus of the NRC is public health and welfare.

A That is correct.

Q That's what you are after in examining a plant? You don't care about the efficiency of the plant; you don't care about how much profit it will make for a utility; you don't care about whether or not it will be able to successfully meet all of the power demands of the people who will want to use the electricity.

You are primarily concerned with whether or not it will be operated safely, and with the public welfare in mind.

A Your first question I thought was "primarily", and you shifted to "You don't worry about". There is a provision under the Atomic Energy Act, which requires us to address the financial ability of the company.

Although that is not a primary focus, it is certainly a factor we have to consider. When you say we are not worried about the profitability of the plant, that is not necessarily true, because the law requires us to look at whether or not that company is financially able of having

that plant.

That's not the primary focus, but it is there.

Q Let me take some specific examples.

A The need for power issue. You said we are not interested in whether or not it can meet the power demands. It is sort of the converse of that, in that one of the requirements placed on us -- is that NEPA?

MR. CHOPKO: It's in NEPA.

THE WITNESS: The NEPA analysis requires the plant to meet a need for power. It's not so much will it provide all of it. The question is, Is it needed? Those are caveats.

BY MR. KANE:

Q Let me see if I can give you a specific example. When the NRC is looking at small break LOCA analysis it is looking at safety concerns; right? There is no other concern there?

A That's right.

Q When it's looking at RCS over-pressure protection system, it's looking at safety?

A Sure.

Q When it's looking at fire protection it's looking at safety questions?

A Absolutely.

Q I can go on and on in these 14 items, but the three I picked out which were open items on the TMI-2 OL

relate to safety questions.

A That's right.

Q If that is the situation, then NRC is supposed to be concerned about safety, and these are safety items in some fashion or another, where does NRC find it in its mandate to draw lines as to what is sufficiently safe for purposes of an OL but is still an open safety item?

A I think under the mandate of the Atomic Energy Act, it says that we are supposed to license a plant if it provides adequate protection for the health and safety of the public.

It does not say that once you've decided that the plant provides adequate safety you can't look at anything else about it.

Q In other words, you are concerned with safety questions that don't relate to adequate safety, they relate to simply "safety".

A I would assume, and I have not reviewed the TMI-2 issues that are open, but I assume, based on other situations that have come up when the questions are asked, the plant's being able to come back up on earthquake, in the most recent case.

The staff's position is that they have now ended up reviewing issues and reached the conclusion that some issues are of sufficient seriousness that the plants cannot

operate until those issues are resolved.

In those cases the plant has been shut down. There are other issues that they reached the conclusion must be resolved to fully understand that plant. But are not of sufficient seriousness o prevent the plant from operating.

Q Continuing to operate?

A Either continuing to operate or preventing it from operating as a new plant. It may be a weakness in the system that can't be tolerated, but there is not fixed line, that fixed barrier, that you only have two classes of issues.

There are those grey area issues.

Q Has there been any discussion by the Commission about the subject matter of open items on OLs and whether or not that should be changed?

A Not that I can recall; there may have been.

Q Another subject on the same vein --

A If I can finish answering that question, there was the issue of new operating licenses was not a major question prior to TMI, because there were not plants coming up. Post-TMI no plants have been given operating licenses, because there is a whole new perspective of what should be done.

Q Okay.

A I would be surprised if post-TMI -- I imagine there are many, many requirements, a large number of which may not even have yet been seen that will be required to be

met before a plant can get an operating license.

Q Do you think OLs will still be issued with open items?

A I would doubt it.

MR. CHOPKO: Before we get too far away from Admiral Rickover's testimony, since the Commissioner has not seen it, would you be willing to provide the Commissioner with a copy of it for his own use, and maybe make any additional comments he sees fit?

MR. KANE: Yes.

THE WITNESS: Or learn from it.

MR. CHOPKO: In that regard, would you be willing to provide a courtesy copy to other NRC Commissioners?

MR. KANE: Sure, I have no problem with that. Let me see if I have it.

end 3b (Discussion off the record.)

4a MR. KANE: Back on the record. Mr. Ahearne, was there some clarification that you wanted to put on the record?

THE WITNESS: In the Green County case I referred to as an instance of NEPA requiring us to look at other issues, it was the staff who had looked at the question of the acceptability of the site from the standpoint of the impact upon the environment, and reached the conclusion it was unacceptable.

It had never reached the full Commission level position.

BY MR. KANE:

Q. Another subject matter I wanted to ask in the same vein of open items in the OL issuance is exemptions from regulatory requirements.

As I understand it, for example at TMI-1 there was some problem with the ECCS and they were granted an exemption by the Division of Operating Reactors in March, 1979, again, in terms of a reduction in authorized megawattage, which then was deemed to be sufficient to allow ECCS to function as it was constituted, and to allow sufficient time to remedy this deficiency.

Who approves exemptions from regulatory requirements for nuclear power plants like TMI Unit 1?

A. The waiver of requirements had gotten to be an issue that there was a concern on. I don't recall specifically that one, but there had been a practice where granting of waivers was being done by office directors.

That is, on the level below Harold Denton, one level down beneath that. That came to the attention of Commissioners, as I recall, last fall.

There was concern raised and at least I thought what the conclusion was, and your quoting March, '79 indicates my interpretations correct, was that, therefore, any

waiver of a regulation with regard to an operating plant was going to have to come to the Commission for approval.

I know since then several have, but I don't recall that one.

Q That did appear in the Federal Register. I don't have a copy here, but we can provide you with one. It was done over the signature of Victor Stello as Director of the Division of Operating Reactors.

I don't recall that there was any Commission approval or disapproval reflected in connection with that exemption. But it has been your understanding that since the fall of '78 requirements for exemptions for operating plants be approved by the Commission itself?

A Be checked by the Commission, because the authority, I believe the authority has been delegated to Harold Denton and redelegated to his office directors. Our requirements were that before exercising that that it be checked with us.

Q What do you mean by "checked"? Just that you know that they are doing it?

A Let us know they are thinking of doing it and do we have any problems with it. If we have a problem with it it would have to come up to the Commission.

Q How is it done? Do they give you a formal presentation? Is there a memorandum?

A In some cases they came in and briefed, and in other cases it was a phone call to explain, depending on the particular regulation and for how long it was going to be waived.

Q Do any guidelines exist for waiving regulatory requirements?

A I don't know.

Q Has the NRC Commission developed any formal, written statements or requirements or policies, etcetera, to be followed in connection with waiving regulatory requirements?

A Mr. Fitzgerald is pointing out Section 50.12 of 10 CFR. Jim, that's a waiver, I think, on construction permits.

MR. FITZGERALD: I think you're right.

THE WITNESS: The only requirement I was aware of was the requirement initiated by Commissioner Kennedy last fall.

BY MR. KANE:

Q That is the requirement of checking with the Commission?

A Yes.

Q Does the Commission take a vote on these matters? Or is it informal?

A It would reach a vote if we disagreed. It is a delegation of authority that has been given to Harold ~~Denton~~.

He is exercising authority. To take it to a vote would mean that we are, in a given case, taking it back from him.

Q. Since you have been on the Commission, has there been any such disagreement with a granting of a waiver of regulatory requirements for an operating plant?

A. No.

Q. So every time it has been done, the Commission has concurred?

A. I was only aware of it being done two or three times.

Q. In those instances, the Commission concurred?

A. Yes. You say this was in March, '79?

Q. Yes, it appeared in the Federal Register of March, '79. It's possible that exemption never went into effect, because TMI-1 never came back on line. I guess this is as good a time as any, let's go off the record.

(Discussion off the record.)

BY MR. KANE:

Q. Mr. Ahearne, as you know, Harold Denton last week had a conversation with the Presidential Commission concerning his decision to resume plant licensing and a determination was made to hold up on that until further action or further consideration by the NRC Commission.

Did you agree with his original decision to resume plant licensing?

A The first I knew about it was in the newspaper.

Q He did not confer with you on that and you received no other knowledge?

A No, and I wasn't here, either. I was on vacation. The first I knew of it was when I read it in The Washington Post.

Q What was your reaction when you read it in The Washington Post?

A Surprise.

Q Why were you surprised?

A I thought he would have checked with us first.

Q Did you agree with that decision?

A He didn't check with me.

Q Right. When you found out about the decision, did you agree with it?

A As I said, I thought he should have checked with me.

Q Yes, but when you found out about that decision having been made by reading The Washington Post, same way the Presidential Commission found out about it, at that time did you think in your mind, "Yes, that's a good thing to do", "Yes, I agree with that"?

A Actually, what I thought was, I really had better get a copy of what he actually said, what memo he sent. It is ofttimes difficult, from reading the press, to find out

what is actually being said.

Q Did you get a copy of his memorandum of August 20th --

A Yes, I called the office and got a copy.

Q Having read the memorandum and read the newspaper account of Mr. Dedden's deci. ion, did you agree with that decision?

A I felt that the newspaper account was not really accurate. The impression I got from reading the newspaper account was not quite what ~~Dedden~~ Denton's memo said. There was a difference, which probably is only a subtle difference in importance as far as the regulatory side or the agency is concerned.

What Harold said was that he was going to put his people back to work in a licensing process. The impression I got from the paper is that he said we were going to start licensing plants.

Q The paper account did refer to the fact that within approximately a month there would be at least one plant coming up for OL issuance, and would be reaching the end of the licensing process.

Was that inaccurate?

A In practical fact it is certainly inaccurate. But what I am trying to point out is that the impression I got when I read the paper is that ~~Dedden~~ Denton had written something or

said something that we were going to start issuing licenses. What his memo said was that he is putting his people back to work.

And the process is continuing. That is a difference, because I think what he also went on to say -- these lessons, if accomplished, are necessary and ~~efficient~~ sufficient for the continuing safe operation of licensing -- of operating plants, and for the resumption of licensing activities.

It is my intent to bring the staff's first completed review to the Commission. I would have preferred him to check with me before reaching that conclusion, but that does not say that there will be a plant in a month.

Q He is resuming plant licensing activities, staff licensing activities?

A That's right.

Q Did you agree, when you found out that he intended to resume plant licensing activities, did you agree that he should have his people resume staff plant licensing activities?

A Not resume in the sense of continuing doing what they would have been doing prior to Three Mile Island. To the extent that here are some hardware changes that we had reached a conclusion ought to be done for operating plants and that we ought to try to get those incorporated into any plants in the process of being built, I felt it appropriate

for him to say that he is now going to come to the Commission and say, "Here are these hardware changes that I think I ought to tell the operating plants to do.

"And I think I ought to tell the plants under construction to fix." That, I felt, was appropriate. The following step -- certainly one can interpret this, and after I talked to Harold, which was yesterday, he had already gone through the cycle with you people.

The impression I had here is that he is also saying -- he could be interpreted as saying, "We now know the things that we will require, the basic things we will require to let a plant be operating."

And that I did not think was correct.

Q I still want to ask you the basic question. Mr. Dedden's memo refers to resuming staff licensing activities that suggest that up to this point staff licensing activities since the accident have not been moving forward; is that correct?

A He said that. He came to a meeting and said -- here was this body of people working on these plants under construction, for example. He has taken them off those to put them over here and do something else.

They have now finished doing this something else, and what does he do with them? What he is saying is, "I am now moving them back over here, and here are these things

that Mattson and I have concluded ought to be done for an operating plant. We have to put in this particular piece of equipment. We ought to put in an instrument that will measure this."

Q This is a short-term lessons learned?

A That's right, you ought to put in this piece of equipment. He is saying, similarly, for a plant under construction we think it should be in there also, and I will turn some staff onto those plants in addition.

Q I think that addresses the basic problem and it is one Mr. Dedden raised in a conversation with one of our staff recently. That is that totally aside from the licensing activity by the staff, if I understand Mr. Dedden's point there is in a number of locations around the country right now utilities proceeding to pour concrete and construct plants pursuant to construction permits they already obtained.

They are doing that construction in conformance with the plans and design already approved by the NRC that do not incorporate any of the lessons learned interim short-term recommendations that, obviously, do not incorporate any long-term recommendations, because they have not even been made.

And, obviously, do not incorporate any recommendations that the Presidential Commission will make, since those

recommendations have not been made.

A That's right.

Q Has the NRC at all considered ways, possible ways, procedures to use to stop that construction pending the outcome of these investigations?

A There is a simple way to do it, and that is to issue an order to stop all construction.

Q Has NRC considered doing that?

A We have considered that at least twice, and reached the conclusion that we would not stop the construction. This was the same time that Harold came in and said, "I've reached the conclusion that I am not going to be cranking up my operating license people for at least this interim period."

Q "Interim period" being until the Presidential Commission report comes in?

A At the time it was a non-defined interim period. This ends his interim period, and we have a meeting with him next week, to understand what he had in mind.

Q Doesn't the NRC failure up until this time to order all construction to stop create a situation where an awful lot of plants are being built without possible safety features that you might want to have incorporated at some point in the future?

And doesn't that create the situation that the utility will come in at some point and say, "Wait a minute,

I've spent all this money, I've put all this investment of time and money in this plant and I built it according to the plant specifications and design you approved.

"I knew I was doing it all along. You didn't stop me and now I am done and I am here for my OL, and now the Presidential Commission reports come in and other reports come in, the long-term lessons learned have come in and there is a whole bunch more requirements and I can't do that on my plant; that kind of backfitting is not possible or equitable.

"And we have to now balance the equities to be sorted out here, to determine whether or not they should be required to do any of that, and I certainly don't think I should."

Doesn't that invite that situation by not stopping the construction in the meantime?

A It certainly invites that situation. And on the other hand, there is the opposite, which would be do we stop all the plants and what are the grounds on which we stopped all the plants?

The reasons you've just indicated, that there may be changes which are of such a fundamental nature that the plant under construction can't be fixed would be the reason, and so far our judgment has been that that was not sufficient reason to stop all those plants from being built.

Q Are any of those plants B and W plants that are being built that are under construction permits?

A It is possible. I would have to go and try to find a list somewhere; I don't at the moment recall.

Q Are you aware that licensing boards are also proceeding with matters before them?

A Of course.

Q Has there been any consideration within NRC that it might be appropriate to stop those licensing board considerations until such time as the reports come in?

A Yes, we debated that, and the question was, Are these licensing boards considering issues they would have to consider in any event? Or are they considering issues they would not have to consider?

Our conclusion was that the issues they are considering are ones they would have to consider, and under the assumption that I think we are all pretty confident there will be a number of other things they will have to consider also.

Our conclusion was that they might as well get those issues out of the way.

Q Hasn't it been considered that some of the other issues that may have to be considered may have a direct impact on the evaluation of the issues that the licensing board is looking at?

A. That is certainly possible.

Q. That would require redoing all that work.

A. The fundamental question we addressed was, Should we stop everything? By "everything" I mean stop any plant in construction, stop all boards and shut down all plants.

Q. Obviously, you can do any mix of those three things. You don't have to do them all.

A. That's right. But that's the first line. There are some people who argue that that is what ought to be done. That there are enough open questions that, perhaps, no plant should be allowed to be built or to operate, in which case you shut them all down.

The other end of the spectrum is that you allow all plants to continue operating. You allow all plants to continue being constructed, and you allow all plants to continue being licensed, with the assumption that when changes have to be made you will make the changes.

Where we ended up was, we shut down B and W plants as a sub-set, until a certain number of things of immediate character had to be done.

We basically reached an agreement which Harold recommended, and we accepted that no operating licenses would be issued, but we allowed plants to continue being constructed.

On that spectrum, that's where we came out.

Q I can understand the very glaring objection to shutting down all plants now. Given what I understand the position is, that nuclear power already occupies in the energy generation -- existing energy generation needs of the country, that could cause a severe economic dislocation.

On the other hand, the plants being built are being built in anticipation of future power needs, and are not currently available to generate electricity.

A That's right.

Q If they are delayed, presumably, there could be a future impact. On the other hand, it is entirely possible that conservation alternative sources or something else could be devised, to take care of that problem in the future.

The immediate problem caused by closing down all the plants is a tough one, and I can see where the balance would be in favor of leaving those plants where they are for the time being, with the possible adjustment of some B and W plants; that is being carried out, as I understand it.

But the plants being built, the ones going through the licensing process, the justification for not changing that situation does not seem very apparent to me.

Why allow plants to continue to be constructed, for example?

A A minor comment and a major position. The minor

comment is, if alternative sources and conservation were a strong likelihood for those plants, then the board should not have issued the construction permit.

That's the need for a power issue that they must address. That the need for power must be shown, or the plant cannot be given its initial construction permit. So to the extent that the issue can be addressed it was addressed.

And your comment that in all likelihood you can have these other sources, in those cases at least the board system has concluded that that is not correct. If you defer construction of those plants, then there will be an impact on the need for power.

Whether or not the board's conclusion is correct is an arguable issue, but at least the board system has reached that conclusion. The fundamental reason we have continued with the construction was that as a collegial judgment, a judgment decision, it was a sounder basis to allow the plants to continue being constructed, recognizing the length of time it takes construction to occur.

Q Is it true that some of those plants will be available for issuance of an OL within as little as a month?

A Not the plants still being constructed; no. Salem, I think, is the one that would be available the soonest. It has long since been constructed.

Q It is just waiting for an OL?

A It is going through all the various processes. After a plant is constructed you need a number of other checks and rechecks and a cold test that the plant goes through.

It has long since been constructed.

Q North Anna is another one in Virginia.

A North Anna is constructed.

Q And it's waiting for an OL?

A There are other issues, and I can't go into that, because that one will most likely come to us as an adjudication issue.

Q Okay, I guess the point is if Mr. Dedden had been allowed to proceed with his original decision, we would have had more OLs issued in short order.

A Absolutely false.

Q Why is that?

A Mr. ~~Dedden~~ Denton, as he said in his memo, it is his intent to bring the review to the Commission.

Q I still don't understand why that makes what I just said absolutely false.

A You said here is a positive conclusion that that would issue, and it would depend upon the vote of the Commission. Just as a horseback guess, I would have concluded that it would not have.

Q You would conclude that the Commission would vote

against issuing an OL entirely?

A That's right.

Q Why?

A I would guess it would be because the Commission would have concluded that there are a number of open issues, which is the reviews under way that we would really like to wait to see their results before issuing an OL.

That's just a guess and we would have to have a collegial meeting and vote on it.

Q I see. In the meantime, though, to the extent that there are these other plants out there doing construction, the problem for the Commission is compounding; isn't it?

You will have more plants coming, saying, "We are ready for our OL; we want it; why can't we have it?".

A The plants that are going to be in that stage are the ones that have essentially completed their construction and are in this other process of going through it. I think the most serious question with regard to what Harold does with his people on those plants is really the one, Are there any technical changes we believe must be made to operating plants?

If the answer is, "Yes", then the question is, If you must make them to a plant that is already operating, should you make them to a plant that has not yet begun to operate?

I am not sure yet that I see the logic of why the answer is "No".

Q. There may be many problems addressed in the interim by the Short-term Lessons Learned task force. The ones that have been addressed by the Lessons Learned task force, in the estimation of that task force and, presumably, in the estimation of Harold Dedden need to be changed.

And we have some 70 operating plants right off the bat that you have to do that with. That may still not be deficient in the long run for what is necessary to make the plant safe.

A. Probably isn't.

Q. Why, in the meantime, make the situation worse by allowing other plants to keep on moving along to construction without any changes, other than the ones already decided upon by the NRC?

And then have them presented for an OL and at that time have to make the determination as to whether you will require all the backfitting, or whether you will actually deny an OL issuance entirely, and force the utility to eat a multi-million dollar investment.

To my thinking, there is a line to be drawn between currently operating plants and ones not currently operating, and being built. It seems to me the wisest course would be to stop construction entirely and to avoid that

fait accompli at the end.

A All I can say was that our judgment was different than that.

Q I see; okay. Is it true that there has never been a plant that has obtained a construction permit, been completely constructed and then denied an operating license?

A Then shut down and never operated?

Q Yes.

A I think that's true. Diablo Canyon certainly is an open question.

Q Right, but does that indicate to you that there is a certain momentum towards OL issuance once a plant has gone that far down the line?

A Would you care to ask that question again?

Q Doesn't that past history indicate to you that there is a certain momentum to grant the OL once a utility has obtained a construction permit and gone that far down the road to completion?

A There might be an implication there that the plant having been granted the construction permit does not undergo any changes as a result of regulatory requirements before granting the operating license.

If that were the case the implication would be correct, or one could draw the inference that once it gets its construction permit, changes are not going to be made.

I think the actual case is that there are a vast number of regulatory requirements placed on that plant after it has gotten its construction permit. The plant, by the time it gets its operating license, has had a substantial number of regulatory requirements placed on it and changes made in it, modes of operation or design before it gets there.

So the momentum is that it's not going to move from that site, and Diablo Canyon is certainly the first that I know of, major question, is that correct?

I would guess that you could just as well reach a conclusion based upon, I think, an analysis of the history of what has happened to plants after they have gotten their construction permits that you have a very high certainty, almost surety, that the plant will stay in that place.

But you have an almost similar high surety that you will have to make many changes in it before you can get it to operate.

Q But you still have a very high assurance that sooner or later you will get an operating license for that plant; don't you?

A That is certainly correct; yes.

Q Okay.

A With many changes made.

Q So we can take it based on that past experience

only it would appear a very strong likelihood that these plants right now that are being constructed will continue through their construction up to the end of that phase, when they are completely constructed.

And the chances of them getting an OL are pretty good.

A. I don't know, for one major reason. We have this signal event in history of nuclear power, Three Mile Island. I don't know whether that has shifted the whole system to a new curve, whether the data developed prior to it really allow you to extrapolate into the future.

Q. That action has not yet moved NRC towards the cessation of all construction?

A. It has not caused it to cease construction; that is correct. It has certainly moved it in that direction, to the extent that the issue has been debated several times.

Q. Aside from what impact TMI-2 might have on the situation, just looking at past history other than TMI-2, going back into history from March 27, 1979 previous, it would indicate these plants currently constructed are very likely to get operating licenses, by the very fact that they are being constructed?

A. If you take away that data point, that event, that is certainly true. Of course, if you take away that data point and that event, then I think the issue of shouldn't

they most likely get them is also answered positively.

That even has changed so many things. I doubt whether you would find most industry people who are building plants right now feeling that, "Oh, boy, we've got to hurry up and get the plant built before any results come out, because now we can get our license and away we go."

I am sure it's just the opposite. They would expect that there may be an increasing possibility that they have to make fundamental changes or, in some cases, they may never get their license.

Q You really think that is the way some of the utilities may, in fact, be thinking?

A I do.

Q What that really means is that some utilities are putting millions of dollars on theline, gambling that they will get an OL when there is expectation that they may very well not?

A I think anyone who deals with a regulatory system always has some risk involved; they are always doing that. Your point was that the risks they were taking previously were almost nil. (Subject "A")

As far as the dollars they were risking, that's not true, because the substantial changes that they might have to make in their plant could add very substantially to the amount of dollars they were risking in taking something

that was at one stage relatively profitable to another stage very unprofitable.

Seabrook and the Public Service Commission or the New Hampshire utility is a good case in point of how you can go to what looks originally like a good business situation to one that is a bad business situation, even though the license is still coming out.

So I don't think it has suddenly changed that before they were not risking, and now they are risking. What I am saying is that I would suspect many utilities now are much less confident that that plant will reach successful completion and operation when they would have been before.

Q Then why haven't those utilities decided voluntarily to stop construction until the dust clears on the Three Mile Island situation?

A I would suspect some certainly have slowed down.

Q Do you know whether or not any have?

A No, I have not checked.

Q I was curious about this NRC Order, docketed on August 9, 1979, concerning TMI-1. It does talk at page 3 about some features of the B and W design that make it unusually sensitive to certain abnormal transients, and which results in placing a large burden on the operator, under the conditions of those transients.

Two of those features are: Number 1, design of the

steam generator to operate with relatively small liquid volume in the secondary side; and, Number 5, low steam generator elevation relative to the reactor vessel that provides a smaller driving head for natural circulation.

Then the Order goes on to describe some actions required by NRC to mitigate some of those five features. The two I just mentioned, the design of the steam generator and the low steam generator elevation.

As to those two features, what has NRC done to remedy or mitigate the impact of those two features?

A I don't believe we have made any requirements to change the systems.

Q Well, there have been some changes but not as to those two matters. It is my understanding that there has been an adjustment on the PORV set point --

A But you spoke to those two specifics.

Q Yes, as to those two specific matters, you don't believe any changes have been implemented?

A No, because the first one is really the once through system, the small, much smaller liquid volume, and the second is the location of the steam generator.

Q Is the reason the NRC has not taken any steps to mitigate that situation the fact that even though these design systems are made to make the system unusually sensitive to off normal situations, it does not pose any risk to the

public health and safety?

A I believe that is the reason no action has been taken up to the moment. The issue of whether the basic B and W design has some problems in it that make it unacceptable is one of the things that some of the reviews are looking at.

They might reach the conclusion that it is.

Q This Order also recognizes, as I said, it places -- the particular features of the system place a large burden on the operator, the plant operators, in the event of off normal system behavior during such anticipated transients.

Those operators are the same ones whose retraining was spot checked by the NRC; are they not?

A Well, as far as the B and W design, that's absolutely correct.

Q So we have a situation of retrained operators who were not, all of them, reexamined by the NRC being put back in plants to work with a design, two of the features of which have not been remedied by anything the NRC has ordered and which make that design unusually sensitive to this kind of transient.

A On the other hand, we have operators put back into B and W plants on which they have been previously trained, and whose behavior characteristics are the ones they have studied and who have been relicensed or reexamined on the

same principles on which the whole licensing system works, operator licensing.

So the two fundamental questions still are if the-- Is the B and W design unacceptable? And is our general operator licensing acceptable? And those are two open questions.

I sort of disagree with the implication or by inference that you feel that it is specific B and W operators on TMI-2 that is the issue. I think it is a broader question.

Q What I am very concerned about, that there is no question from what happened on March 28, 1979 that some operators of B and W-designed reactors do not understand what is happening during a certain type of transient.

That was clear from the sequence of the act, and also clear from the fact that retraining was required. What I am disturbed about is that NRC then decided it would proceed as it had in the past, to spot check the retraining.

That retraining, requalification was spot checked by NRC, as I understand it, every two years, from Mr. Paul Collins. Six requalification exams are selected and spot checked.

That, obviously, was not sufficient for what was needed at TMI-2 during the accident, for the operators at that time to give them the understanding that they needed of that reactor transient.

A I take exception to that conclusion. It is not clear that the fault was that the operators did not pass their exams.

Q That's not what I said.

A I thought you said the spot checking was inadequate--

Q To assure that the operators really understood the nature of the transient they were faced with.

A Instead of spot checking, if we had gone out and given each of those exams to the operators, every one of them, I don't believe that we would have gotten any different result on those operators at Three Mile Island 2.

Q Because you would not have tested them on this matter?

A That's right.

Q In this circumstance I am talking about one week after TMI when the people had that retraining, if NRC had administered the exam you certainly would have tested them on the accident?

A That's right, and that's what the retraining was on that accident.

Q That's right, and we would be sure every operator going into a B and W plant now understands that accident and how to deal with it. Whereas, given the procedures NRC did follow, we don't know that.

All we know is that the utility tested them.

A That's right. And my response continues to be that if there is a weakness in that approach it is not a weakness just on this particular case, but a weakness in general on the way of testing operators.

Therefore, I don't reach the conclusion that you do, that this was a case where we should have tested them all, although we don't have to test them all in general. If we have to test them all this time, then we ought to test them all in general.

Q Shouldn't we begin with the immediate problem and move on to the more general ones? The immediate problem, I guess, is making sure that all of the operators in B and W plants know how to deal with TMI-2 type of accidents?

A That is certainly true, and the conclusion we have reached so far is that by implementing this audit type approach, we are assuring that.

Q Did the design of TMI-2 contemplate that the operator would terminate the high pressure injection based upon a misleading pressurizer level?

A It almost sounds as if you are asking, Did the person who designed it figure that the operator would have a misleading pressurizer level? I doubt it.

Q I am relatively confident the answer is "No", but I wanted your understanding.

A I do not know the designer of it -- my understanding

after the fact of this issue, was that the question of a misleading pressurizer level was just not well understood.

Q You have heard of design basis accidents?

A Yes.

Q Was the operator terminating the high pressure injection at TMI-2 based on a misleading pressurizer level a design basis accident?

A Without going down the list of what TMI-2's accidents were, I am pretty confident in saying no, it wasn't, because my general impression from many people is that the issue of a misleading pressurizer level was just not recognized.

Q My general impression also in taking depositions of personnel in the Division of Safety Systems is that core uncovery to the point of generating a large amount of hydrogen in the pressure vessel was not contemplated as part of the design basis accident.

A I believe that is correct, because of this lack of seeing a sequence that would lead to that.

Q As I understand it, what we are really talking about in the TMI-2 accident are multiple failures, a failure in terms of instrumentation to give an accurate reading as it should, and then human failure, based on that, in terminating high pressure injection.

A In leading to a system that wasn't analyzed.

Q So we are talking about multiple failures more severe than those contemplated in the design basis of the safety system. It was not contemplated that HPI would be turned off and you would have that kind of core uncovery and it was not contemplated you would have that large amount of hydrogen generation and it was not contemplated that you would have those high temperatures in the core.

The instrumentation was only prepared to go up to something like 700 degrees.

A Those are basically the same event, uncovery of the core, high temperature and hydrogen generation. If you say there is this large amount of core uncovery for this time, the other two facts, the hydrogen and the high temperatures follow from that.

Q I was not trying to identify them as separate failures.

A That is not a failure but a result of failure.

Q Right. We had a multiple failure as a result of human error that led to consequences more severe than those contemplated in the design basis.

Core uncovery, to the extent it happened at TMI-2 is simply not contemplated; it is not a credible event.

A That, I think, is correct.

Q Given all of that, I was curious, in looking at the NRC proposed annex to 10 CFR Part 50, Annex D, which

states,"Occurrences in Class 9 involve sequences of postulated successive failures more severe than those postulated for the design basis for protective systems and engineered safety features."

Doesn't that indicate that the TMI-2 accident was a Class 9 accident?

and #4b

A I gather Class 9 is more a term of art. I am still not absolutely clear on how it is used. I thought I heard Harold, in one Congressional hearing, say that Class 9 really included all of those accidents, severe accidents, which were not thought of in the other classes.

And, therefore, TMI-2 is a Class 9 accident. I have heard other people argue that, no, Class 9 refers to a certain level of radiation release resulting and, therefore, this wasn't.

Q I was looking at the definition in the proposed annex. That definition appears to apply to TMI-2.

A I guess I am not as concerned with whether or not it is a Class 9 accident as I am with how do we address in the regulatory process severe accidents.

Q Sure. But whether or not it is a Class 9 accident is not just a semantics problem; is it? As I understand it, Class 9 accidents are the ones that Harold Dedden described, the ones that are not contemplated and not part of the design basis for setting up the system.

A When Harold said in his hearing -- at least I thought he said that it was a Class 9 accident, I was not surprised. I conclude it was, in my non-legalistic interpretation of what Class 9 was, this seemed to me to meet the criteria.

Q Doesn't that take you back to the problem you have in the licensing process that TMI-2 means you now have to be looking at sequences of postulated successive failures more severe than those postulated previously for the design basis for protective systems?

You have to start getting into multiple failures, one after the other.

A The difference I would like to make on that, I believe it means that you have to look at accidents whose results are failures, whose results are more severe.

Failure may or may not be more severe, but it is when you put them together that what results from them is more severe.

Q That's what I meant. Doesn't that necessarily impel the licensing process from this point forward into an exploration of scenarios of multiple failures?

A This is a personal opinion, because this has to be a collegial issue, and we are in the process of asking the staff to now -- in fact, we started earlier and it had begun to generate out of the floating nuclear power issue.

We had begun to examine whether the constraints we had on the types of accidents you consider too restrictive, and this will certainly, I think, seal that. And definitely we will have to look at it.

Q In your speech before the National Energy Resources Organization on June 24, 1979, Mr. Ahearne, you emphasized the uncertainties in safe radiation levels and the reliability of waste disposal methods.

Referring to one report on waste disposal methods you stated, "I cannot find the IRG --", "I cannot read the IRG report and reach a conclusion as to whether or not some waste management is going to be possible."

Is this a proper environment to conclude that one nuclear plant after another poses no undue risk to public safety and, therefore, merits an NRC license?

A As a matter of fact, we have in the process -- it is out for Federal Register notice addressing just that question, Can we continue licensing? Do we have sufficient confidence in the eventual solution of the waste management problem?

I was addressing there the difficulty of getting a clear picture from a variety of sources. In that particular case, I was addressing the fact that here you had a Presidential review panel which spent two years reviewing this issue, and yet when they completed you could not really

find them taking a specific position.

It was on the one hand this, and on the other hand that.

Q I am glad to know the Commission is addressing that question, but I come back to my question for you: Is this a proper environment to license new plants when we have these doubts about safe radiation levels and central uncertainties about ever devising an adequate waste disposal method?

A We are addressing the question of whether there are adequate assurances that the safe disposal of waste can be accomplished.

So we could continue, and if we can't reach that conclusion, the result will be that we can't continue. The Commission, before I got here, did address that and did reach the conclusion that there was an adequate assurance.

Q Clearly, you don't agree with that?

MR. CHOPKO: Objection.

BY MR. KANE:

Q Let me ask you, the tenor of your speech suggests to me that you do not agree with the proposition that there is sufficient assurance that radiation levels currently established are, quote, unquote, "safe", and that there is sufficient assurance that waste disposal methods as currently contemplated are adequate; is that a fair statement of

what you were addressing in your speech?

A. It is not. I think you have reached a conclusion that I did not intend to make in this speech. What I was trying to point out was the difficulty that the citizen has in getting a clear picture.

I was trying to address the fact that in the nuclear area there are a number of issues that it is extremely difficult to get a clear answer on. You have groups saying this and groups saying that.

And I was saying that I think it is the responsibility of those involved to speak much more clearly and to take positions. I was not reaching a conclusion on my part.

Q. Okay, I misread the tenor of your speech. Let me ask you, as far as you know, based on your knowledge in your position as an NRC Commissioner, are there central uncertainties in the quote, unquote, "safe" radiation levels that have been set so far?

A. Do you have in your mind a definition of "central uncertainties"?

Q. I guess what I mean is, Is there a responsible body of opinion existing today which suggests that the radiation levels currently set for safe exposure are not adequate and may still be unsafe?

A. I hate to ask a third question, but I think you used "responsible body".

Q Responsible body of opinion.

A If I say "No", that means that those people who have raised the issue I have concluded are irresponsible. On the other hand, if I say "Yes" it means that I have, in some sense, said that bodies like the National Academy of Science and the Biological Effects of Ionizing Radiation Committee are irresponsible.

My answer is that those organizations, EPA, National Academy of Sciences, whose responsibility it is to advise us on what are the safe levels of radiation, have consistently said that the levels we are using are safe.

My point that I was trying to make there is that it is extremely difficult to go through those reports and reach -- and to see that clearly. There is a lot of debate. The big debate on the ~~Beer~~ BEIR Committee that I referred to was not that the Committee has now concluded -- they came out with a report saying that the 1972 levels are adequate, and those are the ones we currently use.

They did not get the report out because there was a big debate in the Committee. The big debate in the Committee is not, Should the levels be higher or lower? Rather, but should they be higher.

They feel that debate in the Committee -- there was a minority opinion saying the Committee's report exaggerated the dangers of low levels of radiation. After the

report went out in draft, that minority became a majority.

The difficulty of getting this clear picture that we, as regulators, can use and the citizen can understand.

Q Do you have a clear picture at the present time that the standards you are using are safe?

A I have a clear picture that the standards that we are now using are those consistent with what the health bodies have said are safe. We are in the process of going into a set of joint hearings with OSHA, EPA and ourselves on revisions.

It had been held off until the Beef Report came out, but we will go into joint hearings --

Q As an NRC Commissioner, who votes on these matters, you are personally at this time satisfied for purposes of voting on these matters, at least in regulating nuclear power, that the levels being used are safe?

A In those situations where I do have to reach a voting judgment, that is correct. There are uncertainties there, and that's why we are going into these hearings.

Q Do you agree with the statement which comes from the Ninth Annual Report of the Council on Environmental Quality and was quoted in your speech: "An emerging consensus seems to be that adequate information does not now exist to allow accurate prediction of the long-term stability of nuclear waste repositories.

"In particular, information is lacking on the long-term interactions between the geological media and the wastes themselves." Do you agree with that statement?

A I certainly agree with the fact that there is information lacking on the long-term stability. The point I was making on that quote, in a series of quotes, again is the difficulty of finding a consistent conclusion being reached by the federal government agencies who are responsible for the oversight of waste management.

Q That puts you in the position of voting on the licensing of new plants which will produce wastes and which, presumably, will have to be put in one of these repositories, and, at the same time, having no solid assurance that there is a long-term solution to that problem; is that right?

A No, I am saying there is information lacking and there certainly is.

Q That, therefore, prevents you from having a solid assurance as to the solution of the problem; does it not?

A That is what the issue of the hearing will address, whether there is adequate information to provide the assurance.

Q I just don't know how I got all these misconceptions from your speech.

A Probably because you read it late last night.

Q There was another statement with which you concluded

your speech. You quoted an article which came from the Columbia Journalism Review. The last few sentences are: "Do the experts know enough to protect us from nuclear catastrophe? The story has been around, largely uncovered for a decade, and now it is news."

Then you said, "Personally, I agree." You agree, then, that it is news that the question has arisen, Do the experts know enough to protect us from nuclear catastrophe?

A. What I really agree in is that that is really the question.

Q. That that's really the question?

A. Yes.

Q. When you say a question, you mean it is one for which there is no readily apparent answer?

A. No, what I mean is there is a question of, do, for example, we as regulators know what has to be regulated to be safe? Do nuclear designers know what has to be built into a plant to be safe?

Do operators know what is the appropriate behavior to work to to make sure it is a safe operation? Does the Energy Department know what has to be done with nuclear wastes to make sure it is put away safely?

That is the question. Each time that I face a policy issue here, I obviously integrate all of those and reach a conclusion at that stage. Like any person reaching a

series of judgments does.

It is certainly true in the minds of the general public that is becoming more and more the question, Do the experts know enough?

Q It is clearly a question for you every time you are called upon to vote.

A That is correct.

Q And you answer that question every time you vote?

A That's right.

Q You also commented in your speech on control room deficiencies.

A Right.

Q Why has control room design been neglected as it has been by the NRC in the past?

A I suppose that is one of the things that is really puzzling me more than a lot of others. As I tried to explain, I think I understand a causal link to a lot of the actions on this accident approach.

I can't really understand why control rooms have been approved. I have had meetings with Roger Mattson and talked at length with the people who have worked on control rooms.

I found that Steve Hanauer, I think I mentioned it in this talk, years ago -- Hanauer was speaking at that time as technical assistant to the regulatory director of the

AEC and said that the control room design was terrible, appalling.

Basically he was saying that here we now have many new approaches being developed to control space systems and there are many people who understand how to handle sophisticated technology in control rooms.

But none of it seems to be carrying over into a nuclear plant control room. That was 1972 or '74 when he made that. There was another report done in 1976, done for the industry by EPRI, same kinds of criticisms, very poor design practices.

There was a following report done by Aerospace, very poor design practices. I walked into the Three Mile Island room and it struck me, It looks just like the rooms that 20 years before that as a student in school going through mock-ups of coal power plant, electric power plant, very similar.

The most modern control room I think I have seen recently was in The China Syndrome. I don't understand why they have been so reluctant to bring the technology along. In the discussions I have tried to probe on it.

The best I can conclude in their tentative conclusions is that, first, the electrical power industry in general is a very conservative industry. They built coal plants for a long time.

These rooms, this approach was fine for coal plants. Second, a tendency to be reluctant to move -- one of the things, when you move into a larger and larger plant you have to face doing one of two things.

Many more people, or a lot more automatic systems. There just seems to be a reluctance to face resolving that. But it has really been a surprise.

Q What is the explanation for why the NRC has not taken a more direct role in assuring control room design was better?

A I think the conclusion there was that NRC, the AEC before it and the NRC after it had reached the conclusion that it was not directly safety-related. Improved control room design could lead to greater efficiencies in operation but would not directly affect safety.

Q That is the explanation that I have heard in other contexts.

A It is hard to follow that explanation.

Q I have some questions about how hard it is to follow the whole concept of safety-related. One of the things that has come up in the course of deposing and examining Mr. Mattson at the hearings we had last week was the treatment of the PORV as a non-safety-related item prior to TMI-2.

Then the explanation Mr. Mattson has confirmed on a historical basis that was followed was that the pilot

relief valve in its operation was not considered safety-related because it had a block valve behind it on the line, and the block valve was not considered safety-related, because it had a PORV in series with it in front of it.

There seemed to be a Catch 22, and Mr. Mattson seems to believe it is a Catch 22 which should be changed. Does that kind of situation, the kind of situation with control room design as currently existing, indicate to you that the safety-related concept is not a very good basis for regulation of nuclear power plants at all?

A I think it is a slightly different conclusion. I still believe that regulating on the basis of safety is an appropriate approach.

I think there has been a much too narrow definition of what is safety-related.

Q In that regard, I was interested when I first began to inquire as to where I might make a determination as to what is and what is not safety-related, I was directed to Appendix B of 10 CFR Part 55, and I went there expecting to find a long listing of valves, pins and bolts that are safety-related.

Of course, it isn't that, it's the more general guidance, the more general treatment of what is and what is not safety-related, and as I understand it in each individual application process the licensee designates the specific

items that are and are not subject to Appendix B of 10 CFR 55 and the licensing people look it over, evaluate it, and determine if there are any problems with it.

It is the licensee in the initial matter who designates what is and what is not safety-related. In that connection, while I was deposing Mr. Mattson, he made the following statement. I would be interested to know if you agree.

"The system of regulation depends on the judgment of the licensee. There is no human way possible to do it any differently with the people and resources assigned to licensing."

Do you think that is true?

A Do you mean do I think he said that?

Q No, do you think that is a correct statement? I know that he said it.

A I hope he is wrong. He obviously has much more familiarity with the difficulties of reviewing a license application than I do. He has been closely involved in it for years.

And I, never. I don't believe that that can be correct and still allow the system to work.

Q Do you think there are sufficient resources in personnel assigned to licensing, such that the NRC has been in the past exercising independent judgment on licensing,

apart from what the judgment of the licensee may or may not be?

A That's a little hard to answer. Let me say a few comments on that. There are, obviously, people on the staff who believe that we have not spent enough time reviewing license applications.

I think they are correct, and there are, obviously, areas where we did not spend enough time. On the other hand, there is a general view in the industry that we spent too much time reviewing license applications, and we are too hard.

As proof, that oddly-named Committee. I think from the outside it was clear that his purpose was to make certain that these independent reviewers did not review to the extent they then laid on additional extra requirements over and above those that would be required.

My sense is that we probably don't have enough resources at the present time. But that's more looking down from the top trying to see where resources are spent and what is the product of those than it is with a detailed familiarity with what everyone is doing.

Q A statement which you made at the prior hearing before the Presidential Commission sort of interested me. The summary I have indicates that you stated words to this effect, that if the issue of inadequate B and W pressurizer

level indication had gotten to the Commission, the chances are that most B and W reactors would not be licensed, and the staff would have sent notices to all operating plants concerned with that type of situation.

Is that a true statement, do you think?

A I don't recall it. Do you have --

Q I have a page reference to this transcript; I don't have it here.

A I sent it back to you after I marked it up --

Q This was a Presidential Commission hearing. That sounds like a strange procedure. First off, this is before my time with the Commission, so I don't even know what we did on that score, but that sounds like a strange thing for us to do.

But in any event, do you think it's true --

A Read it again. When you read it the first time I was trying to think -- you are saying you are quoting me, and I was trying to recall.

Q It's a paraphrase at best, not a quote. But let me ask you, totally and apart from what you said, do you believe that if the inadequate B and W pressurizer level indication had gotten to the Commission, do you think the chances are that the next B and W reactor would not have been licensed?

That the staff would have sent notices to all

operating plants concerned with that situation?

A Certainly the second is true. Whether it would not have been licensed -- I would have thought it would not have been licensed without substantial changes.

I don't recall the statement; I am not saying I didn't make it. I just don't recall it.

Q In questioning Dr. Mattson in his deposition and before the Presidential Commission last week there were a few points that came up that I would like to bring up with you as well.

Dr. Mattson testified that there is no person in his division, the Division of System Safety, or the entire Office of Nuclear Reactor Regulation who is responsible for overall integration of systems engineering.

Instead, that function is carried out through the Standard Review Plan, the SRP, and there is no individual responsible exclusively for that. Why shouldn't there be someone responsible for that?

A Harold is clearly the person responsible for that. The question is, Is the Standard Review Plan sufficiently well laid out so that you don't need to have one single individual pull all the pieces together?

I would raise that question with Harold and Roger, and ask them. Whether or not there should be is a question I can't answer, and it would require much greater familiarity

with the Standard Review Plan than I have.

Q Okay. The Standard Review Plan has come up in a number of different concepts. One that seems to come up repetitively is the application or non-application of the Standard Review Plan to the TMI-2 plant.

It is my understanding from several deponents that plants receiving construction programs prior to September, 1975, did not have to comply with the SRP and their thinking was that, in fact, they had in effect complied, because of the type of design requirements imposed in the prior two or three years.

Of course, that turns out not to be the case, and the SRP requires diverse containment isolation criteria. The plant at TMI-2 had only a single containment isolation criterion.

What I am interested in is that the decision apparently was made to grandfather these plants under the SRP, regardless of the state of construction of the plants as of September, 1975.

If, for example, you got your construction permit in August, '75, you don't have to comply, even though you haven't done anything, you haven't poured any concrete or anything major like that.

What would be the possible rationale for that type of decision? What was the rationale, if you know?

A I don't know.

Q It was substantially before your time?

A Yes, I would suggest asking Commissioner Gilinsky, who was a voting Commissioner at the time.

Q Okay, I also asked Dr. Mattson what office within NRC specifically looked at the problem of how the operator relates to the equipment, the man/machine interface, and he told me there was no such office in NRC.

Is that a good situation?

A No, it's a very bad situation, and I found it out from the same source you did, as I was trying to find out, How do we handle control room design? Again, the issue of the man/machine interface seemed to be an area that they had reached a conclusion that it was not a safety-related item, control room design.

And, therefore, the interface between the man and the control room, and, therefore, into the machine was not a safety issue. I don't think that's a good practice.

Q Do you have any idea of how it came about that there was no such office? That NRC simply was not looking at the man/machine interface?

A In probing the same people that you probed, the conclusion that I reached was that in the early days whenever that issue was raised no one could make a convincing case that it was definitely a safety problem, and, therefore, it

was put aside.

Q. Okay. As I am sure you know, there has been a lot of concern about the handling of the Michelson Report and the Novak Memorandum prepared by Sandy Israel and based, in part, on the Michelson Report within the NRC.

As I understood, the Novak Memorandum was prepared by Sandy Israel for Tom Novak's signature in January of '78. Dr. Mattson, and a number of other people affirm that it raised a generic safety problem as to operator level and pressurizer level for existing nuclear power plants.

And yet it's clear no word was put out to the Division of Operating Reactors and, in fact, the Novak Memorandum never went outside the system of system of Division Safety and Denny Ross, who also received a CC.

What is your understanding of why that happened, and what steps are taken by NRC to prevent it happening again?

A. As far as why it happened, I don't have much of an explanation. I talked to Roger, and I talked to Denny and Harold. They all seemed to be puzzled as to it. Harold is in the process of reorganizing all of NRR.

In addition, we have tried to form an organization that will focus specifically on safety problems, safety issues that would be independent of all of the branches, in the hopes that we can try to eliminate that problem, or at

least work towards eliminating that problem.

Coordination, even between offices, has been difficult in NRC. Why that particular thing did not surface any higher, I don't know. As I recall in talking to Denny, he didn't have any real reason why he didn't pass it on.

Q. I have the same question with respect to the Pebble Springs that we talked about before, specifically Question 6, in which the response was not provided by the applicant as to a portion of that question, and no one followed up from ACRS or the NRC.

Is anything being done to try to prevent that situation happening again, where a question was propounded by the ACRS and the NRC decides it goes beyond the SRP and the specific regulatory requirements they have, and the ACRS does not ask NRC to follow up and so nothing is done?

A. Not to my knowledge has there been any specific discussion with the ACRS, should we be following up on every question you ask that you don't ask us to follow up on.

Q. Isn't there some kind of procedure that could be used whereby NRC has the responsibility for ascertaining if the question has been answered? And, if it hasn't, to contact the ACRS and say, "Do you want us to follow up?".

A. We could do that. I think more we have to discuss with the ACRS what method -- the assumption -- and certainly that was a question that should have been followed up. The

assumption, Are all of the questions of the ACRS that are not answered ones that the ACRS believed should be followed up? I don't know. That is an issue we have to address.

Q We discussed before, Mr. Ahearne, the Davis-Besse transient of September 24, '77. Had you heard of that transient at all before Mr. Creswell got in touch with you?

A I don't recall having heard of it. Certainly, when he was talking about it, it did not trigger any memory. I may have seen a bulletin of some kind; I don't recall that.

Q In line with the same question I asked about why the Novak Memorandum did not go beyond the Division of System Safety, the coincident logic, ECCS actuation present in the Swiss transient involving the Westinghouse plant obviously did not come to the attention of the NRC as far as we know it until April of '79; it was not reported.

However, it was known, apparently, widely that as of March 28, 1979 coincident logic was a common feature at Westinghouse plants, and, coincident logic works such that if you had a divergence between pressure and level -- that is pressurizer level and pressure in the primary system, it wouldn't come on and you might want it to come on.

You might be in saturation conditions in the primary system. Yet in speaking with Dr. Mattson once again I am informed that coincident logic was not informed at the meeting he had relating to the Davis-Besse transient, and no one in

NRC until after TMI-2 made a connection that a divergence between level and pressure could occur, and, if it did, it would cause problems with coincident logic for ECCS actuation.

What is your understanding of why no one made that connection in NRC?

A That's the type of a question that, in hindsight, you can say, "It's obvious." I am not a nuclear reactor expert, so I can't really say in hindsight whether it should have been obvious.

Afterwards, it was certainly quite obvious.

Q Is there anything being done within NRC to try to prevent having that situation occur again?

A As I think I mentioned, we are forming a specific group, whose sole function is to look at all types of events, situations, and just look at it from the standpoint of what lesson do you learn from it, what are its indicators?

There is a signal here, what is the significance of it? It should have been done a long time ago.

Q What I am concerned about in that explanation -- and, believe me, this is no slur on Mr. Mattson's expertise; I am sure it is quite high, indeed -- but my impression from what he told us on this meeting he had on the Davis-Besse transient on September 24, '77, and the examination given by Mr. Masides of his office and Mr. Safer of I and E was not

a function of merely the transient. They looked at it, studied it, had some understanding of what occurred, but they did not make the connection.

What makes you think the new system being proposed is going to do any better? It seems to me you are saying you will have people who will look at it and try to make the connectic..

A That's right. And the only reason I think it might work where the other system doesn't -- and I have to put aside, for a minute, the review of the Davis-Besse transient, because I had not known Mattson sent someone out.

I don't know what they were really looking at with respect to it. But if you have one office whose purpose is to have plants go through a process of meeting what are currently laid on regulations their focus will tend to be with respect to, What are we cu antly requiring?

If you have another office, a different office that we are trying to set up, whose sole function is to look at, When something goes wrong, what does it mean? They have no other purpose in life.

I think we are all hoping that that would make a significant difference. There still remains the question I have referred to in the Columbia article.

Q Whether or not the experts really know?

A Is this technology one that can't be handled?

Q Some of the points about the licensing process, I am told it's true that an applicant for an NRC plant license is not required to submit any history of failures on equipment.

Even safety-related equipment that would be included in the plant. That strikes me as anomalous, since it would help to make the NRC's job a little easier if you had a history of safety-related equipment at least so you would know where you could evaluate prior operational problems with that equipment.

Why not require a license applicant to submit that kind of history?

A I am not sure to what you are referring. Are you saying if an applicant wants to use a valve from some company that we should require a list of the times that valve has failed?

Q Yes, something like that. For example, in the case of the PORV it has been stated by many deponents I have spoken to that had the full history of PORV failures been available, the NRC would have realized there were problems with the PORV and something should be done in that regard.

But that history simply was not available and was not known.

A My impression is that it is not correct that the

history was not available. I seem to remember someone in NRR, I think it was Darrell, saying that after TMI they went back and looked at all these 3000 reports that blow across the desk, and also went back and looked at other records they have and found, sure enough, that whereas the Westinghouse valves open X times and stick open Y times, lo and behold, B and W valves open ten X and stick open many more times.

It was available, but the system that we had did not collect it and look at it.

Q That's what I mean. Wouldn't it be easier to put the burden on the license applicant to compile a little history that spells out in summary, readily digestible form, how the valve has performed in the past, for example?

(Continued on next page.)

4b end ph

A The visitation I am having is that, let's suppose no license applicant decides to use that system. We have to have a way of keeping track of what is happenning with the operating plants and our weaknesses showing up. We really have to have a system that pulls together that and looks at it and raises it.

Q I was not suggesting that the current system should be abolished.

A Oh, no. The current system has to be changed drastically. The current system had this information imbedded in it and was not pulled out.

Q Wouldn't it be a significant help in terms of having to evaluate operational problems with equipment to put the burden on the licensee to give the NRC a certain history of the device? Not that that would be all the NRC would rely upon but it would take some of the burden off the NRC and put it on the license applicant.

A You mean as opposed to where you don't think it would be appropriate to put it on him inspecting his operators, but reporting on his valves. I see. The licensee I don't think at the moment really has that information, and I'm not sure the maker of that valve has that information. What you are saying is we should set up a system whereby Rancho Seco has a valve that opens and sticks open. In addition to reporting it to us, Rancho Seco should report

it to whoever makes that valve.

Q Yes, the vendors should keep track of the equipment they sell.

A Then that vendor -- that's an interesting, requiring the vendor -- as an additional requirement on the vendor but also to us, that's a possibility, and I had not thought through that.

Q It is my understanding then, Mr. Mattson, that the objection to that proposal in the past has been simply cost or burden on the industry. Has that suggestion ever been brought up in an NRC Commission meeting to your understanding?

A No. The point has been brought up, where that issue has been raised, and we have been debating on, is that there is a series of equipment failures, a reporting system to provide when pieces of equipment fail, not safety-related so-called. At the moment it is a voluntary system and some of us have been trying to make it a mandatory system, and that's where the issue of cost and difficulty and burden has come up.

Q We talked before about the fact that plant standardization has not been successful and plants around the country are all in some respect different from each other. I have been informed by several deponents that the lack of standardization poses significant problems for

evaluating the designs of the various plants for inspection and enforcement regulations, from device and solutions to generic safety problems. Why has this lack of standardization occurred? Why has the NRC permitted that to occur, or its predecessor, the AEC?

A I thank you for that qualification, because obviously most of the plants operating got their original construction permits under the AEC. I think for two reasons. First, the general push for standardization, which began, as far as I can understand it, in the early 70's, was accepted by many people as a desirable goal, and it was assumed would be accomplished as a result of the then foreseen enormous expansion of nuclear power.

When you add 25 plants a year, coming in for being licensed, then the vendors would have a real reason for standardizing. It was expected. It was obviously going to happen, but it would happen as a result of economics. That obviously never occurred, the huge plant buildup never occurred, and you then add the situation where, for a licensee to go to standardize would mean that he would apparently run a real risk of losing the sale, so they are trying to sell custom design to enable them to keep selling their systems. That is from the side of why did the AEC -- I think, why did the AEC not push in that direction? Now, why the NRC has not pushed in that direction I think has been

a lack of a belief that requiring standardization and only a standardized plant could not be supported on safety grounds. I think it was perceived that in order to take that step would raise a tremendous outcry, not only from industry but from our Congress. And the defense of taking it, which would be that you would be able to make the plants much safer and inspected etc., could not be supported. That is my sort of reasoned guess.

The issue has not come up since I have been here.

Q Jumping back for a moment to a more general topic which you mentioned at several points, including in the speech of June 24 that we have been referring to, where I think you stated that five people are a large number to reach effective agreements, the larger question posed by several Presidential Commissioners and which we have to address at some point in this investigation is, should we have a collegial body of NRC Commissioners, is that an effective way to run this organization?

A I don't think so.

Q What would you propose in place of a collegial body?

A These are obviously tentative conclusions, but it is a question I have been trying to think through ever since I came on the Commission. But it appears to me that if one were to start all over again and wipe the slate clean and

try to construct a federal agency that controlled nuclear power, I can't see why the NRC should be different from EPA. I don't see why it shouldn't be a single administrator. EPA has regulations they have to enforce. They go through a hearing process. So it can't be because you have that, that makes the Commission unique. To the extent I have been able to, I have tried to go back and read histories of regulatory commissions to try to understand what is a regulatory commission and why does the federal government have regulatory commissions and what is their reason for being.

A lot of it seems to be tied much more to the economic leverage concern and Congress' concern to have economic leverage separated out from Executive Branch and to have that economic leverage exercised in an organization not dissimilar from a Congressional Committee where you would have mediation, debate, compromise, vote changes, because of the problems of sharp changes in economic leverage.

If that reading is correct, most of it does not really apply to the kind of business of regulating for health and safety. EPA's construction is a much more appropriate one. I see the difficulties we have with trying to -- we are in many ways an operating agency, not just a review agency, like the Federal Energy Regulatory Commission.

We have a large body of inspectors who inspect and

we have many people who for all intents and purposes sit down and help design plants. All of that to me means that we ought to have a much tighter management system. That doesn't really fit with a Commission, so on balance I am tending to conclude there should be just a single person.

Q In line with some of the comments you just made, do you feel the NRC is consumed, overwhelmed or inundated by quasi-judicial functions like the licensing function to the extent that it is impeded in its efforts to strictly regulate for safety?

A By the NRC do you mean the agency as a whole?

Q I guess I do, particularly in connection with the licensing function.

A I don't think the agency as a whole is. If I look at for example the 700 or 800 people in inspection and enforcement, I think they are very lightly involved in the licensing process. They are roughly almost a third of the agency.

Q Has it been your observation, as long as you bring up I&E, has it been your observation that inspection and enforcement effectively carries out the job of detecting violations?

A I think there are a number of difficulties associated with the inspection and enforcement operation. Some being that I think there are not enough people. Some

being that involvement on sites has not been sufficient. I think going to resident inspectors will improve that. I think there, just as in the question of the operators, there might be a question of general level of people in I&E and their technical competence. It has tended to be viewed in the NRC as not a path that a highly competent technical person would go into because it would be a dead end. I don't think it should be, but I think that's part of the problem. I think it has been -- had a problem, and this is much more a second-hand guess.

I would think that carrying over from the days of the AEC when there was very much a promotional aspect to the Atomic Energy Commission, the idea of inspecting and enforcing in a more stern fashion was in a way inconsistent with the overall AEC philosophy. I think there was a problem that the penalties we had available were sufficiently small that they were much less -- they were minimal slaps. An inspection and enforcement agency with very weak powers I think tends to become demoralized.

I read a report of a series of consultants who have looked at the I&E System and they seem to indicate that there are morale problems pervading through it. So there are a number of difficulties.

Q We have taken the deposition of Donald Haverkamp who was the principal inspector for TMI units 1 and 2. He

was the one who was in charge of most of the inspections actually conducted on site. He was there fairly frequently and I am curious as to what further rule you think the resident inspector is going to play that the assigned inspector from Region 1, for example, could not play at TMI, too. Obviously the resident inspector is visibly there all the time, while the other one is not. Doesn't that raise the question of a buddy-buddy relationship arising with the licensee?

A Yes, it does. I would say the most serious question regarding the resident inspector concept is that one, particularly when you realize many plants are in relatively isolated areas and it is most likely that those are going to be the principal technical contacts a person is going to have, so there is that possibility.

I think we have to assure that there is a rotation after a few years which is part of the philosophy of the program so you don't have that long-term relationship. On the other hand, getting to know the specifics of that plant, the people we have already had who are resident inspectors, it appears from both their view and the people who have reviewed the difference between the inspection and the resident inspector just gets to know the peculiarities of that individual plant so much better and is able to detect problems with respect to it. I would hope, had we had a

resident inspector there that those aux feed valves would never have been a problem. If they were for a length of time, for a very short time they would not be caught.

Q That problem may or may not relate to a problem I think we have uncovered in the way inspections were conducted at TMI too. In deposing Mr. Havercamp, we were curious to go through a few of his inspection reports that had been prepared within a few weeks prior to the actual accident on March 28, 1979. Some of those inspection reports related to inspecting repairs or modifications or corrections to various pieces of equipment, some of which were safety related.

In taking Mr. Havercamp's deposition, the attorney who took it was not I and he was a bit surprised in that he asked, for example, there was this particular valve here, did you go and look at the valve. No. Well, what did you do? Well, I went and examined the logs and books of the licenses and determined whether they entered the correct entry for having repaired the valve. That's all he did and it was a paper inspection rather than an active inspection.

In regarding the regulations or this, regulations on how inspections are conducted, we found a provision that could be interpreted as to allow an interview of the licensee or an inspection of the device or simple inspection of the -- examination of the application of the licensee's

device. Do you think that's proper technique rather than looking at the equipment itself?

A Not for some elements, it probably is for some, to assure that certain steps are being followed and in particular to make sure that procedures, if part of your procedures that you want to ensure are done, or doublechecks or something by two individuals, you have to monitor them both. If repairs are made to a piece of equipment, unless the equipment has now gone back to an unaccessible state because of radiation flux or something, then I think the person ought to physically check it. I would hope that a resident inspector would have the time to do it.

Q Mr. Ahearne, in your speech of June 24, and I keep coming back to it because you said an awful lot in that speach, you stated you suspect TMI 2 will engender more emergency planning by the Federal Emergency Management Agency. Are you aware that the NRC does not require states and counties where a plant is to be licensed to have existing emergency plants?

A Yes, I am aware of that.

Q Why isn't that required by the NRC?

A As I have answered on several other occasions, we now have a procedure underway to see whether or not we shouldn't. We have a rulemaking to specifically address that.

Q Okay. But up to this time why wasn't it perceived that that should be done?

A I believe it was perceived -- the requirement will end up in any event, unless the law is changed, the requirement we would be able to levy is on the licensee. We can't, without an additional change in law, we can't require a state or local government to do anything. All we can do is say to the licensee, you can't get a license unless your state and locality do these things and it is up to you and up to the localities if they want the plant to go ahead and do it. I believe in the past that that process was thought to be one not necessary.

Again, if the major accident is not going to happen, going through the difficulty of getting the licensee the leverage on the localities and the states would not be done. But we are going through rulemaking and I would hope by November we will reach a conclusion.

Q When was it decided that that rulemaking should be undertaken?

A It was after Three Mile Island, absolutely. I was trying to think through when in the process.

Q Again, this is another one of those things that has been indicated should be done as a result of the Three Mile Island accident?

A Absolutely.

Q What was it about the Three Mile Island accident that indicated to you that this should be done?

A In going through how our states and local governments are prepared to respond to these kinds of emergencies and finding that in many cases they are not prepared or have just begun to become prepared. For example, as you know, we have this process of concurring on state plans. I am obviously speaking of the reason that I reached this conclusion and therefore others have reached this conclusion. In talking about the state programs people and the difficulties they have in some cases in just getting an interest on the part of people in the areas to do this kind of planning prior to Three Mile Island.

Post-Three Mile Island there hasn't been any difficulty in getting their interest.

Q Do you think the absence of these plans poses an undue risk for public health and safety?

A At the moment we have not reached that conclusion.

Q But I am asking you.

A And I am answering that that is one of the issues we are addressing. One of the things the rulemaking is going to address, at what point should the existence of that plan be required for a plant to continue operating if it already has an operating license? That is an issue in our

rulemaking.

Q Again, I was not asking the entire Commission. I was just asking Commissioner Ahearne.

A My answer is that we are getting a substantial amount of information being developed in rulemaking and many comments from the public, I assume. We will utilize that. I at least attempt to incorporate the information provided to me in reaching a conclusion. It is a significant issue and I will attempt to reach a reasoned judgment.

Q Is it your answer that you have not reached any conclusion at this time?

THE WITNESS: That is correct. Can we take a 10-minute break?

(Whereupon, a brief recess was taken.)

MR. KANE: Back on the record.

BY MR. KANE:

Q Mr. Ahearne, you have given the Presidential Commission a somewhat abbreviated explanation of where you were at the time the accident began, etc., but I am interested in the functioning of the Incident Response Center to your observation at the time of the accident and what physically you were doing during the time of the accident.

A It is unfortunate you had not asked that when I first went to the Commission, the Presidential Commission, at

which time it was a lot fresher in my mind. We are now five months away from that.

Q Can you sort of take us through a fairly brief description of what you were doing on Wednesday morning from the time you first learned of the accident? When did you learn of the accident and how?

A This is going to be to the best of my recollection. I have nothing that I can really go back and check against to say I was here -- as I recall I came in to work and after having arrived I got a call. I don't remember whether it was Lee Gossick or John Davis, telling me that there was -- and it may in fact have been someone else, but I did get a call from Bethesda telling me that there was an event. I don't recall what description they used at the time. I remember I was supposed to, with Peter Bradford, have an interview with Rich Pollack that morning for Ralph Nader's newspaper, or I guess Critical Mass' newspap and thinking should I cancel the interview and go out there.

I really wanted to meet with them and finally, reaching the conclusionthat it appeared that this might be an event which, if nothing else, would enable me to see how the NRC handled an emergency, of the things I should be doing as a Commissioner, understanding that should take first precedence. So I went out there. I got there at 9:30 or something and I stayed there past Midnight. I don't recall

when I left. I left with Gossick, when he left, sometime after Midnight.

When I was out there all I really did was try to see -- get an understanding of what was happening and how we reacted to an accident and how the various people reacted, the way NRC was set up to handle an emergency, Commissioners were not involved in that. It is Gossick running the Emergency Response Center with the head of I&E and senior representative from NRR making the decisions.

I was much more trying to be an observer, because there was no role as a participant. I was trying to be an observer and recognizing that I was a senior official of the Agency and trying to stay out of people's way so I was not interfering with them doing their work.

Q Did you talk at all with Victor Stillo while you were there at the I&E?

A I'm not sure that I talked with him as listened to him. He was heavily involved. The way the system worked, I&E had the patch into the control room and that same link to the King of Prussia office. As I recall, Norm Mosely was the fellow on the telephone headset most of the time with this open line into the control room. Vic was one of the principal NRR people in a group of people interacting with Norm and trying to keep track of what was happenning. I don't recall so much major discussions with Vic as listening to him.

Q Was it your observation that one of the things Mr. Stillo was concerned about very early on was the condition of the core?

A Again, it is now five months away and it's hard for me to make sure I give an accurate picture of what I knew at the time versus what I now know. He certainly had a very strong -- the impression I had was that he strongly felt that the licensee did not appreciate how serious the situation was. He was trying very hard to get B&W involved with the licensee. He seemed to, at least at one phase, really be trying very hard to get them to recognize that they had to get circulation going again and that was a real problem there. I don't want to disagree with anything Vic might have said. I don't recall myself in listening to him and coming away with a great concern, something's wrong with the core. He might have been very concerned and I might not have picked it up or if I picked it up it may now, over the months, have been transferred over to an understanding, and having heard so much about what did go wrong with the core.

Q Do you recall Mr. Stillo yelling over the phone to the licensee that the licensee should turn on the high pressure injection?

A I remember him yelling several times. It was more a shout. Norm Mosely was on the phone most of the time so it was relayed information. The largest shout I can

recall is when he found they had been pumping water from the containment out. That's what sticks in my mind the most.

Q Did Stillo or anyone talk about, to you or in your presence, the subject of the core being uncovered?

A I don't remember. It's just too long a time.

Q Do you recall at any point on Wednesday becoming aware of the fact that the core had been uncovered at Three Mile Island?

A Not to my recollection, no.

Q Did you acquire that information on Thursday, the day after the accident?

A I don't think so. As I recall, on Thursday there was a general mood -- Thursday was the day that the staff came down and briefed us on its way going up to brief on the Hill. As I recall, the attitude then was, things are in pretty good shape and we now understand everything, so I don't think on Thursday that would have come up. But it may have. I don't remember.

Q You stayed at the ERC from the morning all the way to about Midnight?

A A little after Midnight.

Q Your role there you felt was pretty much that of an observer?

A It was solely as an observer. The way that the NRC -- my understanding prior to the accident, and certainly

it was verified during that, the way the NRC responds to an emergency is to decouple the Commissioners, the Commissioners being a collegial organization that are not in an emergency response mode. The responsibility evolves upon an emergency response center with Gossick as the head and I&E and NRR as the two principal advisors. They handled the emergency and I felt at times a little awkward being there because really Commissioners -- the system was not structured to have Commissioners involved. But nevertheless I felt it was critical for me as a new Commissioner to try to understand what does the NRC do in an emergency, how does it operate.

Q How did the ERC function under these circumstances in your opinion?

A The comparison I continued to make was with military command posts, which is more my background. I felt the communication links were just atrocious, miserable communication links. The amount ofinformation, the information flow was very poor and the quality of the communication link was very poor, and I was very surprised at that. I felt that it was -- it was an operations room which had not really been thought of being used in a real accident. It was almost as though, in just thinking through, trying to understand how it came about, I am told that at Brown's Ferry, which was the previous large accident, the whole operation was handled out of the office of the I&E Director and there wasn't even this

minimal thing available. As a result of the Brown's Ferry episode, the conclusion was you really ought to have an emergency center. This center only recently had gone into place. I think last Fall it had finally been set up. But it wasn't the kind of center which I would have expected for handling an accident. I felt that, given the fact that that kind of preparation wasn't there, the amount of people they pulled in, when they pulled them in and got them working, was very good. I felt the people response on the NRC side was quite good.

The equipment available for that response was quite poor.

Q Okay. The evacuation question has come up several times. It is my understanding from Mr. Mattson and Mr. Denton that on Friday, March 30, they both recommended strongly, because of the 1200 milligram release that had occurred and also the impending necessity to rapidly depressurize, that there in fact be an evacuation of a certain area around the plant. It is also my understanding that that advice was not followed by the Commission, and I wanted to ask you why that advice, so strongly urged by two senior people on the staff, was not followed by the Commission.

A I don't recall Harold strongly urging that. I recall vividly Roger saying at one point, I have been saying

all morning that we should be moving people out and I don't understand why we arenot moving people. I don't remember Harold reaching that conclusion. I can only speak for myself and not for the other five. One of the conclusions I had reached when I was in the day at the control room, the Emergency Response Center, we had very poor information and it was one of the reasons -- I don't know whether it was comments I made or that I just assisted in or what. But I was very interested in having NRR get some people up to Harrisburg which led to Vollmer and his group going up on Thursday, the first group. I was very concerned that we really didn't have much of a feel for what was happenning there and I wanted to have a better impression from what our people up there were saying as opposed to what our people down here were saying.

Secondly, evaluation of a large group of people to me meant substantial risk. I agree with a number of the statements Governor Thornburg has made on several occasions about the risk of evacuating large numbers of people. Therefore, at that point, where the only indication that I saw was this lack of communication flow, Vollmer up there had not come across with a strong recommendation or a recommendation as far as I knew. We did have this puff release and that led me to the conclusion that -- the difficulty was not the size of the puff release, and at that

time we did not have any concern, great concern, about what was going on in the reactor, the hydrogen bubble problem had not come up. The concern was we did not know if there would be another puff release, when it might happen, and that's what led me to endorse the recommended advisory on the part of the Governor for the pregnant women and children.

Q Were you also aware at that time that the licensee was taking the position that they would have to rapidly depressurize at some point in the relatively near future? I am not sure I have this correct. But there was something about the makeup system that was a problem in terms of pressure buildup in the primary system and they would have to rapidly depressurize.

A No, I don't recall that, certainly not on Friday. I know as a result of Wednesday I was not particularly in anything the licensee by himself might have been concluding. Later on in that series of days when Harold -- as I recall, when he got up there he concluded that there was no immediate danger and he started talking about times of four to six hours available even under the circumstances that he could see. As I recall, Mattson also told us later, and I don't recall whether it was Friday afternoon or Saturday, that he didn't see any need at that time for evacuation after they got better information from the site.

Q I think that relates to their ability to continue

to bleed off the gas in the primary system, rather than to rapidly depressurize.

A Also the fact that they were now getting better information. They had people there that they had confidence in and understood what was happenning.

Q So on Friday you were not prepared to go along with an evacuation recommendation, a true recommendation? On the other hand, in testifying before the Presidential Commission previously, you made the statement that by Sunday afternoon, which I take it would be April 1, three Commissioners in Bethesda were said to recommend evacuation around the plant Were you one of the three?

A I, Kennedy and Bradford were the only ones there.

Q Why were you prepared at that point to recommend evacuation?

A The hydrogen bubble problem.

Q And what you had been told in that regard?

A That's right.

Q Was that another communication problem?

A On the hydrogen bubble -- I'm not sure. I have had a request around -- trying to get our best understanding of the hydrogen generation issue. We had a number of people around the company who had examined that question.

Certainly the people in Bethesda reporting that, Bob ~~Bruner~~ Burnett, for example, was reporting that he had checked

with all the senior people around the country who understood hydrogen generation, and here was a real problem. Afterwards it turns out that they had not taken into consideration the pressure that was there and consequently they had not taken into consideration the amount, that the hydrogen would penetrate into the water, so oxygen being generated would be absorbed before it got up into the bubble. On that problem, if it was a non-problem, certainly, the bubble went away rapidly and the conclusion was that there was no oxygen left in the bubble by late Friday afternoon. But during Saturday and Sunday in particular, when these calculations were being made and presented to us, the three of us in Bethesda had reached the conclusion that there was a sufficient hazard, and unless the technical people, who by that time the major technical people were on the site, Denton, Hendrie, Stello, the people who understood the system, were all up there and senior technical people in the agency were all up there on Three Mile Island. Unless they had something different, then we felt there should be this precautionary evacuation, as I recall, of two miles, and that's what we relayed to them. Gilinsky, I think, had gone up to the WhiteHouse, so he was not involved in that, but Bradford, Kennedy and I had reached that conclusion.

Q You then communicated that conclusion to Chairman Hendrie?

A Yes. As I recall, Kennedy was on the phone in the emergency room to the Chairman and relayed that information. At that point the Chairman said well, -- he went on to explain the conclusion they had reached, based on they understood the pressure issue, hydrogen going down in to the water and oxygen not generating up. So we never implemented that.

Q Okay. The radioactive release which occurred on Friday, there has been confusion as to whether it was a release that was planned, and if it was planned, whether it was disclosed to the NRC that it was planned. And if it was disclosed to the NRC that it was planned, whether or not the NRC approved that particular release. Do you know whether or not MET ED communicated to NRC in advance of making this release that they planned to do that?

A No, I do not.

Q Do you know whether the NRC was given an opportunity to discuss that in any way with MET ED in any fashion?

A I do not.

Q Do you know if that release was planned or accidental?

A I don't know.

Q There has also been quite a bit of testimony about the attempts during the first few hours of the transient --

emb-25

I believe it was 7.5 hours into the event, the licensee attempted to rapidly depressurize the primary system in order to go on the decay heat removal system.

A That's right.

Q Do you recall that changing being made?

A I can recall that attempt being made, yes.

Q Were you in the incident response center at the time you learned of that attempt being made?

A Yes.

Q You must have been since it was about 11:30 in the morning. Was there any discussion by any NRC personnel within the IRC about the advisability of that decision and whether or not the licensee should attempt to do that?

A There were, of course -- have you been out to the center?

Q Yes, I have.

A So you know there are basically three rooms. The main room, a side room and a small back room. During that period there were discussions in all those rooms at all times, many people milling around. Whether there were discussion on that, I can't say. I don't recall any major discussion. The impression I had at the time was that the NRC people thought that was a good thing, that they ought to be trying to do that. It was more based on that if they could not get the pumps running, main circulation pumps, they ought

to try to get the RHR Running. In fact, when I left, Wednesday night, the open question was could they get the RHR on. As I recall that was one of the puzzling questions on Thursday morning, they still had not been able to the the RHR on.

Q As a matter of fact, as I understand it, later on in the afternoon in Wednesday, the decision was made to repressurize. They could not get low enough.

A That's right. But the repressurizing still had, after the repressurization, to either collapse the bubble or clear -- restore the pressurizer level. The concept was they would still to get the RHR, so that was still a goal. At least that's the impression I had.

End 5A

Tape 5B

Q Based on what you know today, was the attempt to rapidly depressurize around 11:30 in the morning on Wednesday the right thing to do?

A I have not yet reached a judgment on that. That is still based upon more thorough analysis of what was happenning in the accident.

Q At the time the decision was made by the licensee, did anyone in the IRC have any decent idea of what the core temperatures were?

A I'm having trouble answering that question, for two reasons. First, it was not until much later that I found out that the licensee had actually done a potentiometer

tap and determined the above 2,000 degree temperatures.

Q. The necessity for that was because the in-core thermal readouts were only up to 700 degrees?

A. That's right. I can recall discussions on Wednesday that they ought to do a potentiometer tap, because some of the thermal couples were offscale, so that knowledge was there, the knowledge that the temperatures were high.

There was a debate as to whether they were off-scale or broken and the conclusion was, the only way they can be able to tell is to do a tap.

I think I recall several times the question relayed over the communication link to ask the licensee to do a potentiometer tap to find out what the real temperatures are.

What I was hesitating on, you said "decent". The information available from the potentiometer tap I don't recall being present. The fact that there were high temperatures and some of the thermal couples were not reading.

Q. Was there any recognition, to your recollection, of the fact that knowledge of the in-core temperatures would be very important in determining whether the licensee was attempting to -- should attempt to rapidly depressurize?

A. There was certainly an appreciation. In fact, as I recall, the reason they stopped depressurizing was that

the further you depressurized, there was a noncondensable, and the further you depressurized, the larger that volume became and they did not want to depressurize to the extent -- as I recall, there were two problems.

They were worried about uncovering the core and also uncovering one of the loops of the pipe which would then break any chance of circulation.

As I recall, that was known and understood. The direct relationship of the high thermal couple reading and therefore not depressurizing -- no, I'm not sure I understand the relationship you are trying to draw.

Q I'm not sure I do, either. I have no background in physics whatsoever. But we have spent some time deposing Denny Ross and a number of individuals from the Division of System Safety.

They have explained to me, that had the licensee continued to attempt to repressurize, persisted in that effort, he surely would have uncovered the core and the very high temperatures we were reading in the core, if they had known of that at the time the question came up, they definitely would have insisted that the licensee not attempt to rapidly depressurize because that would make the situation much, much worse.

A Are you talking about very high being 2,000?

Q Yes.

A As far as I know, that was not known. It was this 600 and some -- in fact it was broken off-scale. It was that question.

Q That came up, whether it was broken or off-scale?

A That is right. The reason I recall the request to go make a potentiometer measurement was not because of a concern, well, maybe the temperature is up in the 2,000 region, but rather, how can you tell if it is broken or off-scale?

You do a potentiometer tap and then you can tell.

Q As a matter of fact someone told me at one point, someone from the control room got in touch with someone at B&W and asked them what question marks coming out of the computer meant in terms of temperature readouts. Apparently that is what they were getting. The B&W person, whoever it was, said that means either that's off-scale high or off-scale low or that it's broken.

Was that your recollection, that is was this situation?

A I don't recall any relay through B&W. I recall the point, the conclusion of the people in Bethesda at least -- I don't remember anyone suggesting it might be offscale low.

Q Was it your perception when you were there on Wednesday that the individuals at the Incident Response

Center didnot seem well trained on how to use the Incident Response Center?

A No, I did not get that perception. It was more that the equipment they had available at the Incident Response Center was very poor.

Q The hydrogen pressure spike that occurred in the containment building, which occurred on Wednesday, it has been brought up several times that that was not communicated to the NRC until almost 48 hours later on Friday.

Have you ever been able to ascertain why there was that delay in communicating that?

A Well, what the previous I&E report said, in the draft version, and certainly in the question and answer we went through in the Commission hearing when they came in with their original draft report, that the people in the control room at the time really did not interpret it as a pressure spike.

They interpreted it as an electrical problem, instrument failure. They heard a bang, but they had other problems occurring at the same time so they sent someone to fix the instruments.

They misinterpreted what it was, and that was the explanation offered.

Q How did it come to your attention that that 28 psi spike had occurred? Did you learn that on Friday?

A As I recall from the phone call in one of these sessions, these floating sessions we were having, waiting for phone calls to come in and tell us what was happenning, I think it was in one of those on Friday.

Q You also discussed in your speech in June of 1979 the Price-Anderson Act and the $560 million limit imposed in 1967. You commented that it had not been raised since then and you pointed out that with simple inflation it would be substantially higher today.

Should that figure, in your view, be raised to the $1.3 billion you mentioned in your speech? Or should there be any limit at all?

A Let me ask my counsel for a minute.

MR. KANE: Let's go off the record.

(Discussion off the record.)

THE WITNESS: I think it certainly should have been raised to the $1.3 billion and I can't see any reason why -- if it was valid in the first place, then it should have been raised, and as I recall, $1.3 billion is the inflation factor. The question of whether there should be any is a harder one to answer.

There are apparently both advantages and disadvantages to the citizens for having it there. AT one time a couple of years ago I probably would have been able to give you a much quicker answer, not understanding that

facet.

At one time I thought it was solely a protection for the nuclear industry. If I thought that was the case then I would say there should not be any limit. But I am not sure anymore. There are some advantages, apparently, to the public, for having the Price-Anderson type waiver defenses in place, so I'm not sure.

Q As I understand it, that waiver defenses depends upon a determination that what you are dealing with constitutes an extraordinary --

A That's a separate question.

Q Right.

A That's different than whether Price-Anderson should be there.

Q Right. But the basic question is, should there be a limit on the amount of liability that the nuclear industry has to assume in the event of a nuclear catastrophe.

A Another answer, at one point, I thought that was the full question and I have now begun to understand it is a little more complicated than that. Right now there is a combination of a limit and a waiver of liability.

Q Under the circumstances where the waiver applies.

A That's a regulation and a regulation can be changed and probably should be changed. I had not recognized the significance of this waiver liability issue.

I think there are three question. One question is, should there be a limit and a waiver of liability? The second question is, should there be no limit but a waiver of liability? And the third question is, if there is a limit, what should it be?

I have not thought through. I am still wrestling with the question of the waiver of liability and the limitation.

Q If the question were only should there be a limit on the amount of money liability the nuclear industry has to assume in connection with a nuclear catastrophe, your answer would be no, there should be no such limit?

A I'm not sure. I know the answer is that it should be $1.3 billion currently. Several years ago I had much more facile answers to that question.

Q Do you think the industry needs that kind of limitation to get the financing necessary to build nuclear power plants?

A I don't know. That has not been an issue that I have tried to examine. I don't think it is appropriate for the NRC to examine.

Q All right. Are you familiar with the current efforts made to remove the waste at Three Mile Island Two?

A Perhaps not, because I have been away for two weeks.

Q Are you aware that there is some thought that wastes will have to be shipped out of the State of Pennsylvania?

A Absolutely. There are already some being shipped out of the State of Pennsylvania.

Q Focusing on the wastes in the containment building, as I understand it, it is a water particulate mix?

A Some of it. Some are gas and some are plated out on the walls of the container.

Q Right. But taking the ones in the liquid particulate mix, it is my understanding that the NRC plans to drain it out and allow it to sediment out so they can get the water separated from the particulate?

A No.

Q No, that is not being contemplated?

A No. The proposal -- again, I am two weeks out of date. At the moment, we have addressed specifically what we propose to do with the water in the Aux. Building, and I thought we were in the process of proposing to do a similar action with respect to the water in the containment building which is to run it through a bunch of resins toget the particulates out.

Q Right.

A That's why I didn't think it was sedimentation going through the resins.

Q I am undoubtedly wrong.

A You may not be. When I left, I was pretty familiar with what our proposal was on the Aux. Building because of the first step of the cleanup.

Q What you are saying rings a bell. Has there been any discussion of what would be done with the sediment after it has been run through the resins -- with the resins?

A Once the stuff is run throgh the resins and now trapped and imbedded in the resins, yes, there are several, at least two and maybe more, possibilities being debated.

The first question is, do you solidify the resin? You dry out the resin in the first place and get rid of the water. The resin has trapped the radioactive material, but there is still water in it, so you dry out the resin.

In older plants, that resin is put into casks or containers and shipped to low level waste disposal sites. That is the cleaning of contaminated water is not an unusual problem. This level of contamination is unusual.

In newer plants those resins have to be solidified by imbedding them in something like a concrete matrix or another chemical matrix and then put into this container and shipped off.

The first issue is whether or not it should be solidified. Currently, at least when I left, that was a debate that was going on outside the NRC and within the

NRC staff offices, whether it should be solidified.

Q Why solidified?

A If it is solidified, you can then guarantee that you don't have any liquid that could be leaking out of it.

Q So for safety purposes, you solidify?

A Yes. Primarily in transportation, I think.

Q That is putting it into some kind of concrete matrix is safer for purposes of transportation than shipping it in these casks without that?

A That is the conclusion that the staff had reached with respect to all new plants, anyway. Had reached the conclusion that it had to be solidified and the question being discussed is whether or not this should be solidified.

Q If solidifying is the safer way to do it, why should there be any question as to whether it should be solidified?

A You asked the question that I asked the staff. It appears to me that -- the waste management's position is just that. When I left, the reactor regulation division's position was that is one of these items that they believe for new plants was better than what they had for old plants, but it was not a question of reaching a threshhold of safety.

Q In other words, once again the dispute seems to center on whether or not you want a little more safety or a little less safety.

A. It was very similar to that. But that's what you do with the resin. And then there is the question of after you have done that, do you ship it off-site.

The general plan had been to ship it off-site. Currently there is only one low level burial ground that would accept it and that's in Hanford.

Q. What is the objection to solidifying it?

A. The time, the time that it takes to build a solidification plant. Thatseemed to be the major objection.

Q. Why is that an objection? As I understand it, there is no serious question of leakage from the containment building, for example, so you could let it sit for awhile.

A. The staff has argued, and they have gone out with an environmental assessment that as long as the radioactive water is sitting there you do have occupational exposures that you would not have. You could get the radioactivity locked into the resins and encapsulated.

Certainly you may run into a situation where the equipment underwater will begin to fail and you will want to get that water out of the containment building, out of the Aux. Building and the containment building as soon as you can.

There are safety related reasons to clean up the water. Then the question really is, how much -- when I left,

one of the issues they were examining is how much additional exposure has occurred if you keep it there, embedded in the resin while you are building a solidification facility.

Q How expensive is it to build a solidification facility?

A I don't know.

Q I take it it's not just a matter of bringing a cement mixer up and being able --

A Oh, no. The question, first question was, there are three solidification techniques. One is a concrete matrix, and two are chemical matrix. Which of those would prefer to use? I don't think it's a -- compared to the magnitude of the other costs involved, I don't think that's a major issue.

The time seems to be the question, and as I recall, the original estimate was six months to build it.

Q Six months to build the solidification facility? I see. In the prior hearing the NRC Commission, the hearing before the Presidential Commission, Commissioner Hendrick made the statement that there was no thought in the past of what the Commissioners' -- Commission's role in an emergency should be.

Is that true, and if so, why did that occur?

A The Chairman is much better able to address what the Commissionaddressed, both during the time when he was

Chairman and also since he had been in the NRC regulatory side for a while, than I am.

All I can say is that the clear picture I had had prior to the emergency and during those days of the accident was that the NRC System was that the Commission, as a Commission, was not a body involved in handling emergency accidents.

That collegial approach of non-experts addressing the issues was not part of the system.

Q. Was it your perception that that was because it was felt the staff would be in a better position to handle emergencies?

A. I think absolutely.

Q. The question of the distance between the Commission members themselves and the staff has come up several times, and you have touched on it several times during the course of today's deposition.

What is your understanding of why that distance was created or permitted to exist, and also, do you feel that is a good thing in running this organization? Do you think there is a benefit to it?

A. Do you mean distance physically or distance organizationally?

Q. Organizationally.

A I think it is there as a direct carryover from when the NRC was formed. NRC -- what is now the NRC was really the regulatory side of a very large agency of the AEC. The regulatory side was a very small portion of it but you had five AEC Commissioners.

The way the system worked, as I was told, is there was one Commissioner of the AEC who moreor less monitored the regulatory side so that you had a general manager of the AEC who was a very strong individual and you had these people working for the general manager.

You had one commissioner monitoring the regulatory part. The NRC was formed and apparently Congress did not really do much more than say well, we are forming another Commission, we have lots of commissions, and you are Commissioners, and we will take all these Commissioners and put them on top of this organization.

The organization was not structured to respond to this collection of individuals. This equal level distribution of authority was not one which would enable one Commissioner to watch out for one thing and another Commissioner to watch out for another.

There was a concept called Lead Commissioner that some of the other Commissioners in Washington used. That's feasible if you have a chairman who is definitely a chairman in authority in which case he can assign for areas of

responsibility to a Commissioner, your responsibility is this and you watch over that.

In our context, with these five equal, that would not work.

The organizational structure set up by the law is ~~your~~ the fundamental reason for this ~~difference~~ distance between the staff and the Commission.

Q Do you perceive any benefit to that situation within the organization?

A I don't. I think that perhaps people with more experience in the judicial aspect might and might conclude that there is a benefit because of the staff being a party in some of these situations. I haven't seen any benefit from it.

Q Do you think the licensing function of the NRC should be separated, organizationlly, as well as physically, from the regulatory function for existing nuclear power plants?

A No.

Q You think it should be done together?

A Oh, yes. I think the concept of what has to be done and what is being done, I think there has been a difficulty of too much of a separation. I believe there has not been enough interaction between the Inspection and Enforcement Office and Nuclear Reactor Regulation Office, and

they have tended to be too much separate organizations.

I think we would have a much better understanding of reactors and probably a better licensing process and inspection process if there was more interaction.

Q Okay. This has been covered I guess in specifics at a number of different points during your deposition, but all of the Presidential Commissioners will undoubtedly be interested in this question from each of the NRC Commissioners.

That is, overall, what changes would you make in the NRC to make it a more effective organization?

A I have thought many times about that. I think the answer is, what changes would improve it? Not what would I make. As an individual Commissioner there are few, if any, that I can make.

Q I assume whatever changes you would want to make would improve it. I would assume that is your goal.

A Yes. I have tended more to look at, if I were starting from scratch, than modifications with the current system. That's why I would go to a single-head organization, much morelike an EPA model.

I would eliminate four of the five Commissioners and eliminate the Executive Director so that you would have a head of the NRC and a deputy head of the NRC.

I would probably get us out of much of the

international affairs that we do.

Q In terms of export licenses?

A That's right. We spend a lot of time, a vast amount of time, worried about nonproliferation aspects due to the Nonproliferation Act. A large amount of Commission time is spent on that.

We are not experts in nonproliferation of nuclear weapons and we are not experts in any way in diplomatic relations between foreign countries. We are minimal experts on whether or not one country's reprocessing facility is going to assist or not assist in the control of nuclear weapons.

And yet a lot of our time is spend on that.

Q NRC is called upon to rule --

A Yes. That's what the Nonproliferation Act requires. From August 1 to TMI a large part of our time was spent on those matters, because of the interest of where Commissioners chose to spend their time.

As an aside, I think that we ought to have the Congress face very specifically, do they want us involved in health and safety questions of exports? That's a different question.

Right now, we spend all our time on nonproliferation aspects and not health and safety. Our staff are really experts in health and safety and not nonproliferation.

I would also want to significantly change the theory that we operate the Regulatory Commission on. I still think it is fundamentally geared to trying to nurture a growing industry. I guess we have to decide that if the industry can't survive, it should not be allowed to survive and we should not be in any way, have any flavor of trying to nurture thisindustry.

And it would translate into being much, much tougher on inspection, a lot more people in the inspection process. Those are some of the changes I would make.

MR. KANE: All right, Mr. Fitzgerald, Mr. Chopko, do you have any questions?

MR. FITZGERALD: No questions.

MR. KANE: That's all the questions I have, Mr. Ahearne. This is an ongoing investigation, so it might be necessary to bring you back for further deposition sessions. However, we will make every effort to avoid having to do that.

As I said, I have exhausted my questions for the time being at least. Let me thank you for your time and I hope we won't have to bring you back again, but it has been very instructive speaking with you today. Thank you.

(Whereupon, at 4:22 p.m. the deposition was ended.)