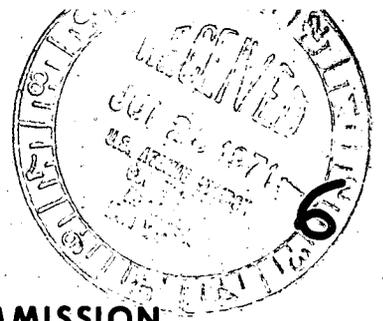


RETURN TO REGULATORY CENTRAL FILES
ROOM 016



UNITED STATES ATOMIC ENERGY COMMISSION

Regulatory Docket File

IN THE MATTER OF:

CONSOLIDATED EDISON COMPANY OF
NEW YORK, INC.

Docket No. 50-247

(Indian Point Station, Unit No. 2.)

RETURN TO REGULATORY CENTRAL FILES
ROOM 016

Place - Croton-on-Hudson, New York

Date - Wednesday, 21 July 1971

Pages. 1728a - 1921

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UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

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In the Matter of: :
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CONSOLIDATED EDISON COMPANY OF : Docket No. 50-247
NEW YROK, INC. : :
: :
(Indian Point Station, Unit No. 2.) :
: :
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Springvale Inn
Croton-on-Hudson, New York
Wednesday, 21 July 1971

The above-entitled matter came on for further hearing,
pursuant to recess, at 9:30 a.m.

BEFORE:

SAMUEL W. JENSCH, Esq., Chairman,
Atomic Safety and Licensing Board.

DR. JOHN C. GEYER, Member.

DR. R. B. BRIGGS, Member.

APPEARANCES:

(As heretofore noted.)

I N D E X

| | <u>Ev.</u> |
|---|------------|
| New York State | |
| No. 1 N.Y.S. Emergency Plan for Major Radiation Accidents Involving Nuclear Facilities dated February 1971 | 1746 |
| No. 2 N.Y.S. Emergency Plan etc. dated May 1971 [Intervenor's Exhibit S] | 1748 |
| No. 3 Summary of Modification of N.Y.S. Emergency Plan for Major Radiation Accidents involving Nuclear Facilities 2/1971 | 1751 |
| No. 4 Letter 6/4/71 from Dr. Hollis S. Ingraham to Dr. William E. Seymour | 1752 |
| No. 5 Specific Operating Procedures S.O.P. Indian Point Station New York | 1797 |

Witnesses

| | |
|--------------------|------|
| Joseph A. Prestele | 1673 |
| William Egan | 1730 |
| Sherwood Davies | 1739 |
| Dudley Thompson | 1873 |
| Mr. Grob | 1891 |
| Mr. Wieseemann | 1898 |

CHAIRMAN JENSCH: Please come to order. We are now in resumed session of the public proceedings, the public hearing of Consolidated Edison Company of New York, Inc., in reference to Indian Point No. 2.

We recessed on Friday afternoon until this time and place. During the course of the hearings which we held last week reference was made to the fact that Congressman Dow of New York had transmitted certain inquiries to the Atomic Energy Commission and reference was made to the fact that Chairman Seaborg submitted a reply to Congressman Dow. Both the letter from Congressman Dow and a reply by Chairman 10 Seaborg are a part of the public record in this proceeding and available for public review, and that public review includes not only review of documents at the public document room of the Atomic Energy Commission in Washington, D.C., but also at the public document repository maintained by the Commission in this vicinity, and that is at the library of the Henry Hudson High School at Montrose, New York, which is down the road here a bit. In addition, I have a written request this morning that Mr. William Egan, of Congressman Dow's office, would like to give a statement. 20

The time for submittal of statements by way of limited appearance has expired and we have received many statements by way of limited appearance. However, in view of the fact that Congressman Dow has made a special request that his statement be received, if there is no objection if the

representative of Congressman Dow is here -- do you have a written statement?

MR. EGAN: Yes.

CHAIRMAN JENSCH: Or a prepared statement?

MR. EGAN: Prepared statement.

CHAIRMAN JENSCH: Do you want it included into the record as if read? You don't have to read it. Just give it to the reporter and we can have it included as if read. Will that be satisfactory? We have done that for some of the persons who did come late in the proceeding. Will that be satisfactory?

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MR. EGAN: It will be satisfactory, or if you'd like it read, either way.

CHAIRMAN JENSCH: Well --

MR. EGAN: Whatever is convenient.

CHAIRMAN JENSCH: We will accommodate you in either way you desire.

MR. EGAN: I am sure the Congressman would like it read.

CHAIRMAN JENSCH: The Congressman would like to have it read. Well, if you will stand up and read it we will be happy to have it stated. Do you want a microphone? If you care to take the witness stand there is a microphone there. There are some people from the public hearing. I am sure they will be able to hear you better.

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If you will give your name too, please, and address. Thank you, sir.

MR. EGAN: I am William Egan. I am District Representative for Congressman John Dow, and I live in Wappingers, New York.

The Congressman has prepared the following statement.

I appreciate the chance to present my views before this distinguished hearing board. You gentlemen are charged with a serious task, that of deciding whether or not 10
the Indian Point #2 nuclear reactor is safe for operation. In making your judgment you must weigh the extent of the risk to the public against the need for the operation of a new generator to supply power for the New York area and the fact that \$138 million has already been invested in this reactor. I feel however, that the uppermost consideration must be for the health and safety of the public. I can think of no more serious matter than to sacrifice the long-range health of the general public for the immediate goal of obtaining more power for the City of New York and the 20
surrounding area.

I am testifying because I believe that there are numerous questions that must be answered and disagreements that must be resolved before the operation of nuclear power generators can proceed under conditions that are known to be

safe. I want to emphasize that I am not attempting to thwart progress or restrain nuclear development; I just want to be perfectly sure that nuclear power generators are safe before watching the rapid proliferation of them throughout the country, especially here on the border of the 27th Congressional District.

Reputable scientists have presented evidence which inclines me to believe that nuclear power plants may indeed present a danger to the populace in the surrounding area. I realize that there are other fine scientists who would play down the danger from nuclear reactors; not being a scientist I cannot make a valid scientific judgment of the evidence. 10

However, the fact that there is strong disagreement within the recognized scientific community does indicate to me that there is no sure answer to these questions. Until we have such an answer and that answer indicates that the operation of nuclear power plants is in no way dangerous to present or future generations I would hope that we could use a great deal of restraint in authorizing nuclear reactors, especially those near large metropolitan complexes. 20

for the information of the board I would like to detail a few areas in which there is vast disagreement among scientists and where possible danger to life exists. One of the major questions posed about the safety of nuclear

reactors is whether the amount of radiation they give off is safe. Most of the controversy seems to center on the question of what is a little or a lot of radioactivity; but there is more to be considered than this. Winds and clouds may collect radioactive particles and concentrate them in one place. Even the smallest amount of radioactive waste can be dangerous if it concentrates as many radioactive chemicals do in plant or animal life. I have seen studies of how small levels of radioactive chemicals increase in concentration throughout the food chain to the point where they present grave dangers of cancer or accentuate existing ailments in the human species. 10

The problem appears to be further heightened in the case of embryos and infants which seem to be the most susceptible to radiological exposure. Infant mortality rates and childhood leukemia deaths appear to be higher in areas surrounding nuclear power plants and some scientists are trying to show that this is a direct result of the radiation given off by the nuclear reactors. Some scientists feel that the effects upon adults may be just as devastating as upon infants but that the adults may be slower to react. 20

Another possible consequence of the radiation emitted by nuclear reactors is permanent genetic damage to humans.

The possibilities of accident and its effects on

the surrounding area also need to be further explored before we go ahead with construction and operation of nuclear plants. Many people concede the possibility of a large scale accident at a nuclear reactor yet little has been discussed as to the scope of such a disaster. Before we condone further proliferation of these plants we must explore all possible consequences.

These are uncertain areas it is true but in considering the granting of a license for this plant you are charged with the heavy responsibility of weighing these possibly disastrous consequences against an immediate need. I feel that we should not risk the health and possibly the survival of future generations just to avoid some inconvenience at the present time. 10

In the past we have seen cases where many unexpected problems developed after the reactor was installed. It is highly possible that some unexpected development such as we have seen may occur some day in such a way as to drastically jeopardize the safety of the general public. By trying to rapidly deploy nuclear reactors at the present time we are rushing technology. We wouldn't think of risking one man's life in space until we were sure that all possible dangers were eliminated yet here we are proceeding while uncertain about the risk of life to millions of citizens in surrounding areas, with a technology that is not yet developed. 20

to the point where we know all of the hazards.

I feel that this Commission must display even more concern for the health and safety of the public than it feels about remedying the current power crisis, and I urge you to decide against granting the license for the #2 reactor until all of the possible consequences have been explored and all of the disagreements in this area resolved. It is certainly better to wait a little while for extra power than to push ahead now on an irreversible path that may cause extreme regret in the future.

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Thank you very much for giving me this opportunity to present my views.

CHAIRMAN JENSCH: Are you from his office?

MR. EGAN: Yes.

CHAIRMAN JENSCH: In Washington or you are the local man?

MR. EGAN: Yes.

CHAIRMAN JENSCH: I wondered. Chairman Seaborg invited Congressman Dow to ask for a time between them some way to discuss many of these matters that I know are of concern to Congressman Dow, and I wondered if Congressman Dow had been able to find time to have Chairman Seaborg come and visit with him or bring information to him of any kind? Do you know?

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MR. EGAN: I don't. I would say now they seemed

to know of this hearing very late yesterday afternoon, that they would be allowed to present something. So I haven't heard anything on that. But I can check and find out, certainly.

CHAIRMAN JENSCH: Have you seen the correspondence between Congressman Dow and Chairman Seaborg?

MR. EGAN: No.

CHAIRMAN JENSCH: Copies of it?

MR. EGAN: No.

CHAIRMAN JENSCH: My recollection, I may be 10
incorrect, is that there was information given I think about
a month or so ago that this hearing would be held and also
that Congressman Dow was invited to submit further inquiries
if he desired information. I know Congressman Dow is busy,
he does hold a responsible position in our United States
Government, and I know the Atomic Energy Commission is anxious
to invite all the information it can, because I think there
are many expressions of concern, and the Commission wants
to consider them all, and it also wants to provide the
information that will be related to those concerned. I hope 20
that Congressman Dow will find time to have a conference
perhaps with some representatives of the Atomic Energy
Commission, and I can only indicate that as I recall the
letters from Chairman Seaborg, that any of this staff, the
regulatory staff of the Atomic Energy Commission, can supply

information for you or for Congressman Dow. They are instructed in effect to do that, and we of this Atomic Safety & Licensing Bureau can only look at what the public record says as to what the Commission would like to provide.

And so if either you or Congressman Dow have any further inquiries I am sure the Atomic Energy Commission would like to hear from you. And I hope in the light of our discussion this morning as to all possible dangers for the space flights, in view of the unfortunate situation with the Russian cosmonauts, which kind of gives some indication 10 that maybe not all possible dangers there have been analyzed.

And as you know there has been no member, as I understand it, of the public injured. As to these nuclear reactors there has been no one of the public injured.

MR. EGAN: No. I think from what I have gathered from the Congressman and on this area it has been that there have been some scientists that have brought his attention to things perhaps even later than a month ago that he is presenting a couple of questions. And I think in the statement it more or less is saying he is questioning it. He is questioning 20 it himself and does not have an opinion on it. It's just that it possibly could exist, and probably he is asking has it been completely checked out and verified.

CHAIRMAN JENSCH: I really don't know how to resolve all differences.

MR. EGAN: Right.

CHAIRMAN JENSCH: Or how they can be resolved, let me say.

Are you familiar with the hearing that the Joint Committee on Atomic Energy had where scientists on one side expressed views and scientists on the other did and then there was a lot of data submitted by both, and analyses made as to the reliability and the research by some scientists as to whether it was complete or not before their statements were made, and that sort of thing? Are you familiar with those? 10

MR. EGAN: Well, not completely, but I am familiar with partial of it, and I am familiar on it. But I am not probably as well-versed in it as I should be.

CHAIRMAN JENSCH: I was just wondering if the staff of the Atomic Energy Commission, the Regulatory Staff, will undertake the responsibility of procuring a copy of the Joint Committee Reports and sending them to Congressman Dow and to Mr. Egan.

What is your address, Mr. Egan? 20

MR. EGAN: Post Office, Newburgh, New York, Post Office Building.

CHAIRMAN JENSCH: Post Office Building, Newburgh, New York. If you would send a set both to Congressman Dow and to Mr. Egan in Newburgh. Will you do that, Staff Counsel?

MR. KARMAN: Why, certainly, Mr. Chairman.

CHAIRMAN JENSCH: We have nothing to do with this type of thing, the Atomic Safety & Licensing Board. You have taken the time to come and Congressman Dow has indicated his interest, and I merely mentioned it because I am sure the Atomic Energy Commission wants to provide you and Congressman Dow and all members of the public with any information relating to concerns they have relating to concerns of this kind.

Thank you, Mr. Egan, for coming here this morning. 10

If there is nothing further at this time, shall we proceed with Mr. Davies? Is he here?

M R. RUPERT: He is, yes, Mr. Chairman.

CHAIRMAN JENSCH: Was that the next order of business involving Mr. Davies? Was that arranged among the parties this morning?

MR. TROSTEN: That is correct, Mr. Chairman.

CHAIRMAN JENSCH: Very well.

Mr. Davies, would you come forward and be sworn.

S H E R W O O D D A V I E S, sworn. 20

CHAIRMAN JENSCH: Give your name and address.

MR. DAVIES: Sherwood Davies, 845 Central Avenue, Albany, New York, Zip Code 12206.

MR. RUPERT: Mr. Davies, do you have with you

a copy of your professional qualifications?

MR. DAVIES: Yes, I do.

MR. RUPERT: Mr. Chairman, if the Board would prefer this could be introduced as an exhibit, or Mr. Davies could briefly summarize --

CHAIRMAN JENSCH: Well, maybe we can do both, if that is agreeable, at your own discretion. He does have a prepared statement, but there are members of the public here and I think that if you could summarize it in a way that would be helpful to them we can do both. 10

So there has been submitted here presented to the table before the Board a page and a half prepared statement entitled "Sherwood Davies Professional Qualifications."

The parties have received copies of this statement. Is there any objection to having a full statement incorporated in the record as if read?

MR. TROSTEN: No objection.

MR. KARMAN: No objection.

CHAIRMAN JENSCH: Mr. Roisman? 20

MR. ROISMAN: No objection.

CHAIRMAN JENSCH: Very well. The previously prepared statement of Sherwood Davies' professional qualifications may be typed and included within the transcript as if given orally, and if you would now proceed with the

summary, please.

[Professional Qualifications of Sherwood Davies
as referred to reads as follows:

"My name is Sherwood Davies and my business
address is 845 Central Avenue, Albany, New York. I am
Director of the Bureau of Radiological Health Service, New
York State Department of Health.

"I hold a Bachelor's degree in Civil Engineering
from Rensselaer Polytechnic Institute (1940) and a Master's
degree in Public Health with a major in radiological health 10
from the University of Minnesota (1958).

"I am licensed as a Professional Engineer in
New York State. From 1940 to 1957 I was employed by the
New York State Department of Health and have held positions
at different times as Junior Sanitary Engineer and District
Sanitary Engineer except for military service in the Sanitary
Corps from 1943 to 1947. In June of 1958 I was appointed
Director of the Bureau of Radiological Health Services and
I served in such capacity until December of 1967. From that
date until January of 1970 I served as Acting Associate 20
Director, Environmental Health Services, New York State
Department of Health. In January of 1970 I was reappointed
to my present position.

I am currently a member of the Health Physics
Society and the Conference of Radiological Health. I am also

a Diplomate of the American Academy of Environmental Engineers - Radiation and Hazard Control. In the past I have served on the Committee on Sanitary Engineering Aspects of Nuclear Energy, Sanitary Engineer Division, Society of Civil Engineers (1958-1959), the Subcommittee N5.2 Radioactive Waste Disposal, American Standards Association (1960-1963), the Program Area Committee on Environmental Health, American Public Health Association (1964-1966), Subcommittee on Radiological Health (as Chairman), American Public Health Association (1965-1966), and the Committee on Radiation Protection, Atomic Industrial Forum (1967). I have also served as a consultant to the U.S. Public Health Service on radiation surveillance (1966-1967) and to the Public Service Board of the State of Vermont on safety aspects of the Vermont Yankee Nuclear Power Plant (1967).

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"I am author and co-author of a number of technical articles that have been published in Public Health Reports, the Health Physics Society Journal and the American Public Health Association Journal."

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MR. RUPERT: Mr. Davies, could you briefly summarize your professional qualifications to the Board?

MR. DAVIES: I presently am Director of the Bureau of Radiological Health with the New York State Department of Health. I obtained a Bachelor's degree in

Civil Engineering from Rensselaer Polytechnic Institute in 1940 and a Master's degree in Public Health with a major in radiological health from the University of Minnesota in 1958.

I am licensed as a Professional Engineer in New York State. I have been employed in varied capacities with the New York State Health Department since 1940 as a junior engineer and a district sanitary engineer and since 1958 have been directly associated with the radiological health program.

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I am currently a member of the Health Physics Society and Conference of Radiological Health. I am also a Diplomate of the American Academy of Environmental Engineers - Radiation and Hazard Control, and in the past have served on a number of committees with the American Public Health Association and others.

I am author and co-author of a number of technical articles that have been published in Public Health Reports, the Health Physics Society Journal and the American Public Health Association Journal.

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MR. RUPERT: Thank you.

Mr. Davies, I have just handed you a document entitled New York State Emergency Plan for Major Radiation Accidents involving Nuclear Facilities, dated February 1971. This is a copy of the document that was introduced by

Consolidated Edison as Exhibit No. 2. Are you familiar with this document?

MR. DAVIES: Yes, sir, I am.

MR. RUPERT: Mr. Davies, to your knowledge is this a true copy of the New York State Emergency Plan endorsed by the New York State Atomic Energy Council and adopted by the New York State Department of Health?

MR. DAVIES: Oh, yes, it is.

MR. RUPERT: Mr. Davies, I have another document for you to look at.

10

Mr. Davies, I have just shown you a document that is a letter dated March 17, 1971, to Dr. William Seymour of the New York State Atomic Energy Council staff from Dr. Andrew Fleck, Jr., who is the First Deputy Commissioner of the Department of Health. Are you familiar with that document?

MR. DAVIES: Yes, I am.

MR. RUPERT: Could you briefly inform the Board of the contents of that document?

MR. DAVIES: This is a letter dated March 17, 1971, which advises Dr. William Seymour that the New York State Department of Health hereby adopts the New York State Emergency Plan for Major Radiation Accidents and assumes responsibility for its implementation. And it is signed by Dr. Andrew C. Fleck, Jr., First Deputy Commissioner.

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MR. RUPERT: Mr. Chairman, I would like this letter marked as an exhibit for the State of New York, and I offer it into evidence.

CHAIRMAN JENSCH: The letter to which the State of New York Counsel has just referred may be marked for identification as State of New York Exhibit No. 1, and having thus been identified and having been previously offered is there any objection by the applicant?

MR. TROSTEN: No objection.

CHAIRMAN JENSCH: Regulatory Staff?

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MR. KARMAN: No objection, Mr. Chairman.

CHAIRMAN JENSCH: Citizens Fund for the Protection of the Environment?

MR. ROISMAN: Well, only to this extent, Mr. Chairman. We have neither the author of the letter nor the recipient of the letter here. I don't think it's a very important document, but I just wouldn't want to set a precedent for purposes of introduction of other documents by New York State. I think if they want us to stipulate after having heard the testimony that the document dated February 1971 is in fact a New York State Emergency Plan for Major Radiation Accidents involving Nuclear Facilities we will be glad to do so, rather than filling the record with these letters.

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CHAIRMAN JENSCH: He already had read a part

of it, and I wondered why it had been offered. But is it your intention that there be included as a part of the exhibit the evacuation plan?

MR. RUPERT: Mr. Chairman, the plan has been modified since February 1971 and I intend to introduce a new copy of the plan.

CHAIRMAN JENSCH: Very well.

State of New York Exhibit No. 1 is received in evidence.

[So received.]

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MR. RUPERT: Dr. Davies, the emergency plan that I just showed you earlier, has that plan been changed or updated since March 24, 1971?

DR. DAVIES: Yes, it has.

MR. RUPERT: Could you briefly describe the nature of those changes?

DR. DAVIES: Legislation that was adopted at the last session of the Legislature and effective on or about April 1, 1971, in effect abolished the office of Civil Defense and transferred certain of those functions to the Department of Transportation as it relates to natural disasters and other functions relating to communications to the Division of State Police.

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Inasmuch as this document previously referred to depended rather heavily upon the responsibilities of the

then Office of Civil Defense, it was felt necessary to modify this emergency plan to reflect the legislative changes as effective April 1, 1971. So that there was then a modified plan that was changed reflecting such changes.

MR. RUPERT: Mr. Davies, the document that I have just given to you, which is entitled New York State Emergency Plan for Major Radiation Accidents Involving Nuclear Facilities, dated May 1971, is this the modified version of the emergency plan?

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DR. DAVIES: This is the modified version of the State Emergency Plan.

MR. RUPERT: Has this Emergency Plan been adopted by the Department of Health?

DR. DAVIES: Yes, sir, it has.

MR. RUPERT: Mr. Chairman, I offer this document, the May 1971 Emergency Plan, into evidence, and ask that it be marked as an exhibit for the State Atomic Energy Council.

CHAIRMAN JENSCH: The document to which New York State Atomic Energy Council has just referred and which bears the title New York State Emergency Plan for Major Radiation Accidents Involving Nuclear Facilities and bearing the date in the lower right-hand corner, of May 1971, may be marked for identification as State of New York Exhibit

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No. 2, and having thus been identified and having been previously offered, is there any objection by the applicant?

MR. TROSTEN: No objection, Mr. Chairman.

CHAIRMAN JENSCH: Regulatory Staff?

MR. KARMAN: No objection, Mr. Chairman.

CHAIRMAN JENSCH: Citizens Committee for the Protection of the Environment?

MR. ROISMAN: No objection.

CHAIRMAN JENSCH: State of New York Exhibit No. 2 is received in evidence.

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[So received.]

MR. RUPERT: Mr. Chairman, May I also point out I have provided this morning the Board and all the parties with copies of the modifications that are included in this new plan for the convenience of the Board and the parties.

CHAIRMAN JENSCH: Now if you will identify that.

MR. RUPERT: That is entitled Summary of Modifications.

CHAIRMAN JENSCH: And it is your thought that you would like to have this marked as an exhibit?

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MR. RUPERT: I would like to have this marked as an exhibit as well.

CHAIRMAN JENSCH: Very well. The document to which New York State Atomic Energy counsel has just referred

to and the document bearing the title Summary of Modifications of the New York State Emergency Plan for Major Radiation Accidents involving Nuclear Facilities, dated February 1971, may be marked for identification as State of New York Exhibit No. 3, and having thus been identified and having been previously offered, is there any objection by the applicant?

MR. TROSTEN: No objection.

CHAIRMAN JENSCH: Regulatory Staff of the Commission?

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MR. KARMAN: No objection.

CHAIRMAN JENSCH: Citizens Fund for the Protection of the Environment?

MR. ROISMAN: No objection.

But, Mr. Chairman, can we go back to this New York State Exhibit No. 2 for just a second?

CHAIRMAN JENSCH: Yes.

MR. ROISMAN: As long as we are on this, we had originally offered into evidence and it was accepted as the Intervenor's exhibit 8, the original February 1971 New York State Emergency Plan for the Purpose of Showing that it was the document upon which the applicant was intending to rely, and since we are not able to say it was in fact a valid copy of the plan we now have testimony from Dr. Davies indicating that the more updated document is a valid copy of the New York

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State Emergency Plan, and if it would be possible we would like to replace our Exhibit S with the new exhibit 2, which New York State has put in, so that for purposes of subsequent discussion we will be talking about what is in fact New York State's Emergency Plan.

CHAIRMAN JENSCH: Do you feel that that duplication is necessary, if this is received? Will that serve your purpose?

MR. ROISMAN: Yes, but it might create some confusion with the presence of an exhibit S being in fact a document that doesn't have any relevance in this case at all. 10

CHAIRMAN JENSCH: Do you want to withdraw it entirely?

MR. ROISMAN: Yes. But I'd like to put this in as our exhibit S, just because these changes as I understand them are mere technical changes. That is certain organization's names have been changed and so forth. In our proposed factual findings we made reference to page numbers, the page numbers identified as S-- and then the page number of the document, in order to keep those documents relevant it would be helpful for us to continue to have as an exhibit S the same plan, but we just want to make sure we have the right plan. 20

CHAIRMAN JENSCH: Very well. The substitution

will be permitted and if you will undertake to provide the new plan to correspond to your Exhibit S so the reporter will have a correct record of it.

MR. ROISMAN: Yes.

CHAIRMAN JENSCH: Very well. That may be done.

State of New York Exhibit No. 3 is received in evidence.

[So received.]

MR. RUPERT: Dr. Davies, I just handed you another document a few minutes ago. Could you tell the Board what that document is?

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DR. DAVIES: This is a letter dated June 4, 1971, from Dr. Hollis S. Ingraham to Dr. William E. Seymour, Deputy Commissioner New York State Department of Commerce, in which he advises that the New York State Emergency Plan for Major Radiation Accidents is revised and that the State Health Department assumes responsibility for its implementation.

MR. RUPERT: Thank you.

I also offer this document, Mr. Chairman, in evidence, and ask that it be marked as an exhibit.

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CHAIRMAN JENSCH: What is the purpose of the offer? I don't see that in it he says "I received your plan, I am glad you are going to do the work--"

MR. RUPERT: Mr. Chairman, it's only to show

that these changes have been made, and it's only to show that the necessary approvals have been obtained from the Commissioner of Health. Dr. Davies has testified that to his own personal knowledge, and we are not offering these documents to prove that the plan has been adopted by the Commissioner of Health. Dr. Davies had already testified to that matter. It's just to clarify the record as far as what has taken place within the State of New York in regard to this plan.

CHAIRMAN JENSCH: Well, this letter doesn't purport to be an approval. That's correct, is it not? 10

MR. RUPERT: That's correct.

CHAIRMAN JENSCH: The document which the State of New York has now presented will be marked for identification as State of New York Exhibit No. 4, having been thus identified and having been previously offered.

Is there any objection by the Applicant?

MR. TROSTEN: No objection, Mr. Chairman.

MR. KARMAN: No objection, Mr. Chairman.

MR. ROISMAN: No objection. 20

CHAIRMAN JENSCH: State of New York Exhibit No. 4 is received in evidence.

[So received.]

MR. RUPERT: Dr. Davies, I have just handed you a document entitled Supplementary Testimony of Sherwood Davies

and I ask if you are familiar with that.

DR. DAVIES: Yes, sir, I am.

MR. RUPERT: Dr. Davies, if I asked you the questions contained therein would you answer as set forth therein?

DR. DAVIES: I would.

CHAIRMAN JENSCH: Do you adopt this as your sworn testimony in this proceeding?

DR. DAVIES: I do.

MR. RUPERT: Mr. Chairman, I move that this document, Supplementary Testimony of Sherwood Davies, be incorporated in the record as if read, as Dr. Davies' testimony in this proceeding. 10

CHAIRMAN JENSCH: Do you have an extra copy of that?

MR. RUPERT: Yes, I do.

CHAIRMAN JENSCH: This was transmitted by letter dated July 7th, is that correct?

MR. RUPERT: That is correct.

CHAIRMAN JENSCH: May I have a copy, if you have an extra copy? 20

Is there any objection to the request by the New York State Atomic Energy counsel? Counsel for the Applicant?

MR. TROSTEN: No objection.

MR. KARMAN: No objection, Mr. Chairman.

CHAIRMAN JENSCH: Citizens Fund?

MR. ROISMAN: No objection.

CHAIRMAN JENSCH: Very well. Supplementary Testimony of Sherwood Davies may be incorporated within the transcript as if read.

Do you have copies physically to give to the reporter or not?

MR. RUPERT: I have already done so, Mr. Chairman.

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CHAIRMAN JENSCH: Enough for all the transcript that will be prepared?

MR. RUPERT: Yes, Mr. Chairman.

CHAIRMAN JENSCH: Very well. The Reporter is directed physically to incorporate the Supplementary Testimony of Sherwood Davies.

Please proceed.

MR. RUPERT: I have nothing further, Mr. Chairman.

CHAIRMAN JENSCH: Very well..

Cross-examination by the applicant?

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MR. TROSTEN: We have no cross-examination.

MR CHAIRMAN JENSCH: Regulatory Staff?

MR. KARMAN: No cross-examination.

CHAIRMAN JENSCH: Citizens Fund for the Protection of the Environment?

Supplementary Testimony of Sherwood Davies,
Director, Bureau of Radiological Health,
New York State Department of Health

July 7, 1971

Q1. Are you familiar with the question asked by Dr. Briggs on March 21, 1971, transcript page 685, to wit:

"In connection with the emergency plans, there are procedures that are to be followed in the event of an emergency. These are procedures that have been provided by the Applicant and others provided by the State of New York. If the Applicant has analyzed an accident, one that would involve extensive threat of radioactivity such as the State of New York to be called in, we would like there to be some discussion of the accident and the time that is involved.

Certainly the amounts of time required to notify people and take measurements. I have seen no description of a typical accident; I should call it an accident that is not typical, one that involves a considerable threat of radioactivity, and the time allowed for carrying out these operations according to the Staff's safety analysis; within two hours at the site boundary one could approach the 10 CFR Part 100 limits under certain conditions and 12 hours seems to be a fairly short time to carry out all of the emergency actions called for in the emergency plan.

We would like to have some discussion about the kind of accidents that have been analyzed and the amount of time considered to be available for carrying out these plans and how they compare with this two-hour business at the site boundary."?

A1. Yes, I am.

Q2. Would you please answer this question from the standpoint of the State's Emergency response?

A2. To adequately respond to the question - to give not only timing estimates but also an outline of the activities to be carried on - will require a multi-part response.

The basic parts of the timing estimates (as they relate to State activities) involve the period required for notification, the period required for assessment and the period required to commence response actions.

I. Notification

In the event that a serious accident occurs, Consolidated Edison is to notify the State Warning Point. The Warning Point at the State Emergency Operating Center is manned 24 hours a day and has multiple incoming lines. The operator at the EOC has instructions to obtain information regarding time of incident, estimate of activity released or that may be released, wind speed, wind direction, etc., and to obtain a return call phone number for verification. The operator has instructions to contact a list of Health Department officials.

The contacted Health official is then to return the call to the Con Edison contact number (the number given to the EOC operator) for verification of the information and to obtain the available information to give a rough appreciation of the magnitude of the occurrence. (He would obtain as much information as is then available but at least information concerning: does the accident result from a primary system rupture or is it a gas puff type release or a water release to the river; do the safeguards appear to be operating; is there any estimate of the amount of release or of the off site doses.)

It is estimated that from the time a call is made to the Warning Point until an official of the Health Department is contacted and returns the call to verify the alarm and to obtain necessary information would take during work hours some 10 to 15 minutes and at the outside one to one and a half hours during non-working hours.

II. Assessment and Prompt Actions

Substantial Releases - specific response actions have been assessed for accidents ranging up to substantial releases resulting in two hour site-boundary doses up to about 30 rad to the thyroid from inhalation.

For an accident this large, primary actions would include:

- 1) Controlled access to the site along Bleakley Avenue and along Broadway.
- 2) Local police notification (bull horn) of the people living along Bleakley Avenue to remain indoors with windows closed.

The need for these actions can be assessed promptly and would be recommended promptly to the Commissioner of Health by the key health official notified at any time day or night from home. It is estimated that it would take some 30 minutes after the key health official obtained necessary information to initiate such actions. This includes the time necessary to contact the Commissioner or his on-duty deputy; to make recommendations to the Commissioner, for the Commissioner to authorize institution of these protective actions; for contacting State Police Radio Network and for State and local police to institute these protective actions.

The time at which subsequent protective actions could be taken would depend on whether the accident occurred during working hours, in which event such actions could be initiated in about 30-60 minutes after verification. If the accident occurred after working hours, these additional actions would be directed from the State

Emergency Operating Center, where there is adequate communications. In this event, there would be required an additional amount of time needed for key officials to gather at the Emergency Operating Center. It is estimated that this would entail from 30 minutes to a maximum of about 1 1/2 hours.

These subsequent actions would include:

- 1) Notification of appropriate local officials
- 2) Notification and advice to school and hospital authorities
- 3) Public notice via radio (TV, etc.) informing the public of the situation and advising them
- 4) Notification to dairy farmers within 20-30 miles (or less depending on wind conditions, etc.) and advise to remove cows from pasture (in order to protect milk supply).

All of the foregoing actions could be taken within one hour from the time the accident is verified if the accident occurs during working hours and within two hours from the time the accident is verified if the accident occurs during non-working hours.

Smaller Accidents - for severe accidents (primary system failures) with smaller off site consequences, or for lesser accidents with lesser off site consequences, the same series of prompt protective actions would be considered for any accidents where off site consequences were more than a few rem (3 rem thyroid at site boundary for two hours). For these smaller accidents the need for each of the prompt protective actions would be considered in light of the estimated effects of the accident.

Protective Actions After the First Few Hours (Monitoring) - protective actions after the first few hours (or in the event of the smaller accidents which pose no eminent hazard) would be based upon measurements of activity actually released or actually found in the environment.

Consequently, one of the first actions taken by the State after receipt of notice that an accident has taken place would be to alert agencies with portable monitoring ability to marshal such forces and start taking measurements under the direction of the State Health Department. These would include measurements not only of airborne activity, but would include evaluation of deposition on pasture and land surfaces, radiological analyses

of lakes, reservoirs and water courses used as source of water supply. This would continue for some time, including milk monitoring at processing plants and/or farms for some period (weeks) thereafter.

It is estimated that from State sources alone, at least 15 professionals with portable equipment would be available for field monitoring and/or assessment. The necessary logistical support would be available from many State sources.

III. Very Severe Accidents

In developing emergency response plans we initially considered protective measures, as outlined in the Commission's Siting Guides (10 CFR 100) - which includes consideration of protection of people within the low population zone if necessary. We recognized that such actions could readily be accomplished, considering the limited number of people in this zone (some 20 houses). However, we felt that the doses at which protective action should be considered are substantially lower than those set forth in Part 100 (e.g. protective actions for I₁₃₁ exposure should be considered or taken in the range of 10-30 rad).

On the other hand, the off site doses computed for the largest design basis accident appeared unrealistically high and that the assumptions upon which such computations were based seemed to assume far too little effectiveness for the various safety features within the plant.

We discussed this with the applicant and received his judgment that the off site consequences of accidents from the facility would be significantly less than Part 100 values.

We also discussed the matter with the USAEC regulatory staff. In these discussions, the Commission concurred with our belief that action should be taken at exposures well below 300 rem thyroid and that the consequences of accidents at the facility would be substantially below those used in calculational siting models for Part 100. The staff indicated that the degree of conservatism of the assumptions for calculating the potential consequences of the design basis accidents described in Safety Analysis Reports provide a high degree of assurance that such improbable accidents, should one occur, will be significantly less severe, probably by a factor greater than ten, than those determined in accordance with the conservative methods and models used.

Thus the USAEC has indicated that emergency planning based upon limiting doses to 30 rem thyroid or less in the event of accidents where off site consequences extend to 10% of the consequences of the calculational models used for the largest design basis accidents, provide a prudent basis for an emergency program. Such a program results in the same scope of protection to the people within the low population zone as would be provided by use of the

guide numbers of Part 100, but provides a more realistic and meaningful program of detailed response for consequences beyond the low population zone.

Accordingly, the State's program for response to emergencies includes preplanned protective measures for limiting dose to 30 rem thyroid or less for major accidents having off site consequences up to 10% of the theoretical consequences of the design basis accident. The State's program also includes arrangements for bringing the State's large-scale general emergency response capacity to bear in the event that actual conditions prevailing at the time of an accident were to indicate that such consequences would be exceeded.

The timing estimates in this portion are based upon bringing such capacity into operation in the event of a hypothetical accident with offsite consequences approaching Part 100 values.

For such an accident, the objective of emergency action would be the same as set forth in the Emergency Plan, to minimize radiation exposure to the population.

The key Health official would immediately (from home or office at any time of day or night) inform the Commissioner of Health or his on-duty deputy and recommend that he immediately take charge of emergency actions and request that the State's Disaster Coordinator (Commissioner of Transportation) obtain all possible assistance from all State agencies.

Command facilities including multiple communications channels (phone lines, etc.) are available at the EOC and emergency operations would be directed from that point.

It is estimated to take from 15 to 30 minutes (working hours or one to one and one half hours non-working hours) from the time that the key health official obtained information of the very severe event until the authorized responsible officials of the various agencies are assembled at the EOC. Within some 30 minutes thereafter, a public notice could be issued via radio, television, etc. informing the public of the accident and issuing protective action instructions. At the EOC are facilities of the New York State Emergency Radio Network composed of 33 commercial broadcast facilities. This network is tested daily and can be activated by the Governor in the event of an

emergency to enable the Governor or his designee to make an emergency public announcement via these stations from any point in the State.

While officials are being assembled at EOC, State and local police would be contacted and on-the-spot notice (via bull horns) would begin. Movement of the people in the low population zone would begin.

Subsequent actions including evacuation (if necessary), identification of specific temporary shelters (armories), obtaining emergency medical assistance (primarily non-radiological first aid) would depend upon the specific conditions existing at the time.

In summary, in the event of a hypothetical accident where off site consequences approached Part 100 values it is estimated that from the time of notification of the Warning Point until the time full emergency command operations are established and a public warning is issued would take from 45 minutes to 1 hour during working hours or from two to three hours during non-working hours.

Movement of the people in the low population zone would have been undertaken before this time - about one half to one hour after Notification of the Warning Point.

Q3. Are you familiar with the question asked by Dr. Geyer on March 24, 1971, transcript p. 688, to wit: "Emergencies don't necessarily happen when the weather is fine and everybody is home listening to the telephone so that the question of backup and organizational changes that are required because people aren't available or communication isn't just what is expected to be, might be discussed in some detail.

The plan looks like a good one and it is quite elaborate if everything works out as it is expected to in that plan. But if it doesn't work out, what then happens?"

A3. Yes, I am.

Q4. Would you please answer this question from the standpoint of the State's emergency response?

A4. The Warning Point phone at the State Emergency Operating Center has multiple incoming lines and is manned on a twenty-four hours continuous basis by an employee of the Division of State Police.

The officer on duty has available a list of home and office numbers of four members of the Bureau of Radiological Health, three members of other bureaus in the Department of Health, a list of the home numbers for the Commissioner and Deputy Commissioners of Health, a list of office and home phone numbers of five other Technical Resource Personnel of other Departments.

In addition, the Disaster Coordination group within the Department of Transportation maintains a duty roster with an executive official on call at all times from the Warning Point.

In addition to personnel backup, the communications system is also backed up in depth.

In addition to the multiple incoming telephone lines, the Warning Point is connected to the NAWAS (National Warning System) network. The USAEC is also connected to NAWAS and the State Warning Point can be contacted through NAWAS by the AEC. The Westchester County Parkway Police (Hawthorne Circle), the Peekskill Police (926 Central Street) and the Westchester County Civil Defense Office (County Office Building, White Plains) are also connected to NAWAS. In addition, local State Police stations (Annsville Circle) are connected by radio and teletype to the State Police Headquarters in Albany, which is also in the same building with the Warning Point.

Q5. Are you familiar with a document entitled "Statement of Proposed Factual Findings with References to Supporting Data Submitted by the Citizens Committee for the Protection of the Environment" submitted by Citizens Committee by a letter of June 4, 1971?

A5. I have read the document with particular interest in those portions relating to the State Emergency Plan. (Pages 13 and 14).

Q6. Are you familiar with the allegation that the State Emergency Plan is deficient in that there is no discussion of precise safety measures to be taken by the public or a program of training for the public in the use of these methods?

A6. Yes, I am familiar with that allegation.

Q7. Do you agree with this allegation? And briefly give your reasons.

A7. No, I do not agree with this allegation.

Citizens Committee apparently misunderstands the function of the State Emergency Plan. The Emergency Plan is not and was not intended to describe the precise actions that will be taken to protect the public.

The Emergency Plan provides the overall framework for providing emergency response by the State to major radiation accidents. The response actions to be taken would be determined, as provided in the plan, under authority of the Commissioner of Health, based upon the nature and scope of the accident which has occurred and upon other salient factors existing at the time of the accident.

The Emergency Plan provides the framework, procedures and principles to be applied by the State in determining actions to be taken in the event of a major radiation accident. Information needed to determine specific response actions has been compiled for the facility location and specific consideration has been given to response actions that may be required to be carried out promptly in the event of a major accident.

With respect to public training, the Emergency Plan does not rely upon the need for sophisticated self protective actions

by the public for which public training is required. Such actions as may be desired to be taken by the public for its immediate protection, may include staying indoors and closing windows and turning off ventilation upon notice to do so by public officials or public broadcast, or the direction to temporarily relocate from limited areas upon notice to do so by public officials or public broadcast and in such case to follow traffic instructions.

Q8. Are you familiar with the allegation that the State's Emergency Plan is deficient in that there is no evacuation plan and no public information with regard to the use of such a plan?

A8. Yes, I am familiar with that allegation.

Q9. Do you agree with this allegation? And briefly give your reasons.

A9. No, I do not agree with this allegation. There are no preplanned evacuation procedures, because there is no need for such preplanned procedures.

For the range of accident consequences for which preplanned responses have been assessed, the off site radiological consequences and the "dose savings" that could be accomplished would not warrant movement of people beyond those in the low population zone.

For the 20 houses in the low population zone, the dose savings resulting from remaining indoors with the windows closed for 2-4 hours provides more radiological protection than movement, particularly if inclement weather, etc. would subject such persons to substantial hazard in attempting to evacuate.

However, this limited number of people can readily be moved for a short period (a few hours) if the key health officials decide that this would be desirable.

We have not preplanned responses to very severe accidents approaching Part 100 values. The basis for this is outlined above (Answer 2, Part III).

For these cases, the State's general emergency response capacity would be brought to bear.

In this event, evacuation of people could be undertaken under control and supervision of State and local police located nearby. In view of the large number of good highways in this area, which provide rapid access north, south and east, a substantial number of people could be evacuated readily.

Q10. Are you familiar with the allegation that the State Emergency Plan is deficient in that there is no system which will guarantee warnings to all members of the public within a short time after the emergency and no program to train those responsible for giving warnings in order to prevent panic from such announcements?

A10. Yes, I am familiar with the allegation.

Q11. Do you agree with it? And briefly give your reasons.

A11. No, I do not agree with that allegation.

This is incorrect as regards the State.

Public warnings via radio broadcast will be provided through State Department of Health officials using available communications facilities. These include, in the event of a serious emergency, the use of the State Emergency Broadcast Network described above.

To assure actual notice, supplementing radio broadcast, to nearby residents - those most immediately affected - local police would provide an on-the-spot alert via bull horns.

No specific program of training in the subject of providing public notice or warnings is felt necessary. The officials of the State Department of Health, Public Information Office, have adequate background so that such training is felt unnecessary.

Q12. Are you familiar with the allegation that the State Emergency Plan is deficient in that it fails to reveal the precise conditions under which it will go into effect?

A12. Yes, I am familiar with this allegation.

Q13. Do you agree with it? And briefly give your reasons.

A13. No, I do not agree with this allegation.

The "Plan" will go into effect upon notification to the State Warning Point by the facility operator that a major radiation accident has occurred. The State has requested, and Consolidated Edison has agreed, that Con Ed will notify the State Warning Point as soon as a "site contingency" occurs.

Upon such notification, the State Warning Point will contact officials of the State Health Department, and such officials will verify the occurrence of the accident, obtain information as to the magnitude of the accident, assess the needs for protective action, and make recommendations for action directives to the Commissioner of Health, under whose authority and direction such protective actions, as may be required, would be carried out.

Q14. Are you familiar with the allegation that the State Emergency Plan is deficient in that there are no provisions for supplemental food or water supplies or control of shipment of contaminated products?

A14. Yes, I am familiar with this allegation.

Q15. Do you agree with it? And briefly give your reasons.

A15. No, I do not agree with this allegation.

While contamination of locally grown food products primarily leafy green vegetables would be evaluated and protective action taken with respect to nearby items found contaminated,

supplemental food supply would be necessary only for events resulting in widespread contamination of a food supply. The State Emergency Plan does not preplan responses for such events (which would substantially exceed Part 100 values). The basis for this is outlined above (Answer 2, Part III).

Nonetheless, as part of the State's general emergency response capacity, supplementary food supplies would be available through the natural disaster officials from sources including the U.S. Department of Agriculture, the Red Cross.

The primary food supply of concern would be the milk supply, because of the "concentration" factor of the air-grass-cow-milk cycle. The Emergency Plan calls for protection of this supply by prompt widespread notification (by radio broadcast) to dairy farmers for some distance from the facility to remove cows from pasture and utilize stored feed.

This would protect the cow and its milk production from contamination and result in minimizing damage to the milk supply. Of course, processing plants would be monitored for some time after the event to assure that contaminated milk did not get through to consumers. Aerial surveillance would be undertaken to evaluate the extent of pasture and land contamination.

Water supplies would be among the very first items monitored for determination of contamination in the event of an accident. Use of a water supply that would be permitted would depend on the results of this monitoring. For the range of consequences considered, there would be no need for auxiliary water supplies or for major restrictions on community usage. There might be circumstances under which limited restrictions would be imposed on potable usage for particular younger age groups.

MR. ROISMAN: Yes, Mr. Chairman.

Let me say at the outset that this cross-examination is going to have to be continued at a subsequent date on the whole subject matter. We had thought that we advised the parties well in advance certainly of today, if not of the hearing next week, that we wanted to cross-examine as to what the scope of the cross-examination was and what our concerns were. This morning we received from New York State in addition to the documents that have just been offered into evidence, a document entitled Specific Operating Procedures for Indian Point Station, New York, dated June 30, 1971. It apparently deals with some of the details that are covered only in general form in the New York State Emergency Plan. 10

In addition, we received from the Staff a document entitled Extent of Advance Emergency Planning for Coping with Potential Accidents which is apparently going to be the testimony of Mr. Dudley Thompson, a copy of his professional qualifications we also received this morning.

Now, we were under the impression that the Intervenor were not the only parties in this proceeding who were trying to do things in advance of hearings in order to expedite the proceeding. We cannot fully cross-examine Dr. Davies and we cannot cross-examine Mr. Thompson at all with regard to information which we have only received today. 20

EXTENT OF ADVANCE EMERGENCY PLANNING FOR COPING
WITH POTENTIAL ACCIDENTS

1. The concept of defense-in-depth is applied to the design, construction, and operation of every nuclear power facility to reduce the probability of accidents and as a means of assuring reliability in functional performance of plant systems. The primary plant systems are backed up by redundant accident prevention systems, most of which operate automatically, to prevent the loss of important functions in the event of a failure of the primary system. In the unlikely event a serious accident should nevertheless occur, additional systems also are provided to contain and control the potential release of fission products to the environment. All structures, systems, and components important to the safety of the plant must be designed, constructed, and operated in such a way as to achieve superior quality. Hence, this defense-in-depth concept provides assurance that the likelihood of occurrence of an accident having radiological consequences sufficient to affect the health and safety of the public is exceedingly low. In the history of licensed or commercially operating nuclear power plants, beginning in 1957 and encompassing 112 reactor-years of operation, no such accident has occurred.
2. In spite of these provisions, it is not inconceivable that an accident could happen that could cause high radiation levels within the plant and release of fission products to areas outside the plant.
3. As a matter of prudence, each nuclear power plant licensee is required to prepare in advance, and to maintain in readiness, emergency plans.

for implementing measures to provide additional protection of persons who might be affected. The licensee's emergency plans include collaborative arrangements for assistance from local and state agencies in the event that the capabilities of these agencies may be needed. State and local agencies also develop their capabilities to respond to emergency situations. In addition, the Atomic Energy Commission maintains Radiological Emergency Assistance Teams in a state of continued readiness. These teams are administered through regional offices located at seven strategic points over the nation, and can respond rapidly to situations where their capabilities may be needed.

4. In recognition that serious accidents could occur that might result in the release of fission products, the Atomic Energy Commission's criteria for the siting of nuclear power plants (10 CFR Part 100) provide that nuclear power plants be located within a low population zone "...which contains residents, the total number and density of which are such that there is a reasonable probability that appropriate protective measures could be taken in their behalf in the event of a serious accident." Thus, it has been, and still is, the clear intent of the AEC that measures for the protection of people in the low population zone can and should be implemented in the unlikely event of a serious accident. It follows that advance planning for providing these protective measures should be undertaken. The measures would be provided primarily by the licensees and by state and local agencies, supplemented

as appropriate by the AEC Radiological Emergency Assistance Teams and other resources of the Federal Government.

5. Highly unlikely design basis accidents (DBAs) are postulated and evaluated for several different purposes in the safety evaluations of nuclear power plants. The evaluation of the DBAs is relevant to the problem of estimating the scope of the emergency planning that should be provided for reasonable protection against the remote possibility of accidents in two respects:

- (a) -In the calculational model used for estimating the potential consequences that might result from a DBA, assumptions are made regarding a number of sequential failures, each of which has a very low probability of occurrence. The use of these assumptions leads to a highly conservative estimate of the fraction of the fission product inventory in the reactor core that might be released into the containment building. A prescribed fraction of this radioactive material is assumed to leak from the containment building and to be transported under the further assumptions of poor meteorological conditions for a 30-day period. The AEC's reactor siting criteria (10 CFR 100) require that for any DBA the low population zone be of such size that the calculated radiation dose to an individual exposed at any point on its outer boundary would not exceed 25 rem to the whole body or 300 rem to the thyroid over the 30-day period. Thus, the calculation of the

potential consequences of design basis accidents, using the highly conservative model prescribed, and the guideline values of 25 rem whole body or 300 rem thyroid, are used to determine the minimum acceptable radius of the low population zone within which protective measures for people are expected to be feasible.

- (b) Realistically, should a design basis accident occur, there is a high probability that the actual consequences would be less severe, probably by a factor of 10 or more, than those that are calculated in the conservative calculational model used for site evaluation, since some of the safety systems conservatively assumed to be degraded in that model would quite likely remain effective to a greater degree than that assumed. Conversely, but also realistically, the level of projected radiation doses at which actual protective measures would be considered for implementation following an accident would be substantially lower than the guideline doses used for site selection because it is prudent to be cautious. This consideration of implementation level also would be a factor of 10 or so lower in most instances than the 25 rem whole body or 300 rem thyroid dose guidelines used for site evaluation. For example, in situations where few people are involved and feasible conditions exist, evacuation or movement of people might be considered for projected dose levels as low as 10 to 20 rem to the

thyroid. The net result of these two realistic considerations is that the geographic area of coverage appropriate for advance emergency planning is approximately the same as the low population zone referred to in the siting criteria of 10 CFR 100.

6. Hence, advance preparations clearly should include provisions for implementing protective measures for residents in the low population zone. One cannot state with absolute certainty that accidents larger than the design basis accident as realistically calculated will not occur. However, such accidents are certainly exceedingly improbable. Coping with accidents that might call for resources beyond those covered by the developed advance emergency preparations might require the additional resources of state agencies, such as use of generalized disaster plans, and the resources of the AEC Radiological Emergency Teams and other Federal agencies. As in other disaster situations, these resources can be mobilized as needed.

All of these parties knew that we were concerned with this question, and we are unable to understand why it was not possible for them to work as hard as we have worked in order to provide copies of this information in advance.

Now, we do not want to have this hearing continued more than the requisite number of days, and at this point we do not expect that the cross-examination that we have for Dr. Davies should take beyond today, but we are going to very strenuously object to us being placed in a position where we have to read this information immediately 10 or during a lunch break or something like that in order to examine it.

And before I begin the cross-examination of Dr. Davies I should want to indicate that I am not going to be able to cross-examine him on the material that was just provided this morning, and I feel confident that I will want to cross-examine him at some time with regard to that material once I have had a chance to study it, if it is what it appears to be on the surface.

CHAIRMAN JENSCH: Would you prefer to do cross- 20 examination now or do some now and some later or postpone it all until later?

MR. ROISMAN: I am perfectly willing to go ahead and do as much as I can now, and I may find that my questions on the specific operating procedure may be handled in the

form of something that's written.

What I wanted to make sure was that I not be placed in a position where it has to be done today.

CHAIRMAN JENSCH: It will be so understood.

This lays adequate grounds for postponing your complete cross-examination. Will you proceed?

MR. ROISMAN: Dr. Davies, in terms of the purpose of the New York State Emergency Plan, is the purpose of that plan to keep the exposure of the public to radioactive releases from the plant in the event of an emergency as low as practicable? 10

DR. DAVIES: It is intended to minimize the exposure to the population as a result of any accidents having releases of radioactivity off site. And I think with this intent it meets the as low as practicable.

MR. ROISMAN: You are familiar with that standard in the Atomic Energy Commission regulation 10-CFR Section 50.34A?

DR. DAVIES: I am familiar with a revision, I believe it's a proposed change, placing some numerical values on the as low as practicable. I am not certain that I am familiar with anything that's been specifically adopted. 20

MR. ROISMAN: Let me show you if I may a copy of the present regulations of the Commission, which include

a Section 50.34A, and direct your attention to subparagraph A of that, and ask you if you would read it, not out loud, but just to yourself, and tell me whether or not that definition that's included in there of as low as practicable is the definition or the standard that this New York State Plan wishes to achieve.

It begins at the bottom of the right-hand page.

DR. DAVIES: As I read this rather quickly I don't believe that the intent, in terms of our plan, specifically relates to this 50.34A, because this --

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MR. ROISMAN: I understand. I was talking about the definition of the term of as low as practicable. I understand that 50.34A relates to normal releases of radioactive material. We are talking here about an emergency plan.

DR. DAVIES: I think generally yes. You'd attempt to develop criteria to minimize the population exposure, and I think generally the lowest practicable is defined here probably with what meets the intent of our plan.

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MR. ROISMAN: Okay, thank you.

Is the primary danger associated with the off-site releases of radioactivity from the plant the iodine?

DR. DAVIES: Yes, that is primarily the basis

for the development of the plan, radioactive iodines.

MR. ROISMAN: Yes, I understand.

Now, Dr. Davies, directing your attention, if you will, to your testimony that's just been received in evidence, supplementary testimony dated July 7th of 1971, on page 4, reference is made to the use of techniques for advising the public of an emergency, and it refers to local police notification by bullhorn of the people living along Bleakley Avenue to remain indoors with windows closed. That's at the top of page 4 of your testimony. 10

DR. DAVIES: Yes.

MR. ROISMAN: Can you tell me will those bullhorn announcements include advice to the public with regard to turning off ventilation systems, closing dampers and chimneys, stuffing cracks, if there are large cracks, broken windows, of that nature, or what precisely would be the type of warning that would be given over the bullhorn?

DR. DAVIES: Probably the precise warning that would be given over the bullhorn would be for people that may be outdoors to enter their homes, to close windows, if they are open during the summer months, to turn off air conditioners, and this would be done primarily if as a result of an accident wind were blowing in that direction and benefit would be secured maybe for a short period of time by being under cover and closing the house. 20

MR. ROISMAN: Under cover?

DR. DAVIES: Well, within the building.

MR. ROISMAN: Now, do the police who will be using these bullhorns, do they have a list, a little thing to read that's been printed up by New York State, so that they will know exactly what to read?

DR. DAVIES: No. We have not told them today specifically the words to use.

MR. ROISMAN: Have you told them the subjects to cover in some written document? 10

DR. DAVIES: We have had a number of meetings.

CHAIRMAN JENSCH: Excuse me. I wonder if you could direct your attention first to the question specifically and give us yes or no and then you can explain it any way you like.

Would you read the question, please?

[The pending question is read by the Reporter.]

CHAIRMAN JENSCH: Will you try that yes or no and then you can explain it.

DR. DAVIES: I have to answer both yes and no. 20

CHAIRMAN JENSCH: Well, maybe that's the way it is.

MR. ROISMAN: Go ahead. Would you explain your yes or no answer, please?

DR. DAVIES: Yes, there is a specific operating

procedure for the Indian Point site that we have developed over a period of time.

MR. ROISMAN: Is that this other document called Specific Operating Procedures, Indian Point Station, New York?

DR. DAVIES: Yes, sir, it is.

MR. ROISMAN: All right. If the answer to my question is contained in there, just defer the answer at this point. I will read that and then see if I have some additional questions to ask you about at a subsequent time. 10

Reference is made throughout the emergency plan, and more importantly in your testimony, in your supplemental testimony, to the time that may be involved with respect to notification of officials, and I attempted to make up a list of these timed events, and let me see if I have gotten them correctly.

The first time sequence where New York State becomes relevant is the time for the personnel at the warning point to contact an official of the Health Department. In other words, the first notice that New York State gets 20 is a call from the applicant, and that comes to your warning point, and then the man on duty at the warning point contacts an official of the Health Department. Is that the first time sequence?

DR. DAVIES: That's correct.

34 MR. ROISMAN: And then is the next time the time of the key official from the Health Department to contact the Health Commissioner or his on-duty deputy in order to discuss and get the Health Commissioner's approval for the proposed contingent action?

DR. DAVIES: No. The next action that would be taken would be the key official with the Health Department, the recipient of this message from the warning point, to get whatever details are available, including a phone number, and to immediately return the call to the nuclear facility operator to both verify the information and attempt to technically get whatever additional information may be available. 10

MR. ROISMAN: Then does he made an assessment of that information and contact the Health Commissioner?

DR. DAVIES: That is correct.

MR. ROISMAN: Following the contact of the Health Commissioner what is the next step in the implementation of the plan?

As I understand it, the authorized officials come to the emergency operating center after having been notified by the key official that these are the people who are responsible for implementing the plan at the highest level, the people working out of the emergency operating center. Is that correct? That occurs after contact with 20

the Health Commissioner or his on-duty deputy?

DR. DAVIES: Yes. There will be contact with the Health Commissioner or his off-duty deputy.

But I might also refer at this time to the specific operating procedure that I believe has been handed out and it spells out in detail some very specific actions that would be taken.

MR. ROISMAN: But I am trying to understand that you do have to have -- there is a gathering of officials at the emergency center following a discussion with the Health Commissioner, is that correct? 10

DR. DAVIES: Yes. There would be for a major accident, yes.

MR. ROISMAN: Yes. That is what I am talking about.

And then there is a time involved in making contact with the local officials who put the plan into effect, that is the police or any local facilities that are included in the emergency plan. Is that correct?

DR. DAVIES: The time sequence may be incorrect. 20 There may be notification of the local officials prior to having a group assemble at the warning point.

MR. ROISMAN: But only after contact with the Health Commissioner, is that right?

DR. DAVIES: That is correct. The contact is

made with the Health Commissioner.

CHAIRMAN JENSCH: Excuse me. Was your last answer there may be a notification? Was that your answer?

DR. DAVIES: There may be a notification, yes.

CHAIRMAN JENSCH: What does the plan provide? Will there be a notification before the gathering of the group?

DR. DAVIES: Well, if I might take a specific example.

CHAIRMAN JENSCH: Well, if you could tell me will there be a notification prior. I am trying to get a definiteness about the program. 10

DR. DAVIES: Yes, there will.

CHAIRMAN JENSCH: Thank you. Proceed.

MR. ROISMAN: Mr. Davies, in terms of the additional testimony which you have submitted today, you have indicated some time sequences, what the time sequence for these various events might be if this was on-duty during the day normal hours and what it might be during off-duty.

Have you run any tests or drills to find out what in fact the time sequence might be at the worst possible time and during normal operating times? 20

DR. DAVIES: No.

MR. ROISMAN: What do you base your conclusions with regard to the hours involved in making these contacts

and giving the plant fully-implemented upon?

DR. DAVIES: Best estimates and prior experience.

MR. ROISMAN: You mean prior experience with nuclear facility emergencies?

DR. DAVIES: Not prior experience with radiation incidents or accidents not involving catastrophic emergencies.

MR. ROISMAN: Was there a time log kept for those other emergencies that indicated how long it took for various procedures to be implemented?

MR. DAVIES: In some cases, yes. In other cases, no. 10

MR. ROISMAN: Would those logs be available for examination so that we could see the figures that might verify your conclusions about how long these various steps would take?

DR. DAVIES: There would be available, as I recall now, maybe some memorandums, written, for the record, or internal communications in connection with receipt of information concerning a radiation incident and the following actions that were taken. 20

With specific regard to logging in the exact times, I think there may be general reference to it, yes.

MR. ROISMAN: Would you be willing to produce some of those that you utilized in making your -- in forming

the basis for your testimony? The ones that weren't used to form the basis for your testimony you could produce them if you wanted, but I wondered if you would mind producing the others.

DR. DAVIES: Well, I don't mind reviewing our files to see specifically the type of data that is available and to make it available.

Now, in regards to the others, as I have previously indicated it again is based upon experience. Whether we have documented it by a memorandum, this in my response wasn't the experience I was speaking of. 20

MR. ROISMAN: I understand.

Can you tell me in doing these time analyses did you take into account -- well, let's just take a few at random.

When the key official is contacted by the warning point, you indicated that he has to get back in contact with the facility to get some more first-hand information on exactly what the occurrence is. Did you take into account the possibility that the occurrence may have either caused the possibility that the occurrence may have either caused or may have been caused by an event which knocked out telephone lines and that communication was being made by radio as opposed to by telephone, and add into your time estimates the possibility that that key official might have to travel from his own home to a location where he could get a radio 20

with sufficient strength to be in contact with the facility operator?

DR. DAVIES: I have not taken into consideration the fact that telephone communication may be knocked out.

MR. ROISMAN: Now, with respect to the contact between the local officials and the people who are at the emergency operating center, has any consideration been given to problems associated with reaching "key local officials"? That is, those who were authorized to implement these plans during off-duty hours or times when they might be away? 20

In other words, have you determined whether all your local officials have a back-up man so that if the emergency operating center calls and the only person on duty, say in the police station -- it's two o'clock in the morning and it's a young recent recruit -- does he know the plans to follow and how to go about getting in contact with the proper man who can tell the police at that station what to do?

DR. DAVIES: You have asked a number of questions and you mentioned local officials, and if you could clarify what you mean by local officials. And you have also mentioned there in the question notifying police. 20

If I could have a better feel for specifics of the question it would help me.

MR. ROISMAN: Sure, sure. Right.

For instance, on page 4 of your supplemental

testimony it indicates that local police notification of the people living along Bleakley Avenue to remain indoors with windows closed.

I assume that someone from the Health Department will have to contact those local police, either directly or through some other official who will contact them, in order to tell him to do it and to implement whatever plans they have.

DR. DAVIES: Yes.

MR. ROISMAN: Now I am trying to find out whether 10 the time that you have indicated it will take for these various notifications to occur, which was in response to a question asked by the Board, takes into account the possibility that when you contact the local police it may be that the person who receives the notification is not in a position to act for those police, but has to contact some higher official within the Police Department in order to get **authority to** send policemen out with bullhorns telling people to remain indoors, or whatever warning has to be given.

DR. DAVIES: Well, we've already -- your question 20 specifically -- we have already talked with staff of Division of State Police at the State level and the point in time that the Commission of Health may make the determination that positive protective action steps must be taken, this would be communicated directly to the Division of State Police in

Albany at headquarters, who would in turn -- they in turn have radio communication with their local offices, to advise them as to very specific actions that should be taken.

MR. ROISMAN: Those are local offices of the State Police?

DR. DAVIES: Of the State Police, yes, sir.

MR. ROISMAN: Perhaps I misunderstood that.

On Page 4 you referred to local police notification. Is it the operation of the New York State Plan that the only notification by bullhorn of the people will come from State Police rather than from the use of local police? 10

DR. DAVIES: No, it is not. Our discussions with State Police, they in turn include into this plan availability of local police. So that if there are specific measures to be taken it would be an action by State Police in conjunction with local police.

MR. ROISMAN: Yes. But my concern is with who controls those local police. In other words, from whom do they get their orders? I understand that State Policemen presumably can get their orders from one official located in Albany or wherever State Police headquarters is. But how about the police in Peekskill or in Buchanan who are a local police force? 20

What I am trying to find out is have you figured into your time sequences the time that might be involved for those local police who received the call from the State Police Office to contact the superior who has to tell them to do it or not, do it or have arrangements been made that anybody who receives a call from the State Police in the Buchanan or Peekskill Police Department is to do what the State Police tell them, without waiting to contact his superior or the man in charge of that police precinct?

DR. DAVIES: Well, this type of action we are requesting is really a police action, and we are quite dependent upon the Division of State Police to work out the relationships that would be effective with local police. 10

MR. ROISMAN: In other words, it's your dependence upon them. You don't know of your own knowledge precisely the answer to this question.

DR. DAVIES: Only to the extent that we have had discussions with the State Police, and their indications to us with regards to how soon they can take effective actions.

MR. ROISMAN: What I'm asking you is, you don't know whether or not their figures have taken account of the problem of a local police, not part of the state system, but just the local police force having a delay in actually beginning the implementation of bullhorn warnings because they need to contact their own superior officer? 20

DR. DAVIES: This is not solely dependent upon action by local police.

CHAIRMAN JENSCH: May I have the question read again?

[The pending question is read by the Reporter.]

CHAIRMAN JENSCH: Can you try that yes or no, the question being, do you know of your own knowledge about this possible time delay?

DR. DAVIES: Not with regards to the police, no.

CHAIRMAN JENSCH: Very well. You may proceed. 10

MR. ROISMAN: Mr. Davies, in another possibility the key officials must assemble at the emergency operating center, including the key official and several others. What provision has been made for providing them with transportation, if say, for instance, they are some distance away or, you know, their daughter has the car out that evening and they only have one car, or the weather is quite bad or they are at a place where helicopter transportation would be quicker and more appropriate than others? Are there specific procedures laid out for getting the key officials to the emergency operating center under the worst possible traffic-weather-type conditions? 20

DR. DAVIES: No.

MR. ROISMAN: Was any account taken in your estimate of the time it would take for those officials to get to the emergency operating center of the possible delays that

might occur as a result of inclement weather, unavailability of a car, similar things?

DR. DAVIES: Partially.

MR. ROISMAN: To what extent? Can you explain it to me?

DR. DAVIES: Yes. The key officials mentioned here represent some four people on my staff and other technical resource people that live in various parts of Albany County, some of whom live fairly close to this emergency operating center.

10

So that under extreme weather conditions we would estimate that at least some people relatively close to this emergency operating center might be available for response.

MR. ROISMAN: You said they live relatively close. Several blocks or several miles? What?

DR. DAVIES: Probably the closest would be within a mile and a half.

MR. ROISMAN: And were you imagining under the worst conditions as time sequence that would permit that person to walk say, through a snowstorm as opposed to coming by any vehicular transportation at all when you figured out how long it would take for that official to get to the center?

20

DR. DAVIES: It's primarily based upon personal transportation, automobile.

MR. ROISMAN: In other words, how long it would take these people to drive?

DR. DAVIES: Yes.

MR. ROISMAN: And is that driving assumed to be in rush hour or non-rush hour? How did you get the driving time?

DR. DAVIES: Well, within a mile and a half even during rush hour the closest individual could make it within a matter of five or ten minutes. I myself live about four to five miles and under morning rush hour conditions it would take about not over fifteen minutes, from my residence now. 10

MR. ROISMAN: Yes, I understand. How about in a snowstorm?

DR. DAVIES: Well, in what type of a snowstorm?

MR. ROISMAN: Well, I have driven on the New York State Thruway from time to time. Let's say it's one of those when the most they can do is get one lane of the New York State Thruway open with a plow going in one direction.

DR. DAVIES: Well -- 20

MR. ROISMAN: In other words, a very heavy, severe -- the kind of snowstorms that, as you know, the New York Times writes up about and says Traffic Snarled. That kind of snowstorm.

DR. DAVIES: We had one in December, I think it

was as severe as any, and as I recall I think the next day was a Saturday or a Sunday and I did travel to my office and I managed to make my office within a matter of twenty minutes to a half-hour.

MR. ROISMAN: This was after streets had been plowed?

DR. DAVIES: Not very well.

MR. ROISMAN: I didn't ask you to judge the Highway Department. I'm sure you are concerned sometimes about it, but the plows have gone through there, and if you'd ask a highway official he'd say, "Oh, we plowed these two days ago."

DR. DAVIES: They were just passable. It was a very severe snowstorm.

MR. ROISMAN: Okay, all right.

But you haven't considered the situation where it's before the plows get there?

DR. DAVIES: Well, if the road is impassable, then I would not use my automobile.

MR. ROISMAN: And that does occur. I mean there are times when the road is impassable before the snowplows have come and soon after a heavy snowstorm. 20

DR. DAVIES: I have not encountered it.

MR. ROISMAN: You have never had an instance of which the roads were impassable due to snow?

DR. DAVIES: That I was not able to get to work or home?

MR. ROISMAN: No. I am asking whether times that event may have occurred at a time when you weren't there to get to work or home? Were there times when you couldn't have gotten to work or gotten home if that had been the time you had chosen to go? We are trying to cover all twenty-four hours for the emergency response of course.

DR. DAVIES: I guess hypothetically the situation could exist that I could not travel by automobile from my residence to this emergency operating center. 10

CHAIRMAN JENSCH: Excuse me for interrupting. I wonder if you could try a realistic approach. How about this time to which we referred to last winter? Could you have gone through the middle of the night with your car before the snowplow went through?

DR. DAVIES: Yes, I could.

CHAIRMAN JENSCH: Thank you.

MR. ROISMAN: And with regard to the notification of officials, are there charts which are in the hands of certain officials which show where the key officials who you need to have at the emergency control center live, their phone numbers, arrangements for them to have backups, if one of them is on vacation or something like that? Is that laid out in some sort of a chart form that's readily available? 20

DR. DAVIES: It's an appendix to this specific operating procedure.

MR. ROISMAN: Okay.

DR. DAVIES: Entitled Emergency Directory 1971, listing both office and home phone numbers.

MR. ROISMAN: Okay. Well, again then I will look at that and see at a subsequent time if I have further questions on that.

Now, on page 5 on your supplemental testimony there are some notifications of personnel that are indicated here. Notification of local officials, advice to school and hospital authorities, notice via radio informing the public of a situation, advising them, and notification to dairy farmers with regard to removal of cows from pastures. 10

Now, with regard to those notifications have the people who would be the likely ones to receive those notifications been advised in advance of the emergency procedures that they are to follow? And let's start with the top one, the appropriate local officials. Do they have some set of plans that they are told what to do? "If you get a call this is what you should be doing"? 20

DR. DAVIES: Yes. We have made available a copy of this overall state plan. We have met at different times with a number of different local officials including local Health Departments, local police, local State police, county

national disaster coordinator and members of his staff.

We have discussed the overall state emergency plan and we have also discussed parts of the specific operating procedure.

MR. ROISMAN: But has this been put in -- or to your knowledge has it been put in in written form? In other words, I assume that the person who receives the notification could conceivably be a different person depending upon the time of day the notification comes in or even when it occurs. That is, there must be some turnover in those personnel. Are there written procedures for the local officials to follow, each type of local official, that he or any subsequent person filling his position would simply turn to this in the event that he received a phone call and say, "Well, the first thing I do is this; the second thing I do is that; the third thing," and so forth? Or has it all been oral communications and giving to them a copy of the emergency plan? 10

MR. DAVIES: We have not spelled out predetermined actions for all conditions. We have spelled out some predetermined actions for a limited set of conditions. 20

MR. ROISMAN: Are those written?

DR. DAVIES: Yes. And one is in part of the specific operating procedure.

MR. ROISMAN: Would it be possible to obtain copies of the others relating to the Indian Point Plant?

Not to the other facilities.

DR. DAVIES: No. I think it is all included here.

MR. ROISMAN: Oh, I am sorry. Okay.

In other words, everything that relates to giving information to local officials on the procedures that they should follow is included in this document that's been written and included in this document is specific operating procedures?

DR. DAVIES: If I could clarify your words 10
"written instructions to them."

MR. ROISMAN: Okay.

DR. DAVIES: We have identified in this document some very specific actions that would be taken. This would be based upon specifically request of these local officials to do this, this and this.

MR. ROISMAN: I understand.

DR. DAVIES: And it has been predetermined. In terms of putting it in the hands of all the local officials, this has not been done. 20

MR. ROISMAN: You mean the specific operating procedures are not in the hands of all local officials?

DR. DAVIES: Not all, no.

MR. ROISMAN: Who is in control of distribution of that? Is that out of your office that the distribution of

that would occur?

DR. DAVIES: The distribution of this would be from the State Health Department, yes.

MR. ROISMAN: I am sorry.

DR. DAVIES: It has been distributed to the local county Health Department, the local County Natural Disaster Coordinator, local police have received a copy, and some others. I don't recall specifically.

MR. ROISMAN: Right. Well, I am referring back to page 5 of your supplemental testimony. It says Notification of Appropriate Local Officials.

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DR. DAVIES: Yes.

MR. ROISMAN: Now what I am asking is do all appropriate local officials have copies or have you sent copies to all appropriate local officials of the specific operating procedures?

DR. DAVIES: No, not all local officials.

MR. ROISMAN: And do you intend to or is it just a matter that this document has come out relatively recently?

DR. DAVIES: Probably not. This notification referred to here of appropriate local officials might be based upon notification at the time of the accident and the specific information they should have or specific actions that they should take.

20

MR. ROISMAN: I understand. Okay.

Now, what about notification and advice to school and hospital authorities? Do they have any written document which describes the procedures which they are to take in the event they receive notification?

DR. DAVIES: We have not provided it to them.

MR. ROISMAN: What about, to your knowledge, has anybody provided it to them?

MR. DAVIES: We have provided to the State Education Department a copy of the plan. We have also provided within our own Health Department to the Bureau of Emergency Medical Services a copy of the plan, and we have discussed with them in detail in connection with certain notification, internal notifications that we should give.

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MR. ROISMAN: But to your knowledge, and I am not talking about the plan, I am talking about the specific operating procedure --

DR. DAVIES: Yes.

MR. ROISMAN: To your knowledge, the specific operating procedures are not in the hands of the school and hospital authorities who might be notified under Item 2 on Page 5 of your supplemental testimony?

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DR. DAVIES: That's right.

CHAIRMAN JENSCH: Excuse me for interrupting. Would this be a convenient place to take a ten-minute recess?

MR. ROISMAN: Yes, that will be fine.

CHAIRMAN JENSCH: At this time let's recess, and reconvene in this room at 12:25.

[Brief recess.]

CHAIRMAN JENSCH: Please come to order. Will you proceed in your interrogation?

MR. ROISMAN: Yes.

Now, Dr. Davies, with regard to Item No. 3 on Page 5 of your supplemental testimony, reference is made to public notice being given via radio, TV, et cetera, informing 10 the public of the situation and advising them. Now, are the persons who are going to be making those public notices, do they have written instructions as to what they should do in the event that they get a call from the emergency operating center advising them that it is appropriate to give public notice?

DR. DAVIES: No. Not the specific radio station or the specific newspaper. They have not received any prior words or instructions.

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MR. ROISMAN: As of the time they receive the notification will they be told the exact words to speak?

DR. DAVIES: Yes.

MR. ROISMAN: Have those words been written out or some tests run using simulated examples?

DR. DAVIES: I would give as a reference
Page 6 of this S.O.P., some words that are --

MR. ROISMAN: I will examine that and see if
I have further questions for you on that.

CHAIRMAN JENSCH: I don't understand his answer.
The question was -- may I have the last question?
[The pending question is read by the Reporter.]

CHAIRMAN JENSCH: Yes or no.

DR. DAVIES: Yes.

MR. ROISMAN: Now, with regard to Item No. 4 10
on Page 5, Notification of Dairy Farmers, have they been
given advance notice of the procedures which they are to
follow in the event that they receive a notification?

DR. DAVIES: No.

MR. ROISMAN: And when they receive their notifi-
cation how will that occur, by what methods will they be
notified?

DR. DAVIES: Could be by a number of different
mechanisms.

MR. ROISMAN: Could you list them, please? 20

DR. DAVIES: Yes.

It could be general release to the press, TV,
radio. It could be request for cooperation and assistance
from the county Agricultural Agent. Could be request for
support and assistance to the local County Health Department.

It could be very well be notification and request for assistance from the milk receiving or milk processing plant in the general area.

MR. ROISMAN: Now, each of those sources of information to the farmers, have they been given advance knowledge of what it is they should be communicating to the farmers to tell them what to do?

DR. DAVIES: No.

MR. ROISMAN: Can you tell me with regard again to the farm situation has an analysis been done to determine the extent to which non-pasture feed products are available for the feeding of cows in the event of an emergency? How much is normally stored? How long a period would it be available? Do all the farmers who might be within this twenty to thirty mile area have it? 10

DR. DAVIES: I had discussed this matter with veterinarians and also milk sanitarians in our department. That is the extent to which we have or I have discussed the matter.

MR. ROISMAN: Are you able to testify that all farmers within the twenty to thirty mile area around the Indian Point plant have a sufficient amount of non-pasture feed available for their stock in the event of an emergency? 20

DR. DAVIES: I cannot so testify.

MR. ROISMAN: On Pages 6 and 7 of your supplemental

testimony reference is made to tests that will be conducted on a continuous basis to monitor the radioactive releases in pastures and milk, various products. Can you tell me what are the consequences of the monitoring showing that the levels are above what the State Department of Health has set as safe levels? What actions would then be taken?

DR. DAVIES: Are you referring specifically to pages 6 and 7 of my testimony?

MR. ROELSMAN: Yes. Down at the bottom of the page, of page 6, it says, "Consequently one of the first actions taken by the state after receipt of notice that an accident has taken place would be to alert agencies with portable monitoring ability to marshal said forces and start taking measurements under direction of the State Health Department. These would include measurements not only of airborne activity, but would include evaluation of deposition on pasture on land surfaces, radiological analyses of lakes, reservoirs and water courses used as source of water supply. This would continue for some time, including milk monitoring and processing plants and/or farms for some period (weeks) thereafter." 10 20

Now, the question that I am asking is assuming that the monitoring shows that the level of radioactivity is higher than what the State Department of Health considers safe, what would happen then? Take them one at a time.

Pastures, land surfaces, lakes, reservoirs, water courses, milk.

DR. DAVIES: Let me just try and respond here.

If we have the major accident previously referred to we would take protective actions possibly before you get into the field and start some of this monitoring or evaluation. So that your question as to finding dangerous levels after you made these measurements, I am hopeful that we will take all actions necessary or that could be taken to minimize this exposure of the population. These actions 10 that we are speaking of here are to identify and in maybe some cases verify the levels of radioactivity in the environment.

If, for example, we have high levels of radioactivity on pasture land or land surfaces that would result in extremely high levels in milk, the action to take in this regard would be to prohibit the distribution of fluid milk.

If the deposition resulted in contamination of water surfaces or you have measurable activity in water supplies, you take some action with regards to intake of water, drinking from that supply. 6 20

MR. ROISMAN: Can you tell me what that might be in the drinking water case?

DR. DAVIES: Yes. Again we should be speaking of protective actions based upon a certain projected radiation exposure to the individual. But let's say it is likely that

we might exceed this projected exposure of the individual. It's quite conceivable that you would take a number of actions, advise maybe the public in this particular area not to use this water for drinking purposes, that you would depend upon maybe carbonated beverages. It's conceivable that milk tank trucks could distribute drinking water. There would be a number of mechanisms whereby --

MR. ROISMAN: Do you have specific plans to determine that there are sufficient alternative sources for liquid for the population in the event that the normal water supply had to be put off limits for purposes of drinking? 10

In other words, you mentioned that milk trucks might be used to deliver water and so forth. Is there a plan for that? Do you know where the milk trucks are, what cleaning might have to be done of the milk trucks, where the water that you will be distributing would be coming from? How it would be distributed to the public? That kind of thing. Is there a plan for this?

DR. DAVIES: Not specifically. 20

MR. ROISMAN: Nothing written down?

DR. DAVIES: Nothing written down.

MR. ROISMAN: Are there specific levels of activity which if they showed up in the water supply, the milk, the pastures, so forth, which triggered the Department

of Health's conclusion that that water or milk or what have you must not be consumed by humans?

DR. DAVIES: I might say that there have been discussions as to what levels would be considered as generally acceptable and not. For a drinking water supply, it would be our goal that the younger age group would not receive a projected dose to the thyroid probably in excess of .5 rem, if you looked at it for a whole year. And I think this is obtainable, generally speaking. But insofar as a drinking water supply is concerned --

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MR. ROISMAN: All right now. But in an emergency situation you have, we will assume, under these very worst conditions, radioactivity coming from the plant site, and it's airborne, and it falls into the main water supply for a town in this area.

Now, you have monitors who go out, and I assume, correct me if I am wrong in this, that the monitors are taking around all points. In other words, you are sampling generally in that reservoir to make sure of what the radioactivity level is in your sampling at the outlet, that is the place where the water begins to go towards the public.

20

Now, do you have a level, a specific amount of radioactivity that would show up in that water that would require the State -- if there are intermediate steps before it, tell me if there are levels for those -- that it would

require the State to take action with respect to the water supply, tell them to limit their use of it or prohibit their use of it?

DR. DAVIES: It's expected that we will be able to predict way in advance the anticipated levels that you might get in a drinking water supply. When I say way in advance, probably you could predict it maybe upwards of four or five days before you were able to physically measure this activity in the water supply.

CHAIRMAN JENSCH: Excuse me. I wonder if I could have that question read? I must have a different impression from it. 10

Would you read it, please?

[The pending question is read by the Reporter.]

CHAIRMAN JENSCH: The specific question is do you have a specific level that would activate these plans, yes or no?

DR. DAVIES: No.

CHAIRMAN JENSCH: Thank you. Will you proceed.

MR. ROISMAN: Yes, Mr. Chairman. 20

Dr. Davies, let me direct your attention to Page 7 of your testimony, and on that page the first full paragraph indicates that there are an estimate of fifteen professionals with equipment that would be available to do monitoring and assessment work. Can you tell me upon what

is that statement based?

DR. DAVIES: Personal knowledge.

MR. ROISMAN: Do you have a list of the professionals who have these monitoring devices?

DR. DAVIES: I have a list of professional people that are trained and experienced in radiation, and I also have information concerning portable instrumentation.

CHAIRMAN JENSCH: Excuse me for interrupting. I thought the question was are they available? I mean, a lot of people being qualified, but as I understand your statement on page 7, these people are available. 10

DR. DAVIES: Right.

CHAIRMAN JENSCH: Thank you. Proceed.

MR. ROISMAN: Are you testifying that there are fifteen portable devices in the State of New York that are in the control of the Department of Health for purposes of monitoring radioactive releases?

DR. DAVIES: Within the Department of Health, no.

MR. ROISMAN: Within other state agencies and the Department of Health? 20

DR. DAVIES: Yes.

MR. ROISMAN: And the number is fifteen? That is what I am trying to find out.

DR. DAVIES: Yes.

MR. ROISMAN: Now, how many would be available if there were at the same time another emergency involving radioactive releases somewhere in the State of New York, say, for instance, at the nuclear reprocessing plant?

DR. DAVIES: Is the question how many other state people or --

MR. ROISMAN: Well, people and monitoring devices. How many would be available if an incident or some sort of an emergency occurred at the Indian Point plant at the same time that monitoring was done with respect to some other kind of a nuclear or radiation incident elsewhere in the State? 10

DR. DAVIES: Well, you have extended it to beyond just state people, so that I would say you might at least --

MR. ROISMAN: No, sir, I didn't mean to. I meant your state, in the context of these fifteen.

DR. DAVIES: Because this refers to state sources alone.

MR. ROISMAN: Yes. That is what I am asking for. I am sorry. 20

DR. DAVIES: Probably if you had another serious emergency of this magnitude you'd probably have not over maybe three or four more in addition to the fifteen mentioned here, as a total now, for both emergencies.

MR. ROISMAN: Okay.

On Page 7 beginning about a third of the way down, you begin a discussion entitled Very Severe Accidents, and in that discussion, as I understand it, your emergency plan and your emergency procedures are designed to cope with radioactive releases from the plant which are equal to one-tenth of the 10-CFR part 100 standards, is that correct?

DR. DAVIES: Yes.

MR. ROISMAN: Do I understand you correctly 10
then that the State of New York does not have a plan or does not have detailed procedures for handling an accident in which the radioactive releases are as high as the most conservative design basis accident releases which have been calculated by the applicant and the Staff for purposes of this plan which are in the neighborhood of 200 or 250 rems as opposed to the 30 rems that the State of New York has planned more specifically?

DR. DAVIES: I don't believe the applicant has made estimates of off-site releases approaching the 10-CFR 100 20 magnitude.

MR. ROISMAN: Well, perhaps you are not familiar with all of the calculations.

CHAIRMAN JENSCH: Just assume it for the moment. Just assume it for the moment for the question. The question

is does New York State have a plan to handle such large rem exposures?

DR. DAVIES: Yes. Within the context of the plan that we have developed.

MR. ROISMAN: Well, now what I am asking is, if I understand this correctly, and let me direct your attention to some of the language, Page 8-A of your testimony, the first full paragraph, would you please read that paragraph into the record, the one beginning with the word "accordingly."

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DR. DAVIES: "According the State's program for response to emergencies includes pre-planned protective measures for limiting dose to 30 rem thyroid or less for major accidents having off-site consequences up to ten percent of the theoretical consequences of the design basis accident. The State's program also includes arrangements for bringing the State's large scale general emergency response capacity to bear in the event that actual conditions prevailing at the time of an accident were to indicate that such consequences would be exceeded."

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MR. ROISMAN: In regard to that second paragraph do we have, have you provided to us, or has it been introduced into evidence the detailed state large scale general emergency response?

DR. DAVIES: Yes. That I believe is in the

emergency plan that has been developed.

MR. ROISMAN: Can you tell me what the distinction is between -- or where I would find the distinction in that emergency plan between your program for response to emergencies which includes, and these are your words, "Preplanned protective measures with regard to accidents with ten percent of the 10 CFR part 100 level" and how that differs from the State's large scale general emergency response?

DR. DAVIES: If I might, Mr. Roisman, the preplanned activities are reflected in the specific operating procedures as to certain types of actions, preplanned actions that would be taken under certain conditions. 10

MR. ROISMAN: In other words, before you go on, I don't want you to testify today on the specific operating procedures. Are you telling me that if I read the specific operating procedures I will find in there the plan that New York State has to cope with emergencies that in fact have releases in excess of ten percent of the theoretical consequences for a design basis accident? 20

DR. DAVIES: No. You will find in there the preplanned activities for the ten percent.

MR. ROISMAN: Right.

DR. DAVIES: You will find reference in there to other actions, protective actions that might be taken

for anything greater than ten percent.

CHAIRMAN JENSCH: We have been talking about specific operating procedures. I don't think the document has been identified and I wonder who bears responsibility for this Specific Operating Procedures and can we get this introduced so we will have specific reference? Would that be helpful?

MR. RUPERT: Yes, Mr. Chairman. I distributed the document for the information of the parties. At this time have no intention of introducing that document into evidence. Maybe at a future time we will. If you would like I can have it just marked as an exhibit and not introduced into evidence, so that the Board would be aware of its existence. 10

CHAIRMAN JENSCH: You distributed it for our information because it was on the table here this morning.

MR. RUPERT: That's right.

CHAIRMAN JENSCH: Why is it you don't want to introduce it into evidence?

MR. RUPERT: Well, it is viewed as a document that would be used by the State to respond specifically to certain types of accidents. Mr. Davies and his staff would utilize the document in making their decisions. We don't really consider it the emergency plan, and for that reason we viewed it as internal. We also would not want to introduce 20

it at this time, because if the matter for introduction into evidence develops we would request that the telephone directory in the back be deleted for purposes of public record, as it refers to both home and business phone numbers that we certainly would like the parties to examine for their own information, but we don't think it would serve any purpose having it on the record, and with the possibility of nuisance calls or anything of this sort.

CHAIRMAN JENSCH: Well, maybe it would be well to -- if the parties don't have any objection we could take that part of it out. But you see, the gentleman on the witness stand has referred in part to this, and I think I'm having difficulty turning to the section and I wonder if you don't have any objection, let us mark this as New York Exhibit No. 5 for identification in order to assist our understanding of the testimony and have it introduced into evidence. Is that agreeable? 10

MR. RUPERT: Fine, Mr. Chairman. If the parties would have no objection if we removed the last sheet -- 20

CHAIRMAN JENSCH: Is there any objection to this offer or the removal of the last sheet from the document?

MR. RUPERT: I believe it's the last sheet. Two sheets, I'm sorry.

CHAIRMAN JENSCH: The last two sheets.

Very well. The document bears the title of Specific Operating Procedures, S.O.P. Indian Point Station, New York, and as I understand it this is prepared by the State of New York, the Atomic Energy Council.

MR. RUPERT: That is correct, your Honor.

CHAIRMAN JENSCH: And having thus been identified, but without the last two sheets.

MR. RUPERT: May I also make another correction, Mr. Chairman. I believe it is tabbed nine. It is an emergency directory of Westchester County. The copies we have distributed today do not have a copy of the emergency directory of Westchester County attached. We do not have enough copies to provide to all the parties. 10

CHAIRMAN JENSCH: That may not be necessary, but with those deletions, i.e., the last two sheets showing telephone directory, and then this Westchester directory to which you referred, is there any objection to the receipt in evidence of State of New York identified exhibit No. 5?

The Applicant?

MR. TROSTEN: No objection, Mr. Chairman. 20

CHAIRMAN JENSCH: Regulatory Staff?

MR. KARMAN: No objection.

CHAIRMAN JENSCH: Citizens Committee for the Protection of the environment?

MR. ROISMAN: Mr. Chairman, of course I haven't had an opportunity to examine it and I would like to have the witness just identify it for purposes of the evidentiary record, that this is the document which described the Specific Operating Procedures as developed by the Department of Health for the Indian Point plant. And then I have no objection, subject to our right for further cross-examination and striking as to irrelevancy, so forth, in the future.

CHAIRMAN JENSCH: Correct, Mr. Witness?

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DR. DAVIES: Yes, that is correct.

CHAIRMAN JENSCH: Very well, the State of New York Exhibit No. 5 is received in evidence.

[So received.]

CHAIRMAN JENSCH: What I had in mind, I think, Dr. Davies, in one of your last answers you referred to some phase of this specific operating procedures being identified in this now State of New York Exhibit No. 5, and what I had in mind is could you show us where in what is now State of New York Exhibit No. 5 that reference is con-
tained? Do you have the subject matter in mind?

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DR. DAVIES: Yes, I do.

CHAIRMAN JENSCH: Will you proceed, please.

Thank you.

DR. DAVIES: The preplanned activities that you

referred to, I think it's covered on Page 1 under Procedures, and certain assumptions are made therein and reference is made on Page 4 to alert A. This is the preplanned activity.

CHAIRMAN JENSCH: Thank you very much. That was what I really had in mind. Thank you.

Excuse me for interrupting. Will you proceed, please?

MR. ROISMAN: Yes.

Dr. Davies, on the same subject would you identify then what portion of this document includes the non-preplanned activities that relate to dosages in excess of ten percent? 10

DR. DAVIES: The reference, page 3.

See, these are the assumptions that are made or the facts that may be known, and then reference is made on Page 9 to Alert C.

MR. ROISMAN: I can see some questions I have without this, but I'd like to study it and talk to you about it. 20

But let me just get clear, those activities where the releases are going to be in excess of the ten percent, is this the sum total of the written documentation for actions to be taken to cover that additional portion of the contingency?

DR. DAVIES: Yes. In addition to the emergency plan.

MR. ROISMAN: Yes. I understand that the emergency plan to some extent treats of the problem. If I understood your earlier answer in your testimony correctly, the emergency plan is really geared only to take care of that portion of the consequences that occur up to ten percent. That to the extent that some action has to be taken to cover that portion of the consequences that exceed ten percent, that is this Alert C and the procedures outlined in the specific operating 15 procedures and nothing else, is that correct?

DR. DAVIES: Yes, that is correct.

MR. ROISMAN: Okay.

Now, when you talk about the 30 rem dose, you are talking about a dose to the people living in the low population zone, is that correct?

In other words, your preplanned activities go to public notification and public action to be taken within what is known as the low population zone.

DR. DAVIES: Insofar as an inhalation dose is 20 concerned, that is correct.

MR. ROISMAN: Okay. Now, if you had a release of say 250 rem at the site boundary after two hours or after thirty days could you have doses outside the low population zone in excess of 30 rems?

DR. DAVIES: Inhalation dose?

MR. ROISMAN: Yes.

DR. DAVIES: Yes.

MR. ROISMAN: Now I take it that as we discussed at the beginning your desire to keep the exposure of the public as low as possible would then have to include some provision for the public beyond the low population zone in order to prevent them from having an inhalation dose in excess of 30 rem, is that correct?

DR. DAVIES: No, not completely true. You may -- 10 well, you would want to keep the radiation exposure lower than 30 rem, if you can.

MR. ROISMAN: All right. If the person is physically outdoors in an area beyond the low population zone and there is an off-site dose, if a person is say in the town of Peekskill, would that person have a lower dose if the person went inside and closed the doors?

DR. DAVIES: If the wind were blowing in that direction.

MR. ROISMAN: Yes.

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DR. DAVIES: And strictly from an inhalation dose, it is our opinion that that individual would receive much greater protection by moving indoors, closing windows and closing air conditioners, et cetera, for the period of time that that cloud might be passing in that direction.

MR. ROISMAN: Right. I understand.

DR. DAVIES: Now, equilibrium will be received within the residences probably within a matter of a few hours. But there would be at least an initial protection afforded by moving in the house.

MR. ROISMAN: Excuse me. I think the question was would the inhalation dose be less if he went inside. Can you give that a yes or no?

DR. DAVIES: The projected inhalation dose would be less.

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CHAIRMAN JENSCH: Very well.

Is this a convenient place to interrupt or do you have something further?

MR. ROISMAN: If I could have just a couple of minutes.

CHAIRMAN JENSCH: Proceed.

MR. ROISMAN: Now, the 30 rem dose, the one for which the preplanned activities have been installed, if I understand correctly would there be any warning to the public, say in Peekskill, if the wind were blowing in that direction? If your projections indicated that the dose in the low population zone would never exceed 30 rem would there be a warning given to the public outside the low population zone about going inside their homes, closing their windows and doors and so forth?

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DR. DAVIES: It could be.

MR. ROISMAN: No, no. I am asking does the plan provide for it specifically?

DR. DAVIES: It doesn't cover that specific question.

MR. ROISMAN: It doesn't cover the giving of notification to people outside the low population zone in cases where the dosage in the low population zone is no higher than 30 rems?

DR. DAVIES: Not specifically as you have outlined it. 10

MR. ROISMAN: Okay.

This would be a convenient spot, Mr. Chairman.

CHAIRMAN JENSCH: At this time we will recess and reconvene in this room this afternoon at 2:15.

[Luncheon recess.]

CHAIRMAN JENSCH: Please come to order.

Before we proceed I might state for the record what is obvious, that Dr. John Geyer is not sitting with us today nor tomorrow, if these proceedings extend that far. 20
His other commitments prevented his being here this week.

Dr. Davies has resumed the stand. Are you ready to proceed with further interrogation?

MR. ROISMAN: Yes, Mr. Chairman.

CHAIRMAN JENSCH: Proceed, please.

Before we proceed, however, let me inquire what arrangements have the parties considered amongst themselves to suggest the agenda for today and tomorrow and Friday?

MR. TROSTEN: Mr. Chairman, we are prepared, following the cross-examination of Dr. Davies, to present the answers which we now have available to questions the Board raised with us last week. And following that presentation which it's a little difficult for me to estimate just how long it will take, Mr. Chairman, we would then propose to discuss the schedule of the resumed hearing. 10

I have mentioned this briefly to Mr. Roisman and Mr. Karman and I believe we have agreement that this is the procedure that we should follow for the remainder of this session of the hearing.

CHAIRMAN JENSCH: Do you have your answers to the questions in writing?

MR. TROSTEN: No, sir. They are to be given orally today. We have not had an opportunity, Mr. Chairman, to prepare these in writing in the short time available. 20

CHAIRMAN JENSCH: Very well. Do you think we can complete them today?

MR. TROSTEN: I think we could.

CHAIRMAN JENSCH: If we run later tonight?

MR. TROSTEN: Yes, I think we will.

CHAIRMAN JENSCH: Thank you.

Will you proceed with your cross-examination?

MR. KARMAN: Mr. Chairman, may I inquire at this time with respect to Mr. Thompson who is present today, and of course we were prepared for Mr. Thompson to submit his direct testimony and subject himself to any cross-examination. Mr. Roisman has indicated that he is not prepared and will not be prepared at this session for cross-examination of Mr. Thompson and Dr. Davies on certain aspects of the State's claim.

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Now, Mr. Thompson has an important meeting scheduled in Washington tomorrow, and if he is not going to be needed at the end of today's session I would like to excuse him. That is, if we extend past today.

CHAIRMAN JENSCH: Well, is his testimony in prepared form?

MR. KARMAN: I have submitted it and you have a copy, Mr. Chairman.

CHAIRMAN JENSCH: We have. Well, we might give consideration if that be received. Get the direct evidence on the record. I don't want to overload our reporter, but based on previous experience with other representatives of the reporter group, we sometimes ask the reporter to stay on into the night, eight or nine o'clock, if it seems advisable, to try to make one long session, and if we can do that, why,

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maybe we can get some consideration of that matter later.

At this time let us proceed with cross-examination of Dr. Davies.

MR. ROISMAN: Yes, Dr. Davies.

Let me direct your attention to Page 10 of your supplemental testimony, and on that page reference is made in the second full paragraph to evacuation, if necessary, under certain conditions.

Can you tell me is there an evacuation plan for the low population zone surrounding the Indian Point reactor? 10

DR. DAVIES: Not specifically, no.

MR. ROISMAN: Is there an evacuation plan for the population beyond the low population zone?

DR. DAVIES: Not specifically, no. Not specifically in the plan.

MR. ROISMAN: Has any consideration been given to traffic routes in the event of the need for evacuation under a variety of traffic conditions: Rush hour, non-rush hour, good weather, bad weather, that kind of consideration, and would people who are handling the evacuation have available to them some analysis, you know, if such and such an avenue was blocked there are three alternatives, that kind of suggestion? 20

DR. DAVIES: Yes. That is referred to under

this Alert A.

MR. ROISMAN: What is referred to? The existence of alternative routes and an analysis of traffic routes?

DR. DAVIES: What is indicated under Alert A is the fact that some considerations have been given to traffic, access to the site, such things as emergencies, et cetera.

MR. ROISMAN: Is that written down someplace? I mean are the considerations written down, not the fact that 10 consideration has been given?

DR. DAVIES: No.

MR. ROISMAN: They are not written down anywhere?

DR. DAVIES: No.

CHAIRMAN JENSCH: I wonder if I can understand the question and the answer. As I understood the inquiry does the emergency plan include possible plans for handling of evacuation during varying traffic conditions, and is that reflected in the emergency plan, yes or no?

DR. DAVIES: I said not specifically, no. 20

MR. ROISMAN: Generally is it in there, and if so, how?

DR. DAVIES: It is reflected in this Alert A.

MR. ROISMAN: Would you point to the particular section?

DR. DAVIES: On Page 4 of the S.O.P.

CHAIRMAN JENSCH: Are you referring to Exhibit No. 5?

DR. DAVIES: I don't know the number, sir.

CHAIRMAN JENSCH: Specific Operating Procedure?

DR. DAVIES: Yes, sir, that's right.

MR. ROISMAN: Thank you.

Now, under A is this all of what is shown on A, on Page 4 of Exhibit No. 5, is that correct?

DR. DAVIES: Yes.

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CHAIRMAN JENSCH: Very well, thank you.

MR. ROISMAN: Let me just see if I have that clear. Your traffic patterns with regard to evscuation is what is listed in Paragraph A of Alert A on Page 4 of New York State's Specific Operating Procedures for the Indian Point Station, is that correct?

DR. DAVIES: If you could clarify for me what you mean by evacuation. I don't know.

MR. ROISMAN: Well, I am using your words as in your testimony as on Page 10, the second full paragraph, you 20 say, "Subsequent actions (including evacuation if necessary)." That is the evacuation I am talking about.

DR. DAVIES: It may be my mistake then in understanding the question. Might we go back to Page 7?

MR. ROISMAN: Seven of which document?

DR. DAVIES: Of the document of my supplementary testimony.

MR. ROISMAN: Yes.

DR. DAVIES: And the heading there is Very Severe Accidents.

MR. ROISMAN: Okay.

DR. DAVIES: And this refers to 10-CFR 100.

MR. ROISMAN: Yes.

DR. DAVIES: Now, you were asking questions in regards to traffic control evacuation, et cetera. The response I gave under the S.O.P. Alert A was ten percent of 10-CFR 100. This is the preplanned response, this Alert A.

MR. ROISMAN: Is there any evacuation plan under Alert A?

DR. DAVIES: Under Alert A no preplanned, no.

MR. ROISMAN: Is there any evacuation plan with regard to any nuclear contingency, with regard to the Indian Point plant?

DR. DAVIES: If I could refer you to S.O.P., that is the specific operating procedure, to Paragraph C on page 3, and I quote, "If there is reason to believe that the safeguards are not working effectively or that the containment is not holding, or if N.F.O. instruments of 2-hour site boundary dose are substantially more than 30 rad, then BRH would take certain actions." And then I refer to

Alert C and Alert C summarizes actions to be recommended to the Commissioner of Health. This is in connection with something that would be greater than ten percent of the design basis accident.

CHAIRMAN JENSCH: Where is the evacuation in Alert C?

DR. DAVIES: Reference to evacuation is Paragraph 4 on Page 9.

CHAIRMAN JENSCH: Thank you, sir.

MR. ROISMAN: Now can you tell me is there an evacuation plan? 10

DR. DAVIES: No, there is not.

MR. ROISMAN: Has there been any drills conducted, any tests conducted to determine traffic routes or traffic controls or briefing of the personnel who will be conducting the evacuation, or briefing of the public who will be the subject of evacuation with regard to any evacuation contingencies associated with the Indian Point plant?

DR. DAVIES: I believe there are a number of questions that you have set forth. 20

MR. ROISMAN: Yes.

DR. DAVIES: And is the question with respect to tests or drills related to evacuation?

MR. ROISMAN: Yes.

DR. DAVIES: No, there have been none.

MR. ROISMAN: In what manner would the public be advised of how to evacuate? In other words, whether to take personal belongings or not, whether to contact other members of the household who may not be at home, like a child on his or her way home from school at the time that evacuation was ordered, whether to go by car, whether to meet at a central point, travel by bus? How would that kind of information be given to the public and when would it be given, if at all?

DR. DAVIES: The question here relates to something more than we have developed in our preplan. 10

MR. ROISMAN: Well, you testified before there is no evacuation in the preplan.

DR. DAVIES: In the preplan, that's right.

MR. ROISMAN: So we are talking about evacuation, any kind of evacuation.

DR. DAVIES: Right.

MR. ROISMAN: Has any information been provided to the public with regard to what they would do in the event of an evacuation, and if not will information be provided to them, and if so when, by whom and what kind of information? 20

DR. DAVIES: No. There has been no information given to the public in connection with an evacuation. And it is likely that at the time or if an accident does occur that a number of actions would have to be considered, and

if it is under the very severe accident that is not planned, well, we have not developed preplans. We would request and receive the support of all the state agencies referred to in the accident plan here, which is substantial, to carry out whatever steps would be necessary.

MR. ROISMAN: Who would tell the public what to do?

DR. DAVIES: The responsibility under this plan rests with the Commissioner of Health to order protective actions, whatever they may be. In terms of implementing or carrying out such protective actions or such steps, Commissioner of Health would request and it's indicated would receive the support of the Natural Disaster Coordinating Agency, which is the State Department of Transportation, and they in turn would solicit and request whatever support is needed from County Natural Disaster Agencies, local Health, full-time local Health Departments, and others. 10

MR. ROISMAN: Dr. Davies, who will tell the public in the event of an evacuation what to do? Either give the name of the person or tell me what position he or she holds. 20

DR. DAVIES: On the State Emergency Plan, in State Emergency Plan for Major Radiation Accidents involving nuclear facilities on Page A-7.

MR. ROISMAN: Did you say 8-7?

DR. DAVIES: I am sorry. A, alphabet, 7.

The Commissioner of Health in the left-hand column is identified, and Item 24 reads, "Directs that protective action be taken and through Commissioner of Transportation assures containing coordination of federal, state and local agency staffs and resources to implement protective actions."

CHAIRMAN JENSCH: I wonder if we could go back to question who will inform the public in the area of the Indian Point Plan, the Governor?

DR. DAVIES: I guess I don't understand the question here. 10

MR. ROISMAN: If the public is going to be evacuated, if that contingency arises, you indicated here it could arise, they have to be told to leave, they won't go on their own that they should leave, who is going to tell them?

DR. DAVIES: I guess when you get down to the local situation and based upon this plan that has been developed it would be through the local county Natural Disaster Coordinator, State Police, local police, which is implementing the implementation or directive made by the Commissioner of Health. 20

MR. ROISMAN: Has any specific individual or position been identified as the one who is responsible for telling the people, that is for making the communication directly to individuals living in homes where evacuation is

to occur?

DR. DAVIES: No.

MR. RUPERT: Mr. Chairman, may I refresh the witness' memory on this question?

CHAIRMAN JENSCH: You can after the interrogation. Let it go ahead this way.

MR. RUPERT: Okay, fine.

CHAIRMAN JENSCH: It will be a lot better.

MR. ROISMAN: Have any steps been taken to provide guidelines or procedures to be used by the persons supervising the evacuation to tell them how to do an evacuation, that is, what does one do first, what is done second, what information do you give to the public, what do you do with various contingent situations that might arise? 10

DR. DAVIES: I have not personally been directly associated with the agencies, either state or local, that would implement and carry out this protective action.

MR. ROISMAN: Has anyone from your office?

DR. DAVIES: No.

MR. ROISMAN: Has anybody? 20

DR. DAVIES: There have been discussions with the planning group in the former office of Civil Defense which is now located in the Department of Transportation, and those people have indicated that resources are available for receipt of people that might be temporarily relocated.

I am familiar generally with some locations, such as armories, that would be available for utilization for receipt of such people.

MR. ROISMAN: Well, I was going to ask that next. What about the armories and medical facilities and places for relocation of these people? Have they been charted out? Are those precise locations known or are those locations and charts in the hands of the people who will be responsible for evacuation?

DR. DAVIES: I have here a listing, and this was 10 provided by people in Civil Defense, of armories and shelters in the vicinity of Buchanan, listing the specific location, the spaces, and the numbers that are stocked with supplies.

MR. ROISMAN: Does your list demonstrate or indicate at what times those armories and facilities are open and if they are open how one would go about getting access to them? Who are the responsible officials who have the keys and control of the facility?

DR. DAVIES: The list does not show the times that they would be open or not open. The Appendix B-10 to 20 the State Emergency Plan indicates the procedures under which request can be made for assistance to the Division of Military and Naval Affairs. At the bottom of that is listed personnel to be contacted on a 24-hour basis by calling.

MR. ROISMAN: Is that a state-wide official?

Where it says personnel to be contacted, gives a number.

DR. DAVIES: Yes, it is.

MR. ROISMAN: Do you know how long it would take that official to contact the individuals who are responsible for the specific armories in question? Do you know if arrangements had been made for getting someone over to open those armories or to make sure that if there are facilities inside they are needed in the event of a radiation emergency, that they are readily available and their location is identifiable to the people who are coming to the facility? 10

DR. DAVIES: I do not know how long it would take.

MR. RUPERT: Mr. Chairman, may I interrupt again. The State Atomic Energy Council has another witness here that has attempted to coordinate in lot of this detailed material that Mr. Roisman is inquiring into, and may I suggest that possibly he might be of some assistance to Mr. Davies in regard to some of these questions.

CHAIRMAN JENSCH: Well, let's proceed with Mr. Davies' information and then have additional information, to be sure. But I presume Dr. Davies is in charge of this entire program, is he? 20

MR. RUPERT: Well, Mr. Davies would be responsible for the decisions that would have to be made within the

Department of Health, but he is not familiar with many of the specific locations of facilities, supply and so on and so forth that the other witnesses in the State would be.

The witness that we do have has attempted to check into many of these areas and he would be in a better position to answer some of these questions.

CHAIRMAN JENSCH: Well, thank you. Let us see what Dr. Davies has in mind for describing the plan and what information is available to him so that we will know what decisions he can make in case this other witness 10 whom you referred to has to be available to him at the time decisions had to be made.

MR. RUPERT: All right, fine.

MR. ROISMAN: Let me just say, Mr. Chairman, that my concern here is with whether the witness can identify the place where this information is written down and would be available in the event of an emergency, rather than having a witness tell me in which specific armory radiation facilities exist and where they are located, who has the key. I just want to know if someone knows that and if so 20 they have written it down someplace so it would be available when it was needed.

CHAIRMAN JENSCH: Proceed.

MR. ROISMAN: Mr. Davies, going on then with this, on page 10 of your supplemental testimony you referred

to temporary shelters, armories, emergency medical assistance, primarily non-radiological first aid. And what I am trying to find out is what written material is available at this point, either in the hands of your department or the departments that you will be contacting, to identify specifically those armories and medical facilities, the personnel directly responsible for making them open to the public in the event of an emergency, the location of the emergency supplies within those facilities, and similar kind of detail.

Is that detail written down in some place, to your knowledge and available in the event of an emergency? 10

DR. DAVIES: Not totally, no.

MR. ROISMAN: What isn't written down, or if it would be easier what is written down?

DR. DAVIES: Well, what is written down is the actions, rather specific actions that would be taken for this, I will call it preplanned emergency plan, which is ten percent of the design base accident. Reference to Page 10 and the subsequent actions that I have referred to in my prior testimony have to do with the very severe accident which has not been preplanned. 20

Now, there is pointed out here a number of different types of responses that might be considered or might be taken at the specific time based upon the specific conditions.

MR. ROISMAN: In the event if evacuation were required, how long a time from when determination is made that evacuation is required would it take in your opinion to have evacuation completed?

DR. DAVIES: I am not certain that evacuation is required.

MR. ROISMAN: I understand. You have in your testimony the words "if necessary." I am now asking you assuming that it is necessary how long would it take? Let's talk about the low population zone first and then going beyond that. 10

DR. DAVIES: Well, in the low population zone there are something like 62 to 70 people I believe. Certain assumptions would have to be made. If they had their own transportation or if they don't. If they do, this is one condition. If they don't, there are mechanisms for obtaining such things as school buses, public transportation. These resources would be available through the State Education Department, through maybe local school officials. The Westchester County plan, I believe, identifies and their emergency directory includes some transportation, public transportation facilities, so that for the low population zone, 62 to 70 people, it would only be an estimate on my part as to -- 20

MR. ROISMAN: You mean there was no analysis that

has been done?

DR. DAVIES: No analysis has been done to my knowledge.

MR. ROISMAN: What about for people outside the low population zone? Has any analysis been done as to how long they would take to evacuate people say two miles, one mile from the plant boundary?

DR. DAVIES: No.

MR. ROISMAN: Can you tell me why the State of New York does not --

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CHAIRMAN JENSCH: Why don't we take the question as you have now propounded it and get his answer before we proceed? Do you have the last question in mind? Why doesn't the Reporter read it. Something about have you had an analysis made of the timing necessary to evacuate within a two-mile or one-mile area beyond the property line?

DR. DAVIES: I think I responded to that no.

CHAIRMAN JENSCH: All right. Next question please.

MR. ROISMAN: With regard to the evacuation of the public and with regard to protective measures that the public might take other than evacuation, it's my understanding that the New York State Plan does not provide information being disseminated to the public generally before any emergency occurs, that the information disseminated to the public about protective actions they might take or procedures to use in the

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event of an emergency will occur only after the emergency arises and then will be communicated by the various means that we have discussed before. Is that correct? Am I right in restating that?

DR. DAVIES: I think that this is generally correct, yes.

MR. ROISMAN: Can you tell me why the State of New York has decided not to inform the public in advance of various measures that they might take?

DR. DAVIES: Yes.

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MR. ROISMAN: Okay. Would you please?

DR. DAVIES: But I think first of all we have to outline the parameters we are speaking of. What type accident are we addressing ourselves to?

MR. ROISMAN: Well, let's start with --

DR. DAVIES: If we knew that then I think you could proceed to develop it.

MR. ROISMAN: Let's start with one that's within the ten percent figure and then one that's in excess of it.

DR. DAVIES: It's within the ten percent, let's 20 say it's less than one percent, in all likelihood you would not have any specific action that would be taken or that you would want the public to take.

MR. ROISMAN: Excuse me. I think you misunderstood my question. Where the conditions warrant specific action

being taken by the public, why does the State not advise the public in advance before emergencies arise of what specific actions they would have to take?

DR. DAVIES: Well, there are a number of varied actions that you would take under varied conditions.

MR. ROISMAN: Yes.

MR. DAVIES: And if we might go back to the less than one percent of the design basis accident from the standpoint of an inhalation dose you may not want the public to do anything. Yet you may have the contamination of pastureland, whereby some steps should be taken. That may not even occur. So that you may have varied types of responses or varied types of protective actions that should be taken. 10

If it's up to ten percent, if it's assumed that it's ten percent, then we, in this analysis that we have made we feel that there are very specific steps that should be taken to minimize off-site exposure of the population.

MR. ROISMAN: Let me give you some examples, because you are not answering what I'm asking you. It says in the emergency plans that New York State has developed that under certain conditions you might tell the public, "Go inside, close your windows." Okay? 20

DR. DAVIES: Yes.

MR. ROISMAN: Why don't you tell the public in advance that when somebody comes around and tells you, "It's time to go inside and close your windows," something that shows them exactly what it is that they should do, for instance, that they should cut off ventilation systems. Maybe a little public check-list that the person might have in his hand to know that if he gets one of those notifications on the radio or from a bullhorn that they would go inside their house and they would know what to do. They would close the damper on the chimney or whatever the 10 steps are. Why isn't that information provided to the public in advance?

DR. DAVIES: Because that may not be the action that's indicated.

MR. ROISMAN: The question was assuming that the man on the bullhorn tells them.

DR. DAVIES: Yes.

MR. ROISMAN: That you are to go inside and close up your house, why are they not informed of all the details of how one goes about closing up their house so that they 20 will know what to do precisely?

Are you telling me that in some cases the instruction would be close the windows on the north side of the house but don't close them on the south?

DR. DAVIES: It may very well be that you'd

close them -- the population that lives just northeast of the site, that this would be the primary area of concern, that the population living southwest, the wind is not blowing in that direction.

MR. ROISMAN: No. But I am saying the people who are living in a certain area have to be informed that they should do something. Now, if they are living in a direction in which the radioactivity is blowing a protective action is one that's indicated here in the emergency plan, namely, that they should be told to go into their houses and close their windows, why are they not given information in advance before an emergency arises telling them exactly what to do? 10

DR. DAVIES: Well, I guess in answer to your question I would say yes. If this accident is going to occur under these exact conditions.

MR. ROISMAN: My question wasn't a yes-no question. The question was why aren't they given information in advance?

DR. DAVIES: Because of the multiplicity of different types of conditions that could exist at the time of the accident. 20

MR. ROISMAN: In your previous testimony, Mr. Davies, you have indicated as far as I can tell that there are only two things that the public can do unrelated to the

question of consumption of products. They can go inside and close up their houses or they can be evacuated. Now, can you explain to me where all the nuances come in?

You mean people are told -- you would tell them to close up their house but only to close up part of it under one condition and part of it under another, or would you tell them to close it up and if they were told to close it up it would mean close up the house as tight as you can make it and stay inside until a certain event occurs, you get a telephone call, you get another notice from us, your television set tells you something? I can't understand all the nuances about closing up the house as you are talking about.

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DR. DAVIES: Well, may I try to explain? Maybe I can clear it up a little.

Let's assume that an accident does occur and the wind is blowing in a certain direction and that you assume that these are the conditions at the time the accident occurred with the release of a certain amount of radioactivity. It is conceivable that the greatest source of exposure to that population would be their trying to get out of the area by running back and forth and putting things in the car, versus going in rather calmly and closing windows and closing off air conditioners and just staying there until conceivably the wind changes and

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then you can make a different set of evaluations.

Now, to say that at the time the accident happened 66 or 70 people on Bleakley Avenue should be immediately evacuated may be the worst thing that could be done, because the wind may be blowing directly in that direction. By the time the people assembled things and went back and forth from their house they may receive a substantial exposure. So that to predetermine and say that "under these set of conditions you would do this and under that set of conditions you would do another thing," it's difficult. 10

MR. ROISMAN: I think you misunderstood what I was saying when I said under a certain set of conditions. I wasn't saying the public would have their own little monitoring devices and determine for themselves. But you indicated the public were then informed of what they should do by a bullhorn or a radio announcement or something like that.

DR. DAVIES: Yes.

MR. ROISMAN: When they are informed of it if we started talking about just closing up the normal three-bedroom house with window air conditioning units, that's not something that you can say, "Go in and close up your house." There are things that people ought to know, that people might forget about. The attic. Maybe the attic 20

has something that can be closed off. They have got an attic fan that's going. Maybe that's good, maybe that's bad. They have got a chimney. When they get a notice from the man with the bullhorn, "Go in your house and close up your house," the question I am asking you is why don't they have something passed out by the State of New York that tells them, "If you get that kind of notice on the bullhorn or from your radio, this is what you should do to close up your house"?

DR. DAVIES: Well, I thought in the preparation 10
and in the instructions to be given it's fairly straight-forward and simple. Now, the question you are raising, maybe it is the thing to do.

CHAIRMAN JENSCH: Excuse me for interrupting.
You mean you'd like to think it over a bit and decide whether that would be a proper course?

DR. DAVIES: I think it should be looked at.

CHAIRMAN JENSCH: You may proceed, please.

MR. ROISMAN: Now, with regard to evacuation 20
are there certain things other than the evacuation routes themselves which the public could be advised of in advance of an evacuation? For instance, if the public were concerned about valuables in their house, would they be safe or not, they might want to know or be interested to find out will the streets be controlled or should they take their valuables.

They might want to know, "Well, little Johnny is off at the grade school. Shall I wait until Johnny comes over before I evacuate?"

They may want to know whether they should try to go all in one car. You have got a lot of people who maybe there will be only a housewife at home in the afternoon. Should the housewives get together in one car and lock up their houses and leave? That kind of thing.

Now, as I understand it information like that also is not given in advance. Can you tell me why that kind 10 of information is not given in advance?

DR. DAVIES: Because the preplanned emergency response is based upon levels of release such that the evacuation that you speak of is not indicated.

MR. ROISMAN: But if you do have as a contingency the possibility of evacuation, in other words, it's not ruled out, you have not written in your plan that under no circumstances will there be an evacuation associated with the plan, in fact your testimony on page 10 says, "Subsequent actions including evacuation if necessary." 20

So that you recognize that there could be a need for evacuation, but it's your feeling that -- what I am trying to find out is why isn't the public advised if that event should occur? In other words, if a notice is given on the radio that it's time to evacuate, why doesn't the

public have something in their hand to tell them what steps they should take?

DR. DAVIES: Actually we have not developed in detail plans for a 10-CFR 100 accident, including many different types of actions.

MR. ROISMAN: When you say 10-CFR 100--

DR. DAVIES: Well, design basis accident.

MR. ROISMAN: You mean the State of New York does not have detailed plans to handle an emergency in the event of releases of radioactivity that would occur from the maximum credible accident at Indian Point No. 2? 10

DR. DAVIES: We do have detailed plans. We have these detailed plans covered in the documents that you have seen. We have not preplanned actions that would be taken for -- by preplanned the line of questioning you are asking in terms of evacuation, we have not preplanned that for the design basis accident. We have preplanned this based upon the 10 percent of this design base accident in detail. And I think this is reflected in my prior testimony. 20

MR. ROISMAN: Did the State of New York at one time have a plan, public plan under the Civil Defense Department for the use of a fallout shelter by the public in the event of nuclear bomb attack?

DR. DAVIES: I don't know.

MR. ROISMAN: You were not with the Department
say in the fifties.

DR. DAVIES: I was with the New York State
Health Department in the fifties, yes, but not with
Civil Defense.

MR. ROISMAN: So you don't know whether such a
plan existed then?

DR. DAVIES: Not in terms of details, no.

MR. ROISMAN: Do you know that there was some
kind of a plan for the use of fallout shelters by the public 10
in the event of nuclear attack?

DR. DAVIES: Generally, yes.

MR. ROISMAN: Just in your capacity as a
citizen, do you remember having received any information
regarding, well, first of all, how you would know whether
a nuclear attack was occurring, and, secondly, in general
what kind of steps you as a citizen would take? For
instance, you as an employee at the State Building in Albany,
did you get information with regard to that?

DR. DAVIES: Yes. 20

MR. ROISMAN: Is that information still being
given to people generally?

DR. DAVIES: I guess the most current information
I have goes back a few years and the information is that you
would utilize fallout shelters as available.

MR. ROISMAN: Were those fallout shelters marked, identified?

DR. DAVIES: Generally, yes.

MR. ROISMAN: What about for students at schools? To your knowledge, were there procedures set up for students to take certain action if they were in schools with regard to a nuclear bomb attack?

DR. DAVIES: I recall the last drill or test exercise of some eight, ten years ago, yes.

MR. ROISMAN: There were actual drills that were 10 conducted?

DR. DAVIES: I believe so, because my boy participated in some type of activity.

MR. ROISMAN: To your knowledge, were there drills conducted in large areas? Did New York City ever have drills or did Albany ever have drills to see how quickly people would get off the street and go to fallout shelters, that kind of thing?

DR. DAVIES: I don't know. I don't know what they had in New York City.

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MR. ROISMAN: How about Albany? Is that where you have been?

DR. DAVIES: That's where I have lived, but I don't recall any drills to see how quickly people would get off the streets.

MR. ROISMAN: You mean as far as you know the drills that were conducted were conducted within schools as opposed to for the general public?

DR. DAVIES: Generally instructed organizations, yes.

MR. ROISMAN: Is there someone in your department who might be familiar with that?

DR. DAVIES: Yes.

MR. ROISMAN: Do you think it would be possible to provide us just some written statement that would indicate 10 what kind of drills, if any, were conducted for the general public with regard to the use of fallout shelters in the event of nuclear bomb attack?

MR. RUPERT: Mr. Chairman, I don't think we are really getting anywhere. Dr. Davies is with the Department of Health and he is not intimately familiar with the procedures that are the responsibility of the Office of National Disaster and Civil Defense. As a result, as far as what drills in regard to fallout back in the late fifties and the early sixties were made and other information that would be the 20 responsibility of civil defense, he is not intimately capable of answering those type of questions.

CHAIRMAN JENSCH: Well, I think what you are saying is that you want him to say, "I don't know," when he doesn't know. Maybe that's the way to handle it, unless you

put on another witness.

MR. RUPERT: We had one witness here, Mr. Chairman.

CHAIRMAN JENSCH: We will take that matter up later. But if the witness doesn't know, just tell him he doesn't have to guess on an answer, and we will go on a little faster.

MR. RUPERT: All right, fine.

CHAIRMAN JENSCH: We will proceed, please.

MR. ROISMAN: Yes, Mr. Chairman. I was merely 10 asking if he thought it would be possible to get us that information.

CHAIRMAN JENSCH: Maybe he doesn't know.

DR. DAVIES: I don't know.

MR. ROISMAN: Oh, thank you.

CHAIRMAN JENSCH: Very well. Let's proceed.

MR. ROISMAN: On page 10 of your supplemental testimony, Mr. Davies, in the third full paragraph, the second line, the words "approach part 100 values" appear. You say^a in the event of a hypothetical accident where 20 off-site consequences approach part 100 values, it is estimated that from time of notification of the warning horn until the time full emergency plant operations are established and a public warning is issued it should take from 45 minutes to one hour between working hours or from

two to three hours during nonworking hours."

Now, is the accident that you are referring to in that particular place an accident where the releases are in excess of the ten percent figure?

DR. DAVIES: Yes.

MR. ROISMAN: Can you tell me how you were able to compute the time that would be involved? You testified earlier that for accidents where the release rate was in excess of ten percent you don't have any preplanned procedures.

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DR. DAVIES: I am sorry. Would you repeat that?

CHAIRMAN JENSCH: Let the reporter reread the question, please.

[The pending question is read by the reporter.]

DR. DAVIES: The time estimate referred to in this paragraph was based upon getting the resources that are referred to in the basic plan assembled, or their designees.

MR. ROISMAN: Do you want to go on with a further answer?

DR. DAVIES: Not really, but I might try and clarify a little bit here if I can.

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MR. ROISMAN: Let me ask a question. Maybe that will help your clarification.

Are you telling me that the time estimates there which involved actions will be identical, whether the releases at

the site are above or below this ten percent figure?

DR. DAVIES: They may not be identical, no.

MR. ROISMAN: Would they differ significantly?

DR. DAVIES: They might.

MR. ROISMAN: How then, if there are no preplanned procedures for the in excess of ten percent accident condition are you able to state that the time involved in carrying out these procedures will be a certain period maximum?

DR. DAVIES: Well, I think what is said here, 10
there are two things in this paragraph. One is that until -- one is, "Until the time full emergency command operations are established and a public warning is issued--"

MR. ROISMAN: Yes.

DR. DAVIES: Now, that's the time relationship referred to there.

MR. ROISMAN: But that's what I'm asking you. Are full emergency command operations and public warnings substantially identical whether the releases are ten percent, six percent or eighty percent of the 10-CFR part 100 limits? 20

DR. DAVIES: Yes. If it is the 10 percent as we have referred to on the S.O.P. would pretty much take effect upon reporting to the Commissioner or his deputy, and the response to take this action --

MR. ROISMAN: What if it's 25 percent?

DR. DAVIES: If it's 25, 50 percent, or much greater?

MR. ROISMAN: Yes.

DR. DAVIES: There is then a definite determination that must be made. I would offhand say that maybe one of the first things would be probably if the wind is blowing in a certain direction that the people would be advised just to move in the house.

MR. ROISMAN: I am talking about the time, time figures. How long it would take to get to the point of having warned the public and have full emergency command operations established? Would it take more time if you had releases of 25, 30, 40, 50 percent rather than the ten percent or less? 10

DR. DAVIES: No. I guess what we had better identify here is that here is the situation that we have not preplanned, that has not been preplanned in the accident response capability. It is some order of magnitude greater. There may be very specific actions that are indicated or must be taken, but you do it with full knowledge of the data that is available to you, the evaluation that you will make, and all we say here is that in order to get the nucleus of the organization, to make some of these determinations, and by the time you get at least an indication of a public response as to actions taken, the time estimate here is from 20

45 minutes to an hour or two to three hours for nonworking times.

MR. ROISMAN: And that defines whether the releases are 25 or 30 percent or 10 percent?

DR. DAVIES: No. If it is 10 percent or less or if it is ten percent, this design basis accident that we are speaking of, there is a procedure here in which the Commissioner is advised and it would be recommended to issue Alert A. If Alert A is issued then there are very specific accidents that are identified in there. If it's 25 percent, if it's a hundred percent, we then move into Alert C, which is referred to on Page 9 of this S.O.P., which is much greater or could be much greater than what we have preplanned for. 10

MR. ROISMAN: Mr. Davies, on page 10 you have testified, you wrote it out in fact, that in the event of a hypothetical accident where the consequences of off-site dose approach part 100 values, that the total time involved from the time of the notification of the warning point until the full emergency command operations are established and the public warning is issued will be 45 minutes to an hour or two to three hours. I want to know how you were able to compute the time that will be involved in getting to that step with the case of radioactive releases approaching intensity of part 100 standards if you have accurately 20

8 testified before that the procedures used in that case are not preplanned? In other words, do more emergency command people have to come to the emergency command post? Is the nature of the warning that is given to the public substantially different? Does it take longer to decide what kind of warnings should be given to the public? If it does, then how does that enter into your conclusion that how long it is going to take?

DR. DAVIES: I think the key here is the fact that we have the accident that's much greater than you 10 planned for. You don't know how much greater it is, but it's greater. There may be actions much more -- let's say actions would have to be taken or protective steps would have to be taken and that this time estimate is based upon getting together those people that would be involved in this decision as to the accident and the magnitude of the problem and then to issue a public warning.

Now, I think it must be pointed out that actions should be taken to minimize dose to the population, and on the other hand the extent of the actions that must 20 be taken is quite dependent upon the data, the information you'd have and the resources that you can marshal and would have available to you.

All I have indicated here is the time estimate or getting this group of people together and for then

issuing some type of a public warning.

MR. ROISMAN: Well, Mr. Davies, you will be back on another day and maybe we will go into it again.

Let me direct your attention, if I may, to the last paragraph on Page 10 where it states that the movement of people in the low population zone would have been undertaken before this time, about one-half to one hour after notification of the warning point. When you say movement of the people, do you mean evacuation?

DR. DAVIES: It could be, yes.

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MR. ROISMAN: All right.

DR. DAVIES: Yes.

CHAIRMAN JENSCH: Well, could be. What is it? We are trying to get your definition, I think.

DR. DAVIES: Well, this again is that very severe accident, greater than 10 percent of the DBA.

CHAIRMAN JENSCH: Yes.

DR. DAVIES: Depending upon meteorological conditions you might very well move people from that low population zone.

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CHAIRMAN JENSCH: Well, what did you mean when you wrote that sentence?

DR. DAVIES: The people would be moved from that low population zone.

CHAIRMAN JENSCH: i.e., an evacuation, correct?

DR. DAVIES: Yes.

CHAIRMAN JENSCH: Thank you.

MR. ROISMAN: Mr. Davies, you have indicated that no drills had been run to determine evacuation time. And that in fact the whole evacuation procedure has not been planned, that it falls into that category of evacuations which are unplanned. How did you compute your determination by saying by this two to three hour period maximum or by one to one and a half hours before the notification of the warning point all the people in the low population zone would have been moved? 10

DR. DAVIES: Again it's an estimate.

MR. ROISMAN: Based on what facts or studies or testimony?

DR. DAVIES: I have no tests.

MR. ROISMAN: Did you conduct the estimate yourself or was there someone on your staff?

DR. DAVIES: This has been discussed with members of my staff and also with members of the now -- well, the staff of the Department of Transportation that's assumed civil defense functions. 20

MR. ROISMAN: But you don't know what factors were taken into account in reaching that estimate?

DR. DAVIES: No.

MR. ROISMAN: For purposes of evacuation or for

purposes of telling people to move inside, close up their windows and so forth, are there specific standards that are to be applied to determine when evacuation must occur and when it need not occur, when people must be told to go inside and when they may not?

In other words, conditions which trigger that in terms of specific radiation monitoring results?

DR. DAVIES: No. If you are dependent upon specific radiation monitoring results you may already have received substantial exposure. Parts of this plan are intended to take action before some of this type of evaluation may be available. 10

Now, to answer the other part of your question, I would refer you to page 2 under 4) Objective.

MR. ROISMAN: Of what document is this?

DR. DAVIES: I am sorry. New York State Emergency Plan for Major Radiation Accidents involving Nuclear Facilities.

CHAIRMAN JENSCH: State of New York Exhibit No. 2? 20

DR. DAVIES: On Page 2, paragraph 4, it sets forth the objectives of the plan.

MR. ROISMAN: Yes, I understand it. We talked about the objectives earlier. But I am trying to find out if there are standards laid down to determine when certain

actions -- in other words, what conditions, what is the minimum condition that would exist and how would you determine -- you indicated to me that if you relied solely upon monitoring it might be too late. How do you determine when to order evacuation? What factors will enter into that decision?

DR. DAVIES: If we are to exceed from inhalation a 30 rad thyroid positive steps should be taken.

MR. ROISMAN: In other words, when your analyses of what the total radioactivity that could be inhaled by persons in certain locations indicate that that could exceed 30 rad, you then order evacuation of the people in the area that might be subjected to that dose, is that correct? 10

DR. DAVIES: Consideration would be given to evacuation.

MR. ROISMAN: What is the point at which it's certain that they would be evacuated or is there one?

DR. DAVIES: Well, I have difficulty here with the question because the word certain implies knowledge that I am not sure you have. 20

If you could explain to me the knowledge that you would have or the certainty I think I could respond better.

MR. ROISMAN: No. I want you to tell me how you

know when conditions exist that require evacuation?

For instance, let me give you an example.

The Atomic Energy Commission has said that if releases from a design basis accident from this plant would exceed 300 rems at the site boundary at the end of two hours, then the plant would be in violation of the AEC regulation and couldn't be given a license.

In other words, they have set a limit. They have said that is the limit. You may not exceed it.

Now, I want to know do you have anything, does the State of 10
New York have anything like that decided in advance to determine when there should be an evacuation and when an evacuation will be ordered?

DR. DAVIES: Yes. We do have a limit and we would use as the guide the Federal Radiation Council Reports No. I believe it's 5 and 7.

MR. ROISMAN: All right. And what is that limit?

DR. DAVIES: That limit for the thyroid is 30 rad.

MR. ROISMAN: All right.

You were doing an analysis of the consequences 20
of the accident and the consequences of the accident as you analyze them indicate that a certain group of people living in a certain location are going to receive an inhalation dose in excess of 30 rad, even if they stay inside. Does the New York State Emergency Plan provide that they will be

evacuated?

CHAIRMAN JENSCH: Can you answer that yes or no?

DR. DAVIES: A qualified yes.

CHAIRMAN JENSCH: Proceed and explain it. Where does it so provide?

DR. DAVIES: Qualification is that in our development of this plan our calculations indicate that the thyroid dose from inhalation would probably not exceed 30 rad.

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MR. ROISMAN: Well, the question is does the plan provide for evacuation when you reached or exceeded 30 rad? Yes or no. And where in the plan is it so provided if the answer is yes?

DR. DAVIES: In the S.O.P. it's provided for.

CHAIRMAN JENSCH: Are you talking about State of New York Exhibit No. 5?

DR. DAVIES: Yes, sir.

CHAIRMAN JENSCH: Will you proceed, please.

DR. DAVIES: Under Alert C, and that evacuation 20 would pretty much be related to the 30 rad dose referred to previously.

CHAIRMAN JENSCH: Well, pretty much is how close, how far, how near?

DR. DAVIES: Well --

CHAIRMAN JENSCH: Where does it say -- it says, "directing evacuation if necessary" under Alert C. The question is where is the specific standard, if you have one, for an evacuation?

Do you have a specific standard for an evacuation?

DR. DAVIES: No.

MR. ROISMAN: Mr. Davies, can I direct your attention to page 3 of that?

CHAIRMAN JENSCH: Are you going to a different subject? 10

MR. ROISMAN: No. It's the same.

CHAIRMAN JENSCH: I think this would be a convenient place to interrupt your examination for the reporter.

MR. ROISMAN: If I could just ask him one more question.

CHAIRMAN JENSCH: Proceed.

MR. ROISMAN: At least I think it's one more question. On page 3 of the S.O.P. for New York, that's State Exhibit 5, it says in subparagraph C on that page, "If there is reason to believe that the safeguards are not working effectively or that the containment is not holding or if NFO estimates of 2-hour site boundary dose are substantially more than 30 rad, BRH should," and one of them 20

is, "recommend the Commissioner institute alert C."

DR. DAVIES: Yes.

MR. ROISMAN: Now, the little footnote says after the words "substantially more than 30 rad" that this means some multiple of 30. Let me just see if I understand correctly, that multiple you mean two times, three times, four times 30 rad?

DR. DAVIES: Yes.

MR. ROISMAN: In other words, 50 rad would not be a condition under which Alert C would be recommended? 10

DR. DAVIES: No, that is not true. 50 rad would be some multiple that would be greater than 30 rad.

MR. ROISMAN: Well, that's what I was asking before. I mean you can multiply 30 rad times the number 1.0001 and will get something a little higher than 30 rad.

What do you mean when you say "this means some multiple of 30"?

DR. DAVIES: Probably in the range of 60 or above.

MR. ROISMAN: It's not a specific figure? 20

DR. DAVIES: No.

MR. ROISMAN: Thank you. We can adjourn here.

CHAIRMAN JENSCH: At this time let's recess till 3:45.

[Brief recess.]

CHAIRMAN JENSCH: Please come to order.

Dr. Davies has resumed the stand. You will proceed with your interrogation, please.

MR. ROISMAN: Yes, Mr. Chairman.

Let me ask you just a few more questions on the evacuation issue. On page 16 of your supplemental testimony there is an indication that you might, even under the preplanned situation, move people in a low population zone, that is even though the consequences from the release from the plant would not involve doses in excess of 30 rad. 10
Are there standards that have been established for when that evacuation might be determined or what factors will enter into the decision, assuming now that your calculations show that no dosage in the low population zone would exceed 30 rad?

I will direct your attention to the third paragraph.

DR. DAVIES: Yes. I think this would be quite dependent upon the professional judgment at the time of the accident. 20

MR. ROISMAN: Do you know what factors would enter into that judgment? In other words, is it a wind direction question or is it related more to how easy or difficult movement might be? In other words, in the middle of a cold, rainy night and that would be an influencing

factor? I am trying to find out what factors would go into that decision.

DR. DAVIES: This would be a definite consideration, because under that condition, a cold, rainy night, in all likelihood it would minimize the exposure. They would undoubtedly be in their residences and undoubtedly on a cold night keep windows closed.

MR. ROISMAN: You mean it would minimize their exposure if they were not evacuated?

DR. DAVIES: They would be better off to remain in their residence than to move. 10

MR. ROISMAN: So whether conditions are one of the factors that would enter into the decision as to whether to move them or not, even assuming the dosages were 30 rad or less?

DR. DAVIES: Meteorology has to be a factor, yes.

MR. ROISMAN: What about traffic conditions? Would that be a factor in deciding whether to order evacuation? 20

DR. DAVIES: If by this you mean a greater likelihood of death or disability from getting out into heavy traffic versus staying there, yes, it would have to --

MR. ROISMAN: No, I wasn't trying to mean anything. I was merely trying to find out, since apparently or at least

you indicate that the possibility still remains open that you would have evacuation of the public in a low population zone even when the dosage that they would receive in the low population zone is 30 rad or less. I am trying to find out what factors enter into it. One of them indicated is meteorological conditions. What about traffic conditions? Is that a factor that enters into it?

DR. DAVIES: Yes.

MR. ROISMAN: Do you know which way it comes? More traffic, don't move them, or traffic, don't move them? 10

DR. DAVIES: It would cut this way. And hopefully you would institute traffic control immediately under emergency conditions. But if you were to consider the movement of people for a man-rem savings, and there was considerable traffic, it's quite conceivable that sitting out in a car surrounded by a cloud containing some radioactive materials may result in more exposure than remaining where they were. They may move right into the path of a passing cloud. So that, yes, this would be a factor.

MR. ROISMAN: What will you do in the event 20 of people whom you tell to move if they don't want to move?

DR. DAVIES: We have discussed this, and at the present time it bears an indication that they should be temporarily relocated or evacuated, that all persuasion other than force should be attempted.

MR. ROISMAN: And if the person is not persuaded, then they would remain?

DR. DAVIES: Yes.

MR. ROISMAN: Would that apply equally to children and adults?

DR. DAVIES: I think it would apply to adults and the parents. That is persuasion to have them move setting forth the conditions and problems, et cetera.

MR. ROISMAN: Well, in other words, if the parent and child after all the persuasion said, "I am not going and neither is my two-year-old infant," you would not attempt to take the infant, even though the parent didn't want the infant to go? 10

DR. DAVIES: I would not urge upon anybody that is instituting this protective action to take forcible action.

MR. ROISMAN: Now, on pages 17 and 18 of your prepared testimony you discussed methods for communicating information to the public, including the use of bullhorns. Do you have any statistics indicating how many bullhorns are available in the vicinity of the Indian Point plant and who has the possession of them, that is, what public officials, police? 20

DR. DAVIES: I do not know the specific number. I do know that the State Police have bullhorns available.

MR. ROISMAN: What about the local police, the Peekskill or Buchanan Police?

DR. DAVIES: I do not know.

MR. ROISMAN: Do you know if those bullhorns -- or let me put it a different way. Does the Department of Health or anybody concerned with the radiation problems impose certain standards with regard to the bullhorns, that is, that they be maintained, that they have batteries, if they are battery-operated, that they have a certain range associated with them?

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In other words, are there conditions imposed so that you have full assurance that in the event their use is needed they will be ready and they will be the right kind?

DR. DAVIES: Yes. The inquiry I made in this regard with a representative of the Division of State Police is that, yes, they are battery-operated. They are tested weekly. They are used rather frequently in certain emergency response conditions that State Police run into, and that in addition that some of the State Police have amplifiers on State Police cars.

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MR. ROISMAN: Now, that information, is that also available with regard to the local non-State Police, Peekskill-Buchanan, so forth?

DR. DAVIES: I do not know.

MR. ROISMAN: What techniques are planned for reaching persons to give them warning either about staying indoors or to evacuate if they are in apartment buildings? Say it's late at night when people would normally be watching television or radio.

DR. DAVIES: The procedures other than the utilization of bullhorns or such devices might include direct knocking on doors of people, if there is a reasonable number in a localized area.

MR. ROISMAN: Well, like in an apartment building. You mean there are plans now that would call for a police officer going through an apartment building knocking on all the doors? 10

DR. DAVIES: I don't know of any apartment building in the low population zone.

MR. ROISMAN: What about the population zone in the area, assuming again this is the most severe accident conditions?

DR. DAVIES: We have not developed a response in this regard. 20

MR. ROISMAN: You indicate on the top of page 18 of your supplemental testimony "that there is no specific program of training in the subject of providing public notice or warnings, and it is not felt necessary to indicate the officials of the State Department of Health, Public Information Office, have adequate backgrounds and such training is felt unnecessary. Do you have that there? It's the very top paragraph on page 18.

DR. DAVIES: The response is that there are public information people in the State Department of Health who through their routine activities, and which would include emergency conditions, are advised by professional staff in the department, and they in turn prepare or communicate public releases, notices, et cetera, to the press. This is the response that I had indicated here. 10

MR. ROISMAN: Right. That those officials would not be the ones who would be making notice to the public by use of bullhorns or knocking on doors and so forth.

DR. DAVIES: No, they would not.

MR. ROISMAN: And those people who will be making the notice or the notifications in that manner, they do not have any special program of training for the manner in which to make those notices? For instance, in order to prevent a panic by misstating a situation or inadvertently stating it incorrectly? 20

DR. DAVIES: No. They have not received training.

MR. ROISMAN: On pages 19 and 20 of your supplemental testimony at the bottom of the page on a carrying over, page 19 and carrying over to the top of page 20 and through that page, you indicate that supplemental food supplies might be necessary in certain circumstances, but they are available through the use of Red Cross, U. S. Department of Agriculture and the like. Do you have specific standards of radiation or dosage or monitoring or calculations or something which you would use in order to determine when to actuates the use of Red Cross supplies or U.S. Department of Agriculture food supplies? 10

DR. DAVIES: If the total projected dose to the individual were 30 grams or more, some type of action would be indicated.

CHAIRMAN JENSCH: Some what? Excuse me.

DR. DAVIES: Some type of action would be indicated to reduce or minimize this dose. I would expect that with food, and because the contamination of food would be at a certain time during harvesting or particularly during the summer months, that the instructions would be not to utilize, if we had them, leafy green vegetables or produce from the individual's farm until the people have been so advised. 20

MR. ROISMAN: Would programs be set up to do monitoring in grocery stores, distribution points?

DR. DAVIES: Well, first of all the food and grocery stores, the canned goods, would not be contaminated.

MR. ROISMAN: I understand.

DR. DAVIES: Your bakery products would not be contaminated. Your dairy products--we have talked about that a little bit. The vegetables that may be produced locally and would enter the market would be the food of primary concern. And, yes, I would expect that we would attempt in our total monitoring and evaluation to make some analysis of measurements in such foods. 10

MR. ROISMAN: But you do not have a specific amount of radioactivity in that respect which would warn you in effect, "Confiscate it," or tell the public, "Do not eat it"?

DR. DAVIES: I have figures in terms of amount of ingested iodine 131, and the expected dose to the individual. If we have that data in terms of the amount of possible or suspected contamination of a food product, and you can relate this to dose, then you can make the determination what action you would take. 20

Now, let me back up again and say that with a general surveillance of the area of pasture and land surfaces with radiological instruments you can pretty well delineate

and define areas that might be contaminated and areas that may be of concern. This would be the intent.

CHAIRMAN JENSCH: May I have the question read, please.

[Pending question is read by the Reporter.]

CHAIRMAN JENSCH: Can you answer that yes or no?

DR. DAVIES: Yes, we do.

CHAIRMAN JENSCH: Thank you.

MR. ROISMAN: Let me give you some instances 10
and see how that might work in practice. Let's assume that your calculations indicate that the public living in the area one mile from the plant will receive a maximum dose directly from the releases from the plant of 20 rad, taking the precautionary measures that the state has warned be taken. Probably stay indoors and so forth. It's going to be about 20 rad.

Now, based upon that would you then have statistics available so that you could determine the amount of say milk or leafy vegetables or whatever the average 20 person might eat and be then able to figure out by measuring the milk and leafy vegetables and so forth that are available for this same population to assume whether or not you should put a limit on how much of that they should eat in order for them not to exceed this 30 rad figure that you indicated was

the maximum, that represents the maximum that you want to permit the public to be exposed to? Do you have a basis for making those kinds of calculations so that you can be sure that you do keep the public dose at 30 rads or less?

DR. DAVIES: Yes, I do.

MR. ROISMAN: And where are those statistics?

DR. DAVIES: You may find them as attachments in the form of graphs to the specific operating procedure.

MR. ROISMAN: All right. Well, as I said, we will come back to this specific operating procedure. 10

When we do that would you be prepared to just identify for me in here, indicate precisely where there is shown the amount of radioactivity which would be in milk, for instance, that would warrant, given the 20 rads that have been received by the public from the direct releases from the plant, that would warrant determining that they shouldn't be permitted to drink milk or only drink a glass a day or whatever your limits might be?

DR. DAVIES: Yes.

MR. ROISMAN: Okay. Thank you. 20

Now, may I direct your attention to the New York State Emergency Plan, and the copy that I am working with, which I had prepared prior to the hearing, is the old version, but as I understand it substantively we are still talking about the same thing. I will refer to it if possible by the paragraph number which I see at least before we get to the

appendix pages. The paragraphs are numbered consecutively, 1, 2, 3, 4 and so forth, rather than the page numbers, since they differ slightly.

Now, referring to paragraph 4 of the State Emergency Plan, in the second paragraph the statement is made, "Protective action to minimize radiation exposure shall be undertaken at the direction of the State Commissioner of Health if the projected absorbed dose is likely to exceed the protective action guide as defined in reports No. 5, No.7 of the Federal Radiation Council, et cetera.

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How do you make the determination whether the dose is likely to exceed?

DR. DAVIES: You actually have to evaluate all factors: inhalation as a potential source of exposure, ingestion would be the other source of exposure by food, water or milk, and the composite intake would represent a calculated projected dose to the individual.

MR. ROISMAN: All right. So in other words, whether it's likely to exceed or not will be based upon calculations made and inhalation and ingested dosages?

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DR. DAVIES: Yes.

MR. ROISMAN: And are they statistics that go into making those calculations on the inhalation dose based upon monitoring or upon projected or expected radioactive releases from a plant, given certain information that you get from the

applicant describing the nature of the accident to you?

DR. DAVIES: Our actions are based upon information from the applicant based upon projected offsite concentrations of radioactivity.

MR. ROISMAN: Do you know how those projected offsite concentrations are computed?

DR. DAVIES: Generally.

MR. ROISMAN: Where does the data come from? In other words, is it a formula such as appears in TID 14844, takes account of the breathing rate of the public and takes account of the diffusion factors and it takes account of meteorological conditions and all of the various factors that go into making up that formula which provides for the dosage at the site boundary? 10

DR. DAVIES: The basis for our estimates includes the TID 14844 as set forth in the safety analysis developed by Con Ed and contained in their reports. We also have utilized the information provided by the Atomic Energy Commission staff in their safety evaluation for Unit No. 2 in which they have made certain calculations. 20

MR. ROISMAN: Well, let me put it in a different way. The analyses in TID 14844 are those that have appeared in the staff safety evaluation of the FSAR. Assume that a certain amount of radioactivity would be released from the reactor vessel in the event of a design basis accident,

double-ended pipe break, and then they compute the leak rate for the containment and then they add in some non-variables: breathing rate and things like that. They come up with a computation of what the maximum release might be, assuming the worse kind of meteorological conditions and the like.

Now, do you get a figure from the applicant that says in effect, "We just had a design basis accident, double-ended pipe break, therefore the amount of radioactive releases at the site boundary computed under TID 14844 under very conservative assumptions is so many rem, and then you make computations, knowing that figure as to how much the public will be exposed and what kind of protective actions would be appropriate?" 10

DR. DAVIES: We already have that figure from the applicant.

MR. TROSTEN: Mr. Chairman, I am wondering if perhaps at this point the applicant should respond to Mr. Roisman's question, since his inquiry concerns the type of data that the applicant would provide to the state in the event of such an accident. 20

CHAIRMAN JENSCH: Let's see what he understands will be provided, because it may affect his own judgment on the matter. We will proceed. We will proceed in your cross-examination.

MR. ROISMAN: In other words, you know what statistics have been computed for purposes of the design basis accident, what the amount of radioactive releases would be at the site boundary, is that correct?

DR. DAVIES: Generally, yes. That is correct.

MR. ROISMAN: All right. Are those figures that the applicant computes for the design basis accident different than the site boundary doses that are computed by the staff, by the AEC staff?

DR. DAVIES: Yes.

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MR. ROISMAN: Which figures is it that you use in making your judgments on how much radioactivity is projected to be released?

DR. DAVIES: We used ten percent of the AEC's figure.

MR. ROISMAN: Ten percent of the AEC's figure?

DR. DAVIES: Yes.

MR. ROISMAN: Now, I understand that you used ten percent of the AEC figure for figuring out what your plans should be.

DR. DAVIES: Yes.

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MR. ROISMAN: How about when you are actually in a design basis accident situation? Do you take the AEC's projected figures and also take only ten percent of that or do you figure what the dosages will in fact be to the public?

DR. DAVIES: Well, we have taken the ten percent of the AEC's figure.

MR. ROISMAN: Yes. And you used it to decide how much emergency procedures you wanted to provide.

DR. DAVIES: Yes.

MR. ROISMAN: Now, when you are actually in a real accident situation you still reduce the AEC figure by this 90 percent?

DR. DAVIES: That is correct.

MR. ROISMAN: Do you have any statistics or figures that you are gathering during the course of the accident which would help you decide whether your assumptions about what the dosages to the public will be are accurate or inaccurate? In other words, is there a certain kind of monitoring that's going on at the site boundary or elsewhere that would help you verify--you have assumed that the amount that will actually be released is only ten percent of the worst projected by the AEC. How can you check that?

DR. DAVIES: The answer is yes. Many things would be done to check this level of release. One would be some time after the fact, it may be 24, 48 hours, but it would be thyroid check, measurement for the thyroid activity which could be done relatively quickly of selected people that may be --

MR. ROISMAN: That's right.

DR. DAVIES: Not all the populace.

MR. ROISMAN: You will analyze some people who for instance live in the low population zone, that kind of thing?

DR. DAVIES: Right. This is some time after the fact, but it's an evaluation you can make.

Secondly, there are some selective air samplers operating around the site in which the filters could be pulled off and measurements made for radioactivity.

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MR. ROISMAN: When would those be likely to occur, the air sampling?

DR. DAVIES: I am sorry.

MR. ROISMAN: When would the air sampling be done for you to check the figures?

DR. DAVIES: We do have some continuous air sampling around the site. I believe at least a couple are on the site. I'd have to check. But they operate continuously in the collection of a sample of air.

MR. ROISMAN: But when would the New York State people be looking at that information? I don't mean physically looking at it. Perhaps getting in touch with the applicant, saying, "Would you please tell us what the continuous monitoring of the air shows in terms of radioactivity at these sites?"

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When would that occur? Talking now from the time the accident initially occurs.

DR. DAVIES: Well, if the accident were to occur, and assuming that the cloud passed over the sampler, it may not, but if it did and you had been collecting the sample for a period of an hour or two, that sample could be removed and taken to the lab and immediately counted for iodine. So that you would have then information as to the amount of iodine that you collected in this air sampler.

MR. ROISMAN: Is it your understanding that 10
the earliest that New York State would have information on the continuous air sampling would be within an hour or two after the accident?

DR. DAVIES: No, I didn't mean to imply that.

MR. ROISMAN: Okay. What would be the earliest?

DR. DAVIES: You may not be able to get it.
The cloud may not pass over the air sampler.

MR. ROISMAN: I understand it.

DR. DAVIES: If I might just continue, I believe 20
the plan mentions aerial monitoring, which I think under satisfactory weather conditions, and we have talked with the health and safety laboratory of the Atomic Energy Commission, portable instrumentation could be placed aboard a helicopter and measurements made over land surfaces to detect radioactivity.

MR. ROISMAN: How soon would you expect--what would be the earliest that that sampling should begin?

DR. DAVIES: Possibly within six hours under reasonably average conditions.

MR. ROISMAN: I understand.

DR. DAVIES: You could have very poor weather and it may be 24 hours.

MR. ROISMAN: Yes, I follow.

I am concerned here at least for a few moments about how you handled the two-hour doses. As you know, the 10 10-CFR Part 100 standards talk about two-hour doses at the 520 meter distance, and then 30-day doses at the 100 meter distance. Now, you have testified that in figuring what the two-hour dose actually is at the site boundary you are assuming that it will be one-tenth of the worse calculated by the AEC, using its very conservative assumptions. I am trying to find out how you get information to verify that before the two hours are up and how you are able to take corrective action if it proves that the figure shouldn't have been ten percent but should have been 20 forty percent.

DR. DAVIES: You aren't going to be able to get that specific figure in two hours.

MR. ROISMAN: All right.

Let me direct your attention to paragraph 6 of

the State Emergency Plan. I am sorry, paragraph 7, entitled Public Information, subparagraph B. It says, "Specific information on recommended protective actions to reduce the exposure will be promptly disseminated to the affected public by the most expeditious means available."

It's on page 6.

DR. DAVIES: Yes, I have it, yes, sir.

MR. ROISMAN: Can you tell me what means are available other than the ones that we talked about? Is it television, radio, bullhorns, door-to-door knocking? 10
Are those the means that are available for getting the information to the public?

DR. DAVIES: Yes, primarily.

MR. ROISMAN: There is no firehouse warning, ringing of bells or whistles or something of that nature that would even--something that would tell the people, "Something has happened at the nuclear facility. Go in and turn on your radio to a preselected channel and you will find out what has happened and what you should be doing about it?" 20

DR. DAVIES: No.

MR. ROISMAN: Nothing of that sort.

And the State Emergency Plan--I am sorry I can't give you the cross page to your revised plan--but it's the page that's entitled Support Activities by the Executive

Department, Division of State Police, Under the Direction of
the State Commissioner of Health.

DR. DAVIES: Yes.

MR. ROISMAN: I believe it's page B-3.

DR. DAVIES: B-3, yes, sir.

MR. ROISMAN: Is that correct?

DR. DAVIES: Yes.

MR. ROISMAN: Now, have you some place in the documents that you have provided us with--have you got a detail of the actual number of State Police in the vicinity? 10 And where, for instance, something regarding their patrols, where the radio-equipped cars might be at a given time, or, you know, what the parameters of their patrol areas are and the like?

DR. DAVIES: No, not specifically.

MR. ROISMAN: Do you know if that information is available from the State Police, if they are able to say now, in advance, that if an accident occurs at 3 o'clock in the afternoon you would expect this many cars to be within ten miles, that many within thirty miles, assuming no unusual 20 conditions that would take police away from their assigned responsibilities?

DR. DAVIES: Yes, we have discussed with them these matters.

MR. ROISMAN: And it's your understanding that they

do have that data?

DR. DAVIES: Yes. They also--the discussions that I have had with them indicates the number of state police they have on duty available during off-duty hours and they have indicated--we have outlined the probable situation in regards to the accident and they have indicated that they are prepared to respond.

MR. ROISMAN: Well, what I am trying to find out is when the emergency is actually occurring, and I gather that the control over emergency procedures is taking place in the state emergency operation center, how will the state emergency operation center be able to keep track of where the resources of the State Police are at a given moment, and, for instance, if they get information that certain actions need to be taken involving the police will they be able to know by looking at a sort of an overall chart exactly what resources they have at given points and be able to move them, or will they have to in turn contact the State Police and say, "We don't know what you have available and where it may be, but if you have anybody available in this area, get them over to some other area." 10 20

DR. DAVIES: It's my understanding that the State Police has contact, radio communication, with their district officers. I do not know if they specifically have the location of each car or each trooper in the barracks or district office.

MR. ROISMAN: I am even trying to find out if the Emergency Operating Center in the event of an emergency would have that data available to it in the Center so that the--I take it that control for the allocation of resources comes initially from the Emergency Operating Center.

DR. DAVIES: We have been assured that the resources will be made available.

MR. ROISMAN: But it's your understanding that the Emergency Center won't know precisely where the resources are?

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DR. DAVIES: Any specific point in time, no.

MR. ROISMAN: Mr. Chairman, I think that completes my cross-examination of this witness at this time.

CHAIRMAN JENSCH: Well, if there is to be further cross-examination I guess we had better defer any further interrogation in that regard prior to completing this. I understand the staff has a witness who cannot be here tomorrow.

MR. KARMAN: Yes, Mr. Chairman.

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MR. TROSTEN: Mr. Chairman, I have just one question for the witness. May I present it?

CHAIRMAN JENSCH: Surely.

MR. TROSTEN: Mr. Davis, applicant has testified concerning the information that would be provided to the

state immediately following an accident. Is it correct that the State Health Department will use this information which would include calculated thyroid dose levels at various distances downwind in determining, in making its initial determination as to what, if any, protective actions were needed? In other words, would the actual estimates given to the State Health Department by the applicant be used in making this initial determination?

DR. DAVIES: Yes, it would.

MR. TROSTEN: Thank you.

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CHAIRMAN JENSCH: Would you apply a ten-percent factor on those doses? As I understood, you were going to use only ten percent of somebody's figures for some other determination. Would you likewise apply a ten-percent calculation for this information from the applicant?

DR. DAVIES: We have already done that in our SOP, sir.

CHAIRMAN JENSCH: Very well, thank you.

MR. TROSTEN: Mr. Chairman, I am not sure, but it seems to me in listening to the questions that there may be some confusion in the record as to just what this ten-percent factor was applied to, and I am just wondering if--

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CHAIRMAN JENSCH: Do you want to get the transcript to review it?

If that is agreeable you may have an opportunity

to defer your further examination till then.

MR. TROSTEN: All right, Mr. Chairman.

CHAIRMAN JENSCH: Very well. Thank you, Dr. Davies. And you are temporarily excused, subject to further recall,

By the way, I might ask you, when was this New York State emergency plan for major radiation accidents involving nuclear facilities which is now Exhibit State of New York No. 2 prepared, do you know? I notice it has the date of May 1971 on it.

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DR. DAVIES: This was the one that was revised in both April--during April and May.

MR. ROISMAN: I see. I was wondering why it wasn't exchanged among the parties here until what is it, today?

MR. RUPERT: Mr. Chairmen, we did not distribute the May copy of the emergency plan because basically the only difference between the May document and the February document is organizational changes. For instance, responsibilities that were previously delegated to the Civil Defense, Office of Civil Defense in the Executive Department, were assumed by the State Police of New York. And since it did not seem to be any material change in the document we waited until this morning to distribute it.

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CHAIRMAN JENSCH: Well, I understood you dis-

tributed it this morning, but what prevented you from distributing it before? Did you have any restrictions as to why you shouldn't exchange it?

MR. RUPERT: No. Only in the sense that we did not have enough copies available. But if there was any surprise on any of the parties it is my fault and I apologize, if the Board is concerned about it.

CHAIRMAN JENSCH: How about the State of New York Exhibit No. 5 which bears the date of June 30, 1971? Why wasn't this exchanged before today?

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MR. RUPERT: Then again there were copies that were not available until last week. I should have distributed that earlier, too, Mr. Chairman. I apologize for not doing so.

CHAIRMAN JENSCH: Well, if you have any more documents--

Do you have any more that you are going to exchange? We will receive them now if you have any.

MR. RUPERT: No, I don't.

CHAIRMAN JENSCH: Are you likely to have any more, do you know?

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MR. RUPERT: Well, it would depend upon whether Mr. Roisman would make any request. He did make a request regarding some of the notes, I believe, of Dr. Davies in regard to time sequence.

CHAIRMAN JENSCH: In regard to another request are you planning something like operating procedure stops, substitutions, some more substitutions?

DR. DAVIES: No, Mr. Chairman.

CHAIRMAN JENSCH: I thought that since we have been endeavoring to get an exchange of documents, and I realize that you are making a first appearance here, and I just wanted to express the request that you exchange it early in advance, because it does extend the time of the hearing. And we are anxious to avoid delays.

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Thank you, Dr. Davies. You are temporarily excused.

MR. ROISMAN: Mr. Chairman, may I just say on the documents, in the document that we filed when the hearings began last Tuesday we indicated in the proposed cross-examination with regard to this supplemental testimony several documents that we would want to receive, and it's my understanding that the State of New York has produced those or is perfectly willing to produce them. The only thing that I might request is if they would identify which document is in response to the specific question. For instance, I was just looking now on page 6 of that document that we filed, paragraph 8-H. We asked you to describe in detail and produce a copy of the "State Large Scale General Emergency Response Capacity."

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During the cross-examination today we had some difficulty in pinning down precisely what pages of the documents that we have appropriately have that title to them and if the State of New York merely tells in response to these specific requests for documents which document or portion thereof meets that, so we would be able to relate it back to the supplemental testimony of Dr. Davies, that would be helpful.

CHAIRMAN JENSCH: Would you be able to discuss that between you and the gentleman?

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MR. RUPERT: Yes, I will.

CHAIRMAN JENSCH: Very well.

In order to accommodate the staff, if there is no objection, would you call your next witness.

MR. KARMAN: I'd like to call Mr. Dudley Thompson.

CHAIRMAN JENSCH: Will you come forward and be sworn, please.

D U D L E Y T H O M P S O N, having been sworn,
testified as follows:

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MR. KARMAN: Mr. Thompson, will you please state your name, your employer and the position you hold with such.

MR. THOMPSON: Yes. My name is Dudley Thompson. I am employed by the United States Atomic Energy Commission as chief of the Operational Safety Branch in the Division of

Reactor Licensing.

MR. KARMAN: Did you prepare a statement of your professional qualifications for this hearing?

MR. THOMPSON: Yes, I did.

MR. KARMAN: Do you have any corrections or notations to such statement?

MR. THOMPSON: No, I do not.

MR. KARMAN: Is the statement of professional qualifications true to the best of your knowledge?

MR. THOMPSON: Yes, it is.

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MR. KARMAN: Do you adopt it as part of your testimony in this proceeding?

MR. THOMPSON: Yes, I do.

MR. KARMAN: Mr. Chairman, at this time I offer into evidence the statement of professional qualifications of Mr. Dudley Thompson and request that it be incorporated in the transcript as if read. It has been previously distributed to the Board and all the parties.

CHAIRMAN JENSCH: Any objection by the applicant?

MR. TROSTEN: No objection, Mr. Chairman.

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CHAIRMAN JENSCH: Citizen's find any objection?

MR. ROISMAN: No objection.

CHAIRMAN JENSCH: New York State Atomic Energy
counsel?

MR. RUPERT: No objection.

DUDLEY THOMPSON

PROFESSIONAL QUALIFICATIONS

OPERATIONAL SAFETY BRANCH

DIVISION OF REACTOR LICENSING

I am Chief of the Operational Safety Branch in the Division of Reactor Licensing. I am responsible for supervision of branch activities, which include development of appropriate guides for evaluation of operational aspects of reactor licensing with particular emphasis on adequacy of operating organizations and of administrative and procedural controls, including emergency planning.

I attended the United States Military Academy and received a B.S. degree in 1951. I received my masters' degree in E.E. with minors in physics and mathematics, from Purdue University in 1956.

From 1956 to 1960, I was an instructor, and later an assistant professor, in the Department of Electricity at West Point, where I instructed cadets in E.E. and nuclear physics.

In 1960, I resigned my Army commission and accepted a position as Group Leader, Reactor Operations at Brookhaven National Laboratory, where I had complete responsibility for operation of the Brookhaven Graphite Research Reactor and of the Medical Research Reactor. I also served as principal understudy to the Head of the Reactor Division, acting for him in his absence and assisting in the design, construction and operation of the High Flux Beam Reactor.

While at BNL, I served on several ad hoc committees for the purpose of management review and audit of operation of the BNL critical facility and the High Intensity Radiation Development Laboratory, and as Secretary of the Laboratory's Reactor and Critical Experiments Safety Committee.

In June, 1967, I accepted my present position with the Atomic Energy Commission.

I am Vice-Chairman-elect of the Reactor Operations Division of the American Nuclear Society and have served on the Executive Committee of that division for the past six years. I am a member of Subcommittee ANS-3 of the standards Committee of the American Nuclear Society, and a former Associate Editor of Nuclear Applications, a professional journal of the American Nuclear Society, and have served as a member of the society's Publications Committee. I am also a Senior Member of the Institute of Electrical and Electronics Engineers and of Tau Beta Pi and Eta Kappa Nu engineering honor societies.

CHAIRMAN JENSCH: I would suggest, however, that the request is granted, but could the witness, as did Dr. Davies, give a very brief summary of it so we may have it for the benefit of the public here?

MR. KARMAN: That will be fine. Would you please, Mr. Thompson.

MR. THOMPSON: In my position as chief of the Operational Safety Branch in the Division of Reactor Licensing I am responsible for supervision of branch activities, which include development of appropriate guides for evaluation 10 of operational aspects of reactor licensing, with particular emphasis on the adequacy of the operating organization and of administrative and procedural controls, including emergency planning.

I attended the United States Military Academy at West Point and received a Bachelor of Science degree in 1951. I received my Master's degree in electrical engineering with minors in physics and mathematics from Purdue University in 1956. From 1956 to 1960 I was an instructor and later an assistant professor in the department of 20 electricity at West Point where I instructed cadets in electrical engineering and nuclear physics.

In 1960 I resigned my army position and accepted a commission as group leader for reactor operation at Brookhaven National Laboratory where I had complete responsibility

for operation of the Brookhaven graphite research reactor and of the medical research reactor.

CHAIRMAN JENSCH: May I interrupt. Have you been in nuclear reactor activity generally since that time? Is that correct?

MR. THOMPSON: Yes, I have.

CHAIRMAN JENSCH: And you worked at Brookhaven Laboratory until you joined the Atomic Energy Commission?

MR. THOMPSON: And that was in 1967, yes, sir.

CHAIRMAN JENSCH: And you are a member of the Institute of Electrical and Electronics Engineers and Tau Beta Pi and Beta Kappa Nu, Engineering Honors Society, is that correct? 10

MR. THOMPSON: Yes, I am.

CHAIRMAN JENSCH: Is there any other thing that you want to add to this summary?

MR. THOMPSON: I think not, Mr. Chairman.

CHAIRMAN JENSCH: Thank you very much.

Will you proceed.

MR. KARMAN: Yes, sir. 20

Mr. Chairman, at this time I would like to offer into evidence a document entitled Extent of Advance Emergency Planning for Coping with Potential Accidents, a copy of which has been distributed to the Board and all the parties.

CHAIRMAN JENSCH: Is there any objection by

the applicant?

MR. TROSTEN: No objection, Mr. Chairman.

CHAIRMAN JENSCH: Citizen's Fund for the
Protection of the Environment?

MR. ROISMAN: No, but we would like to reserve
our right to cross-examine at another time. We received
it this morning, Mr. Chairman.

CHAIRMAN JENSCH: Very well.

New York State Atomic Energy counsel?

MR. RUPERT: No objection, Mr. Chairman.

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MR. KARMAN: I would like to at this time ask
Mr. Thompson--

CHAIRMAN JENSCH: Excuse me for a moment,
please.

The request is granted and the reporter is
directed to incorporate this statement identified by staff
counsel into the transcript. You have copies in sufficient
number to permit physical incorporation?

MR. KARMAN: I do, Mr. Chairman.

CHAIRMAN JENSCH: The reporter is directed to
physically incorporate within the transcript the statement
identified by staff counsel for which this witness takes
responsibility.

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Will you proceed.

MR. KARMAN: I was just going to at this time ask

Mr. Thompson whether he participated in the preparation of this particular document.

MR. THOMPSON: Yes, I did.

MR. KARMAN: Is this a copy of the document just identified which you have before you?

MR. THOMPSON: Yes, it is.

MR. KARMAN: Are there any corrections or additions in the document you wish to make?

MR. THOMPSON: No. I have none.

MR. KARMAN: Is the content of this document true and correct to the best of your knowledge? 10

MR. THOMPSON: It is.

MR. KARMAN: Do you adopt the document as your testimony in this proceeding?

MR. THOMPSON: Yes, I do.

MR. KARMAN: I have no further questions of this witness.

CHAIRMAN JENSCH: Very well.

Does anybody desire to interrogate at this time or make any clarification with respect to this document? 20
Applicant?

MR. TROSTEN: Mr. Chairman, I, too, have just received a copy of it today, so I'm not prepared at this time to interrogate the witness.

CHAIRMAN JENSCH: New York State Atomic Energy counsel?

MR. RUPERT: We only received a copy this morning, too, Mr. Chairman, so we are not prepared to cross-examine.

CHAIRMAN JENSCH: Does the Citizen's Fund desire to have any clarification at this time?

MR. ROISMAN: Not at this time, Mr. Chairman.

CHAIRMAN JENSCH: Well, let me inquire to see if I have the situation in mind with reference to your statement.

Does this statement that you have prepared, 10
Mr. Thompson, reflect a review of the matters set forth in the State of New York Exhibits No. 2 and 5?

MR. THOMPSON: No, Mr. Chairman, it does not include explicit evaluation of the New York State exhibits you cited.

CHAIRMAN JENSCH: Is it your intention to give reviews of those documents?

MR. THOMPSON: Not explicitly, no, sir.

CHAIRMAN JENSCH: Would that be within the range of your ordinary duties and functions? 20

MR. THOMPSON: No, sir, it would not.

CHAIRMAN JENSCH: I am just trying to understand the scope of your presentation, the extent of advance emergency planning for coping with potential accidents.

MR. THOMPSON: Mr. Chairman, I don't mean to be

unresponsive. I was trying to be as direct as possible in my answer. As the Board is aware, but perhaps spectators may not be, the Division of Reactor Licensing conducts evaluations of applicants' submittals. It does not conduct evaluations of state programs. We have no authority nor responsibility to do that in any formal manner. It is true that we have informal contact with representatives of various states to gain an awareness of the proposals that they are setting forth in meeting their responsibilities as governmental agencies. But in trying to give you a direct answer to your question perhaps I was a little bit misleading. We have not explicitly evaluated the New York State submittals in this record, and we have no official status with regard to our ability to review those. 10

CHAIRMAN JENSCH: Well, aside from any official capacity, are you in a position in the recess that we will have to give a review of those two documents, State of New York No. 2 and 5?

MR. KARMAN: Mr. Chairman, the witness--

CHAIRMAN JENSCH: You don't want to do it, is that correct? 20

MR. KARMAN: I didn't say that, Mr. Chairman.

CHAIRMAN JENSCH: Not yet.

MR. KARMAN: As the witness indicated, the Atomic Energy Commission has no review authority over the

State of New York. We certainly have looked at the plan and will continue to look at the plan and may have response to certain specific questions related thereto. But under no circumstances are we reviewing this plan for you.

CHAIRMAN JENSCH: Oh, I understand, but my point is this. As I understand it the applicant has indicated that if this incredible, unlikely, remote and probably not-to-occur incident does in fact arise, they will do some monitoring and have certain environmental activity going on and make some calculations and then as-- 10
I don't want to characterize this matter incorrectly, but they are going to call up somebody in the state, and good luck from there on. And I thought that there ought to be some review of how effectively the public will be protected if the applicant is going to turn the responsibility for evacuation and so forth over to the State of New York, and I thought maybe a gentleman with this background and the work that he does would at least be able to give us some comments on how well the public protection systems will be implemented, although we recognize it cannot be an official 20
review and there is no intention of the federal government to interfere with the state government activities.

MR. KARMAN: We certainly will endeavor, Mr. Chairman, to answer any pertinent questions to the best of our ability.

CHAIRMAN JENSCH: I hope they will all be pertinent. But if they are not I hope you won't regard them as impertinent.

MR. KARMAN: These are questions not necessarily only from the Board, Mr. Chairman.

MR. TROSTEN: Mr. Chairman, I will finally make an observation with respect to your remarks.

Of course the applicant's emergency plans have been prepared and submitted for review of the Atomic Energy Commission in compliance with Appendix E of 10-CFR Part 50 10 and other provisions of Part 50, and of course the overall emergency plan which does involve participation by state agencies in accordance with the Atomic Energy Commission's regulations is subject to review by the Division of Reactor Licensing, and has been reviewed by the Division of Reactor Licensing and I didn't interpret Mr. Karman's remarks as being inconsistent with what I have just said.

CHAIRMAN JENSCH: No. I think that this probably is somewhat related to I think the inquiries that were made of the applicant some time earlier now proceedings to this 20 effect: whether the applicant has any authority to assist or perhaps initiate evacuation, if that situation should be warranted, I do think that a statement that is contained within witness Thompson's presentation is something that might well be borne in mind on page 5 of this statement in

paragraph 6. He states that advance preparation clearly should include provisions for implementing protective measures for residents of low population zone. One cannot state with absolute certainty that accidents larger than the design basis accident as realistically calculated will not occur. However, such accidents are certainly exceedingly improbable, hoping that accidents that might call for resources beyond those covered by the developed advance emergency preparations might require the additional resources of state agencies and so forth do not occur, I inferred from 10 his presentation that since additional resources of state agencies might well be utilized that there would be some review of that program.

Now, I think that in one of our earlier cases I inquired whether the applicant intended to deputize any of its personnel, as for instance, the Florida Power & Light people had done, because lacking such personnel the applicant's employees might not be qualified or empowered to assist or initiate evacuation if that should occur. I think some of the evidence here may indicate a problem 20 about evacuation, and I just wonder whether if that were a responsibility of having applicant's employees deputized, whether that would be something within the review of what the staff could do, or whether this program that the state has proposed will take care of any requirements in that

regard.

And I think that all aspects of this whole matter, incredible as it may be, remote as it may be, or would ever be the probabilities of it, I think might be considered in the course that a review of what the emergency protection plans should be, and this gentleman as a witness from the regulatory staff of the Commission is in a position to speak objectively about these matters, and I think his opinions would be helpful to the consideration of the matter.

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He may also desire to review not only State of New York Exhibit No. 2 and State of New York Exhibit No. 5, but certainly the evidence given by Dr. Davies this morning and this afternoon and the calculations that he has made or indicated are available to him.

MR. KARMAN: You may rest assured that will be done, Mr. Chairman.

CHAIRMAN JENSCH: Very well. Thank you.

MR. THOMPSON: Mr. Chairman, I would just like to offer the comment that we were a little tardy, perhaps, in getting our testimony in this morning, so I think--

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CHAIRMAN JENSCH: Well, if you take that up it will save some time.

MR. THOMPSON: This is probably an opportunity to get even. If they can't look at mine till later I will

look at theirs later, but--because I got theirs this morning.

CHAIRMAN JENSCH: Certainly an opportunity will be given. As I understand, a recess may be required. If there is nothing further at this time we will--

DR. BRIGGS: Hold it.

CHAIRMAN JENSCH: Oh, excuse me.

DR. BRIGGS: Mr. Karman, does the AEC or the federal government have any responsibility or any authority to protect, I will say, the health of the public 10 in the event of an accident like this? In other words, do they have any responsibility for intervening or any authority to intervene?

MR. KARMAN: Intervene? The federal government will be ready to assist the local authorities in any matters.

DR. BRIGGS: Is this an assistance they provide or do they have a responsibility for taking care of the people and seeing that the proper procedures are provided?

MR. KARMAN: I am not quite sure I understand. At what stage of what problem, Mr. Briggs? 20

DR. BRIGGS: An accident has happened and iodine is floating out over the low population zone, and the other zones, and just what are the responsibilities of the Atomic Energy Commission and the federal government under these circumstances?

MR. KARMAN: I see my witness is anxious to answer that question, if possible.

CHAIRMAN JENSCH: Well, I think he is also asking for a legal interpretation.

DR. BRIGGS: Yes, I am.

CHAIRMAN JENSCH: But one or both can handle this, I suspect.

MR. THOMPSON: I will defer to you first.

MR. KARMAN: If you want to volunteer--

MR. THOMPSON: On legal?

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MR. KARMAN: No legal, please.

MR. THOMPSON: As you are aware, the Atomic Energy Commission radiological assistance plan has been in effect for a number of years throughout the United States. This is implemented by a number of radiological emergency assistance teams made up of both AEC employees and contractor employees at many different locations throughout the country, and it's administered by control points at a number of locations around the country. I believe there are some in my written testimony in this regard. But
20
from the practical point of view in the event of a major accident and the report to one of our radiological emergency assistance teams the individuals on those teams are dispatched immediately to the site of the accident or the incident to take whatever measures are appropriate to

cope with the situation. They are officially only an advisory group. However, in the minor instances of calling upon these teams in the past there has never really been a practical problem with dealing with the situation in the field.

Now, I commented to my counsel I would defer from commenting on the legal ground. But from a practical point of view this has been a very effective program.

DR. BRIGGS: Well, from the practical point of view if one had a really major accident and the AEC team said it thought one thing should be done and the State of New York Authority said they thought something different should be done, who decides what is to be done?

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MR. THOMPSON: I believe, assuming the incident of course was in the State of New York where they have authority, they would have to make the decision. Again, from a practical point of view we have never had a situation where, to my knowledge, the advice of one of the assistance teams has been contrary to the action that was contemplated by the individual having authority.

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DR. BRIGGS: Well, from the legal point of view, Mr. Karman, it's entirely New York State's responsibility, is that right?

MR. KARMAN: To the best of my knowledge, Mr.

Briggs. And of course this can be subject--I know of no authority for the Atomic Energy Commission to take over in such event to supersede the local authorities in this matter.

DR. BRIGGS: And they can and do provide a major amount of assistance.

MR. KARMAN: We provide a major amount of assistance, certainly to the fullest extent of the ability of the Commission so to do.

DR. BRIGGS: Thank you.

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CHAIRMAN JENSCH: If there is nothing further, thank you.

You do have something?

MR. ROISMAN: Well, I gather from when Mr. Briggs stopped you before we are on the verge of doing something, at least relatively final with respect to this. I wanted to find out if we are planning to go into sessions this evening to finish up or go tomorrow and if so what is to be covered? I have completed what I can do at this point and I am not sure whether I know what else is going to be done at this time.

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CHAIRMAN JENSCH: Well, at least we don't have anything further from Mr. Thompson.

MR. ROISMAN: No.

CHAIRMAN JENSCH: Thank you, Mr. Thompson. You

are temporarily excused, subject to further call.

As to the agenda, it is now five minutes to five. Applicant's counsel has indicated he has some data to present.

How long do you think that would take?

MR. TROSTEN: Well, Mr. Chairman, this sort of depends. I imagine we can finish in two hours or so. We have the answers to several questions that the Board raised with us last Friday. We are prepared to go forward. We are not prepared to go forward with the answers to all of the questions, but we are ready to go forward with most of these questions right now, Mr. Chairman. 10

CHAIRMAN JENSCH: What do you think of your typing up as many as you can tonight and incorporating, and then we will take some oral testimony in the morning for what balance you may have.

MR. TROSTEN: Mr. Chairman, I really think it would be rather difficult to put this in this evening in the form of written testimony. We could make an effort to do this, but I really think that we have prepared to respond orally and would prefer to do it in that fashion. That is the way the witnesses are prepared to respond to the Board, and the nature of the questions is such, also, Mr. Chairman, that I think it would be preferable if we handled this orally. 20

We can start tomorrow morning if you would prefer to do that, Mr. Chairman.

CHAIRMAN JENSCH: Well, let's try an hour tonight. Is that agreeable to the parties? Let's take a few minutes recess now and come back and take some of our oral testimony, then resume at 9 o'clock in the morning. Is that agreeable to the parties?

[Brief recess.]

CHAIRMAN JENSCH: Please come to order. Is the applicant ready to proceed?

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MR. TROSTEN: Yes, I am, Mr. Chairman.

CHAIRMAN JENSCH: Proceed, please.

MR. TROSTEN: First, Mr. Chairman, I'd like to call the Board's attention to a response which has been prepared by Mr. Cahill to a question raised by Mr. Roisman which appears on the transcript at page 1402, lines 15 to 19. Copies of this response have been given to the Board, the parties and the reporter, and I would like to offer this document in evidence as Mr. Cahill's response to Mr. Roisman's question, Mr. Cahill having been previously sworn. It's a continuation of Mr. Cahill's testimony.

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CHAIRMAN JENSCH: You ask that it be incorporated, is that right?

MR. TROSTEN: Yes. I would like to.

CHAIRMAN JENSCH: Is there any objection by the

regulatory staff?

MR. KARMAN: No objection.

CHAIRMAN JENSCH: Citizen's Fund?

MR. ROISMAN: No objection.

CHAIRMAN JENSCH: New York State?

MR. RUPERT: No objection.

CHAIRMAN JENSCH: It's granted. The reporter is directed to physically incorporate a copy in the transcript, this restatement of the question and the response by Mr. Cahill.

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Proceed.

MR. TROSTEN: Thank you, Mr. Chairman.

On page 1492 of the transcript the Chairman requested certain information from the applicant concerning the spray nozzle arrangement. Mr. Grob is prepared to respond with that information that you wanted, Mr. Chairman.

CHAIRMAN JENSCH: We wanted this nozzle. Can you give us the number of feet? Will that do it?

MR. GROB: I can, Mr. Chairman. It varies with the four headers.

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The uppermost header, the distance between nozzles on the header is five feet. The second header, the distance between the nozzles, approximately three feet. The fourth header down two and a half feet, and--excuse me. I think I have it in reverse order. Yes.

Five, three, two and three and a half feet for the four headers going down.

CHAIRMAN JENSCH: The second header is two feet?

MR. GROB: Between nozzles on that header.

CHAIRMAN JENSCH: And the third header?

MR. GROB: Third header is--the third header is two feet. The second header is three feet, going down the fourth header is three and a half feet.

Now, the headers are five feet in elevation apart from header to header. On the horizontal they are 10 seventeen feet apart, the uppermost header being of the smallest diameter, the lowest header being of the largest circular diameter.

Each alternate nozzle on each header--there are nine nozzles in the top header--is skewed forty-five degrees apart from the verticle. There are fifty-four nozzles in the second header going down. There are 144 nozzles in the third header going down, and there are 108 nozzles in the last header on the bottom.

CHAIRMAN JENSCH: Thank you. 20

MR. TROSTEN: On page 1664 of the transcript Mr. Briggs requested certain information on work being done to develop an in-service inspection device and the reports of in-service inspections. Mr. Grob will respond with that information.

CHAIRMAN JENSCH: Proceed. Maybe it would be better if you did take the stand. You can use the microphone. Thank you.

MR. GROB: There was a request for references referring to some of the tests which have been done and references to reports that describe some of the equipment. We have referencing to certain of the tests, which also these test reports describe the equipment to some degree also. There is the periodic inspection of Oskarshamsverket. I will give you a spelling later on that. Reactor vessel. 10

This is in Sweden, which is reported in the First International Conference on Pressure Vessel Technology held in Delft, the Netherlands, September 29th to October 2, 1969.

There is an in-service inspection of the San Onofre Nuclear Generating Station, Units 1, 2 and 3, which is reported in A.S.M.E. paper 70-WA/any-5.

There is another specific report entitled In-service Inspection of Nuclear Reactor Vessels Using an Inspection Technique by Electric Resistance Probe reported 20 in Japan. This is reported in the First International Conference on Pressure Vessel Technology in Delft, the Netherlands, same date as before.

There are reports on inspection technique

developments. One is In-service Inspection of Nuclear Reactor Vessels Using an Automated Ultrasonic Method which was presented at the 29th National Fall Conference of the American Society for Non-Destructive Testing held October 13th to 16th, 1969, in Philadelphia. This paper was by Gross and Johnson.

There is another report entitled Insipient Failure Detection by Acoustic Emission, & Development Status Report by Parry & Robinson, Idaho Nuclear Corporation, Report No. IN-1398 dated August 1970. 10

There are a series of five reports titled In-service Inspection Program for Nuclear Reactor Vessels, Technical Report to Steering Committee EER Project R.P. 79. These reports are all by Southwest Research Institute. Report No. 1 dated June 2, 1969.

Report No. 2 dated December 2, 1969.

Report No. 3 dated July 30, 1970.

Report No. 4 dated January 7, 1971.

Report No. 5 dated May 28, 1971.

CHAIRMAN JENSCH: This is the kind of a thing 20 that we had hoped could be typed out, you see, rather than taking the time.

MR. GROB: Well, yes, sir, Mr. Chairman.

CHAIRMAN JENSCH: Proceed.

MR. GROB: There is one other thing which we can

do. We have here available a model which illustrates reactor vessel inspection equipment presently being manufactured for the Astronuclear Division of Westinghouse Corporation, which if the Board wishes we can bring in to illustrate this equipment, which is expected to be completed some time next year, that is the manufacture of it will be completed.

DR. BRIGGS: Yes. I have a question or two that I'd like to ask.

If I go through these reports and study them can I come out with a conclusion of what actual equipment 10 remains yet to be developed to do the specific inspections that you propose to do on the Indian Point 2 plant?

MR. GROB: Dr. Briggs, yes. You can see in these reports information on equipment which is to be developed which could be used to do these inspections. Other of these reports discuss equipment which is presently available or soon to be available which could be used also to do the inspections. The exact equipment and techniques which will be used to do the inspections is there are a number of ways and we would hope to use at the time that the inspection 20 is to be done that equipment which seems most appropriate at that time.

DR. BRIGGS: But the technical specifications say that you will make a volumetric inspection in certain places, and I believe it also says that it's assumed that

ultrasonic methods will be used for doing that. And if I read these reports I will be able to find out that in order for you to do the ultrasonic inspection of the nozzles as it is proposed, that a specific ultrasonic detector or an ultrasonic detector will have to be developed and a specific tool for putting that ultrasonic detector in place will have to be manufactured, and that sort of information. Is that right?

MR. GROB: Some of these reports discuss tools that have been developed to do that. Again, it can be assumed that ultrasonic techniques will be used for the volumetric inspection. However, we are very interested in other possibilities such as acoustic emission or whatever else may be developed by the technology between now and the time at which we would do the inspection. 10

The particular model I mentioned earlier illustrates the tool for doing the nozzle inspection and tools for doing the vertical and circumferential inspections of the reactor vessel barrels also.

DR. BRIGGS: Is there any printed information about these models, these devices? 20

MR. GROB: Yes, Dr. Briggs.

DR. BRIGGS: Is that in these references?

MR. GROB: It is not in these references. I have copies which I can make available to the Board and the

parties if they wish to see it.

DR. BRIGGS: Would you do that, please.

MR. GROB: Yes, Doctor Briggs.

CHAIRMAN JENSCH: Will you proceed now.

MR. ROISMAN: Mr. Chairman, could I just ask one question of this witness?

CHAIRMAN JENSCH: Yes, you could.

MR. ROISMAN: Is there some central place you know of perhaps at the Atomic Energy Commission offices in Washington where those documents that you refer to, reports, are all collected? One place where we might go? Are they in the public document room at the AEC? I assume they are not in our public library. 10

MR. GROB: Well, the EER reports that I mentioned are listed with the clearing house and I am not sure whether the normal procedure is that these are available in Washington or whether they are available through some other central location. However, they are listed at the clearing house that the Atomic Energy Commission sponsors.

CHAIRMAN JENSCH: Excuse me. Would the staff undertake to see if the technical library could make those documents available in the public document room for the intervenor? They may have them in the technical library and not ordinarily releasable, but could we be provided with the technical documents in the public room? 20

MR. KARMAN: We will look into the matter, Mr. Chairman. I am not quite sure where they are and if they are available.

CHAIRMAN JENSCH: Very well. Thank you.

MR. ROISMAN: Thank you.

MR. GROB: These other reports, well, the San Onofre report is available with the A.S.M.E. I can't say that they are all available in Washington.

MR. TROSTEN: Mr. Chairman, the next question of the Board to which we will respond was Mr. Brigg's question on transcript page 982, asking for information concerning the basis for the calculation that Indian Point 2 pressure vessel would rupture at a pressure of about 800 psi. Actually these transcript references, the pertinent ones, are transcript reference to page 982 and 1659, and Mr. Wiesemann will respond to that question. 10

CHAIRMAN JENSCH: Very well. Would you come forward, please, to the witness stand to the microphone, please.

Having been previously sworn he doesn't have to be sworn again. Will you proceed. 20

MR. WIESEMANN: The calculation that was performed to arrive at the numbers which I used in my test as an estimate of the burst pressure were calculated on the basis of Svensen's formula, which was included in the PVRC document

covering the calculation of burst strength of reactor vessels. I should clarify that PVRC is the Pressure Vessel Research Council bulletin which was issued, I believe, in April of 1964 covering the methods of calculating the burst strength of pressure vessels. The reason for the range of pressures is that the burst pressure depends upon the condition of the material and the material strength properties increase with irradiation, so that later in life the vessel has a greater capability to resist bursting.

There is also some variation relative to the various components of the reactor vessel. For example, based on the actual measured material properties the shell of the reactor vessel would range from a burst pressure of 7300 psi to approximately 9000 psi under the irradiated condition. 10

The closure head, the top closure head in the unradiated condition would have a burst pressure of 900 psi. It is not as affected by irradiation because of the greater distance from the core and also being at the end of the core rather than along the sides. It could possibly go as high as 9350 psi. 20

The bottom head has an initial burst pressure of 9300 psi and it could go as high as 10,000 psi.

The head adapters in the reactor vessel head which are used to connect the reactor control rod mechanisms

have a burst pressure of in excess of 19,800 psi.

The pressure housings have burst pressure in excess of 10,600 psi. And the rod travel housings have burst pressures in excess of 22,000 psi.

CHAIRMAN JENSCH: We are glad to have this information, and if anything like it could be typed out it will save some time. But proceed.

MR. TROSTEN: Mr. Briggs asked the question on transcript page 1667 concerning the failure of refueling water storage tank relative to the single failure criterion. 10
Mr. Wiesemann will respond to that as well. I don't think, incidentally, Mr. Chairman, that we really have very much more. I think that we should be able to finish up probably within the next half hour.

CHAIRMAN JENSCH: Everything?

MR. TROSTEN: I would think so, Mr. Chairman.

CHAIRMAN JENSCH: Proceed.

MR. WIESEMANN: I would like to ask someone to bring me the safety analysis report book.

Bart, could you bring me that black book. 20

The refueling water storage tank is a passive component in that it does not have to perform any mechanical function. It simply retains, holds the water, and it has to do this for a short period of time concurrent with the accident. Passive components of this sort are not

considered in single failure analysis. The accumulators fall in this same category. However, Dr. Briggs' question addressed itself to the components like the refueling water storage tank, and in the design of the Indian Point reactor coolant system emergency core cooling system, provisions are made to accommodate certain types of passive failures.

For those kinds of components which have to act for an extended period of time after the accident, this generally involves the recirculation system and those systems which are required to remove heat from that system. And in the safety analysis report on page 6.2-2 there is a statement near the bottom of the page which says, "During the recirculation phase of a loss of coolant accident the system is tolerant of a loss of any part of a flow path, since backup alternative flow path capability is provided." 10

Then on page 6.2-10 there is a brief discussion of that capability and a table is included in this particular chapter. It's 6.2-b, I think. Let me just make sure I have the right number. 6.2-7b, which is an analysis of loss of recirculation flow path, and it indicates for each portion of the flow path system what the alternate flow path is. 20

So that failure of that system can be tolerated.

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And for, I think, further information on single active failure, table 6.2-7A contains the single active failure analysis for the safety injection system, and includes a list of each component, the malfunctions, and then appropriate comments showing how that active failure is accommodated.

DR. BRIGGS: Was that all on your response?

MR. WIESEMANN: Yes. Well, if that satisfies your question I believe that's all.

DR. BRIGGS: I just wanted to make clear in my own mind one or two things here.

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Is there a backup to the refueling water storage tank or is there not a backup for that?

MR. WIESEMANN: No.

DR. BRIGGS: Is that the sole source?

MR. WIESEMANN: It's a single source of water, Dr. Briggs.

DR. BRIGGS: And you have indicated that the time that that has to act after an accident is short and it is a passive component and this is the reason for--these are the reasons for not considering its failure, is that right?

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MR. WIESEMANN: Those are not the total reasons. The tank is a Class 1 component which requires that it be given some special attention with regard to the design and

the non-destructive testing. And there is information in the safety analysis report with regard to the special considerations that have been given to that tank. It's designed to withstand the seismic forces and still perform its intended safety function, and it is designed to appropriate standards and has appropriate quality assurance that goes with the Class 1 type components.

DR. BRIGGS: I don't have any other questions.

Thank you.

MR. TROSTEN: On transcript pages 1665 and 1666 Mr. Briggs asked a question concerning documentation pertaining to the removal of the crucible. Now, as I understand your question, Mr. Briggs, you are asking for the dates of amendments to application and communications from the staff which approved the deletion of the crucible from the design of this plant.

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Now, these documents are as follows: The final safety analysis report which was submitted as amended No. 9 on October 15, 1968. This report, the design as depicted in this report, does not contain a crucible, and there is an explanation for the reasons of the deletion of this in Section 1 of the final safety analysis report.

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The next document is the letter of the Advisory Committee on reactor safeguards.

The next pertinent document dated September 23, 1970, concurring in the decision that the crucible need not be included in the plant.

The next document is the staff safety evaluation dated November 16, 1970, which notes that the staff has reviewed the design and has concurred in the decision to remove the crucible. This particular provision, this part of the safety evaluation, appears on page 40.

Now, I believe this is the information that you requested, Mr. Briggs.

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DR. BRIGGS: Yes, I think that is right. I think I should have asked one other question, and that was related to the status of construction of the plant at the time that the removal was approved. Keeping in mind the dates you mentioned here, it seems to me the plant must have been largely constructed at this time, is that right?

MR. TROSTEN: I think it would be preferable to have Mr. Cahill respond. Would you repeat that question, please, Mr. Briggs.

DR. BRIGGS: Well, the question is pretty much 20 this: the dates on these documents that Mr. Trosten referred to, I don't recall quite what they were, but they weren't very long, so the assumption I make is that the plant was largely constructed at the time that approval was received to remove the crucible and first one would ask the

further question, suppose the staff had said, "Well, we are not quite sure. Maybe it should have been left in," and the advisory committee had said the same thing. Would you have been able to put the crucible back into the installation?

MR. TROSTEN: Mr. Briggs, let me make sure that Mr. Cahill is going to respond with the proper prospective on this question.

The date that the staff approved the deletion of this, of course, was at the following--the formal approval came following the letter received from the advisory committee on reactor safeguards.

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CHAIRMAN JENSCH: 1970?

DR. BRIGGS: That's 1970.

MR. CAHILL: Yes, that is correct.

DR. BRIGGS: And so the plant was pretty much built at that time?

MR. TROSTEN: Yes. That certainly is true.

DR. BRIGGS: On the basis that it wouldn't be required?

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MR. TROSTEN: Yes, that is correct.

DR. BRIGGS: Well, I think that answers the question.

MR. TROSTEN: All right, sir.

Now, the only other question that was raised by

the Board at Friday's session, Mr. Chairman, related to the possibility of pressure vessel rupture.

Now, it is the applicant's position in this proceeding that it is not necessary to design against the consequences of a pressure vessel rupture. We believe that we will require additional time. We have not been able in the time since Friday, Mr. Briggs, to prepare all of the necessary information to respond to your question. We will require some additional time to do this. I think at this point it would be appropriate to discuss the time for 10 resumption of the hearing, at which time we would be prepared to respond to Mr. Briggs' question on pressure vessel rupture and to consider the other matters that remain open for the Board's consideration.

Mr. Chairman, before we consider that matter I would like at this time to offer to the Board to inspect the descriptive document on inspection equipment which Mr. Grob said could be made available to the Board.

CHAIRMAN JENSCH: Well, are you proposing to make that an exhibit? 20

MR. TROSTEN: No, sir. I was just proposing to provide it to Mr. Briggs for his information.

CHAIRMAN JENSCH: We don't want to receive it unless all parties have a copy.

MR. TROSTEN: We can make copies available.

CHAIRMAN JENSCH: Why don't you do that overnight or something and mail it in? I don't think we should receive something except all parties receive it.

Well, the Board is amenable to your suggestion for a date of reconvening, and that includes the availability of the further information that's requested.

When do you think you can have the pressure vessel information ready?

MR. TROSTEN: Well, Mr. Chairman, we feel that we can have our response ready for the Board for a hearing 10 to resume the week of August 16th. We haven't quite decided yet, Mr. Chairman, the form which our response will take, but we have confidence that we will be available to present testimony on the week of August 16th.

I might add in this connection that it is my understanding that the staff safety evaluation, supplemental staff safety evaluation, with regard to the emergency core cooling system, is going to be available in the quite near future, at perhaps the end of this month. I understand that it should be available by the end 20 of this month and perhaps before then.

Mr. Karman may be able to offer more definitive comments on this, and I think that this is pertinent, too, to a consideration when the hearing could resume.

We would also, of course, Mr. Chairman, at the

time of the resumed hearing be prepared to discuss the other open matters as the result of this morning's session. We would be prepared to discuss that as well.

CHAIRMAN JENSCH: Well, we are getting a definite date that I did not think existed in reference to the ECCS. In fact, I was just saying that I hoped to get some information in the morning that might bear on that subject, because I didn't think we had information available yesterday as far as I understood it.

And are you saying that by August 16th you will 10 have the ECCS report out?

MR. KARMAN: By August 16th we are certainly hopeful that we will, Mr. Chairman.

CHAIRMAN JENSCH: We have been hoping that, too, for some time.

MR. KARMAN: Well, no. As a matter of fact, Mr. Chairman, only within the past week or two did the applicant furnish the information that was requested of the applicant by the staff. And I must say that they were very, very speedy in their response. 20

Now, I believe Mr. Trosten indicated that he was hopeful on the basis of formal advice that this report on the ECCS might be available by the end of this month, and if that is so it would certainly be a rather speedy response to the necessities of this case. And if that schedule

is filled and followed we will have two weeks in between then and now, August 16th.

CHAIRMAN JENSCH: Perhaps the best way to handle it is that indications are we are hoping for the best and we expect this to be out soon and it's incredible that it would be any longer, but I think that in view of the burdens of assembling a proceeding it's difficult to affix a date at this time. I think we have a problem of notice to the public.

Now, it may be that the parties could agree to a two-week notice. It's not going to be possible for this Board to reconvene at a date when the ECCS report is expected to be out by the staff. Because we desire to review not only what the applicant has submitted, but to review it in the light of what the staff--not only what the applicant has submitted but to review it in the light of what the staff has replied. 10

Now, I have been under the impression from some public statements issued by the Commission in reference to the ECCS matter that there may be more than one document issued in reference to the ECCS system, and it may be that there will be a general statement, as I read the public release information, the public release about it. But after that there may have to be a specific analysis on a case by case approach to each reactor. Now, whether that's correct or not I don't know. 20

MR. KARMAN: I believe this is what we are talking about. This will be an analysis in the Indian Point--

CHAIRMAN JENSCH: There will be two reports out, is that correct, you are saying?

MR. KARMAN: No. I am talking about the staff's evaluation of the ECCS question with respect to the Indian Point 2 plant.

CHAIRMAN JENSCH: Yes, I understand that will have to be preceded by a general analysis.

MR. KARMAN: I don't know that to be so, Mr. Chairman. 10

CHAIRMAN JENSCH: Well, I don't know either, but these are problems that we pick up perhaps in reading public release documents. As I say, I don't think it's possible to say we expect the staff report to be out by July 31, we will convene August 2nd or we will expect it to be out by August 16th and we will be ready by August 17th. We do have some review to undertake and we are not inclined to commit ourselves to allowing ourselves only a limited amount of time. This matter is of such importance 20 that the Commission is giving considerable attention to it, as I read the public release documents, and many of the people are interested in just how the figures come out.

MR. TROSTEN: Yes, Mr. Chairman, I appreciate that there is some element of uncertainty with respect to this.

However, the ECCS matter, of course, is not the only subject which could be and should be considered at the reconvened hearing, and so what I am proposing to the Board is that we schedule the hearing for the week of August 16th and then, assuming that the staff report, the supplemental safety evaluation, is available by the first of August as is my indication at this time--

CHAIRMAN JENSCH: From who? Who did you get that from?

MR. TROSTEN: I have this indication from Mr. Karman. Mr. Karman is my principal source of information on this. 10

MR. KARMAN: Mr. Chairman, I have not told Mr. Trosten anything that I did not tell the Board and all the parties here. It is our hope, and again I cannot commit the regulatory staff, but can give you every hopeful expectation that this report will be available approximately by the first of the month.

CHAIRMAN JENSCH: Well, you see, we thought that talking about dates that the applicant was going to be held up on some fuel loading and sub-critical testing and as I recall some of the testimony from the compliance section of the Atomic Energy Commission staff, there are several items yet to be done. Now, that's immaterial to this consideration, except you indicate that sometimes these dates 20

are more hopeful than realistic and the Board is inclined to recess the case indefinitely and take up everything at one final session.

Now, we could come back here and discuss door knobs or hinges for the doors, but it's hardly worth it to take that amount of time, and we can take up anything else that comes with the ECCS, I think, without undue delay to the final session.

MR. TROSTEN: Mr. Chairman, I am afraid I must ask you to consider this again. Mr. Briggs has raised a question concerning pressure vessel rupture which is going to require the applicant to prepare a considerable amount of testimony in order to be fully responsive to his questions. 10

CHAIRMAN JENSCH: We don't want you to hurry on that.

MR. TROSTEN: And we certainly do not want to hurry on that, but we also want to be able to present this evidence to the Board at the earliest feasible time. We are working as quickly as is practical to assemble this information and the necessary witnesses to respond to Mr. Briggs. It's not entirely certain to us exactly how much time is going to be required in order for this phase of the hearing to be conducted. Mr. Roisman has indicated that he may want to cross-examine Mr. Davies again. There is an 20

additional question that has come up as a result of the session this morning that will necessitate a further session on security procedures. As a result of this, Mr. Chairman, it seems to me that we will have an ample job set out for us if we were to reconvene even if the emergency core cooling report were not available by the first of the month.

CHAIRMAN JENSCH: I don't understand why that cannot be delayed nevertheless until the ECCS report is considered?

MR. TROSTEN: Well, the reason for it, Mr. Chairman, is that the way these questions come up they sometimes require additional effort to be put in after the hearing session on the particular item. If we were to put all of this off until the ECCS session we would be putting off hearing evidence on extremely important issues to this proceeding, and I don't see that there is any reason why we have to consider all of the issues in the proceeding at the very last hearing.

CHAIRMAN JENSCH: Well, we can't quite surmise any insurmountable difficulty in combining a lot of matters. Perhaps we can get out a notice and we will see how these matters develop. Maybe we can get out a notice the first of August say for some time May 16th. We do have another proceeding going on on or about the 10th.

MR. TROSTEN: Is it the 10th?

CHAIRMAN JENSCH: The 10th of August. And I don't know how long that will take. The probabilities are that it might be a little longer than would permit us to be available for August 16th.

MR. TROSTEN: Well, we would be amenable, of course, Mr. Chairman, to having this commence the latter part of that week, if that would be more convenient. I understand that the Chairman has another proceeding that will take place the 10th.

CHAIRMAN JENSCH: We appreciate your concerns. 10
We will keep them in mind, but so far any of the dates have not proved realistic in this proceeding and we don't quite understand your apprehension that we might get a question propounded at a final session that you cannot readily answer. If that incredible possibility should ever develop I am sure you will work out some arrangement agreeable to all parties.

Let's proceed and we can do something more than a one-day session when we reconvene and I am sure the ECSS will provide us a real opportunity in that regard. 20

DR. BRIGGS: Mr. Trosten, it is evident that you people are going to put a considerable amount of effort into answering the questions that I ask, and I think you realize the importance. I wouldn't like you to restrict your activities to just answering the questions that I ask. I think

it's a very important question and it seems that you appreciate it.

MR. TROSTEN: Yes, we certainly do, which is one of the reasons we would like to address it as early as we can.

Mr. Chairman, may I just make this observation. You may recall that Mr. Grob said that we had this model of the in-service inspection tube. Does the Board desire to see this model?

DR. BRIGGS: Is it here now?

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MR. TROSTEN: It is here now.

DR. BRIGGS: Yes, I'd like to see it.

MR. ROISMAN: Mr. Chairman, before we get into that let me just state on behalf of the intervenors that the principles enunciated by the Board with regard to when we reconvene we are in general agreement with. We would much prefer, just in terms of our own allocation of resources, inasmuch as I am in Washington, the hearings are held here, to have one last session of the hearings beginning when all the material is in, including the ECCS, and, in addition, we share, of course, the Board's desire to have an opportunity to review the ECCS, and yet despite efforts on our part to get data to permit that review to take place it is not occurring as quickly as we would like. If I might just go over briefly what the time schedules are. As early as November

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of 1970 the Idaho Nuclear Corporation indicated there may be some problem with emergency core cooling system performing. Those tests ran until March or so of 1971. It took until the end of April for the Chairman of the Atomic Energy Commission to advise the Joint Committee on Atomic Energy that they were going to have a senior task force convene to reevaluate the problem, and it was not until the 19th of June that that senior task force produced new interim policy guides for the emergency core cooling.

The applicant took nearly a month on the basis 10
of those policy guides, which applicant's manufacturer, Westinghouse, participated in the preparation of, and was privy to what was going on, to produce their document which we received last week. The staff has yet to produce its evaluation of what was prepared by the applicant. We understand the staff's document hopefully is for the end of this month. We think that the question of the emergency core cooling system is perhaps the most important question that has arisen in nuclear safety in recent years. It involves an analysis of a particular type of safety device 20
where you did not perform according to the way calculations had previously indicated it was going to perform, or maybe it didn't perform as it was going to perform. We think that our analysis is extremely important and would feel that we would need at least six weeks to two months once we get in

our hands all of the documents that we have requested in order to do an analysis of that. We asked the staff well over a month ago to provide us with a list of what documents were considered by the senior task force in doing its evaluation, an evaluation that was completed on or before the 19th of June. We still don't even have the list from which we could make a request for documents, depending on which ones we want.

In addition, we asked the staff to provide us with any additional tests that had been conducted, and I understand from Mr. Karman that there may be additional information. It's still not in our hands.

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All we have to this date that's been provided is the, what I call the Idaho Nuclear Corporation monthly newsletter which gives a very cryptic explanation of the tests. And of course the interim policy guides and the applicant's analysis of those guides.

We just cannot be expected to move even as quickly as the staff or the applicant have been able to move in the past, much less more quickly, and when the applicant suggests that the staff's evaluation may be completed on the first of August and that we should be prepared to have a full-fledged hearing on the ECCS within two weeks, we consider that to be unrealistic, burdensome and completely unreasonable; if we are to make an evaluation with the limited resources that we have available we are going to need at least

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some time to do it and whatever time that final information comes in in response to our request for documents and in response to the staff's safety evaluation, we would like what we consider to be a reasonable period of time, minimum of six weeks, to prepare for the hearing and to present to the Board the kind of pre-hearing brief that we have presented with regard to every other issue that has been raised, so that the Board and the parties will know where our concerns lie and what issues we intend to raise and how we intend to raise them.

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In effect, what we are saying is that the staff is going to do an evaluation, the applicant has done an evaluation and now we would like an opportunity, once the data is in, to do our evaluation.

CHAIRMAN JENSCH: Well, the staff, as I compute it even on the basis of the hopeful date at the end of the month, will have had about three months on this subject since the Chairman of the Atomic Energy Commission indicated that a senior task force would evaluate the matter.

MR. KARMAN: Mr. Chairman, are you equating the evaluation made by the senior task force with an intervenor's evaluation in the case?

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CHAIRMAN JENSCH: They are of a kind that should have the same opportunity.

MR. KARMAN: Timewise?

CHAIRMAN JENSCH: In order to give them a chance to review what has been done. I don't think any one party to a proceeding should have any advantage timewise in reviewing a matter of this importance. I think qualitywise is a question to see how it develops. But I think that it's somewhat presumptuous for any party to say they can have three months and the other party can have three weeks.

MR. TROSTEN: Mr. Chairman, I'd like to emphasize that the applicant has furnished to Mr. Roisman on July 13th the evaluation of the emergency core cooling system for 10 this plant which provides him, we would submit, with the basic data that he needs for making his review.

CHAIRMAN JENSCH: Well, I think that is the difference.

What do you think he needs? He may decide he needs something more than what you think he needs.

MR. TROSTEN: In addition to this document, Mr. Chairman, we have been prepared since furnishing Mr. Roisman that document, to furnish him copies of documents that are referred to in our evaluation and so we have been prepared 20 since the 13th to furnish this information to Mr. Roisman.

Now, I think that the amount of time taken up by the staff, of course, as well as by the applicant in reviewing this, involved a considerable amount of original work and in the case of the staff it involved an evaluation not just of

the Indian Point 2 plant but of the emergency core cooling system problem generally. And I would say that for Mr. Roisman to say that to have a period of six weeks after receipt of the last piece of information that he needs is entirely excessive. He has had this evaluation that we have made since the 13th of July, and I appreciate that he has been involved in this hearing during this time.

CHAIRMAN JENSCH: That's a week that he has had it?

MR. TROSTEN: Yes. But I feel though, Mr. Chairman, this is an entirely excessive period of time for the intervenor to request for review of this material. ¹⁰

CHAIRMAN JENSCH: We certainly will consider your matter, the matters you have expressed. I can only suggest to the parties here that each party to this proceeding is important to this Board and the review made by each is as important as the other, and no one has an advantage in evaluation over another. And I think that as far as attitudes because you feel you have done some original work, it somehow becomes of superior quality, is not at issue. If there ²⁰

If there is nothing further at this time we will recess to a date later to be determined by a subsequent notice, of which public information will be given by publication in the Federal Register and a notice will be given to any person who requests that a copy be sent and such request for

such a copy of the notice can be transmitted to the
Secretary of the Atomic Energy Commission, Washington,
D.C., 20545.

At this time this proceeding is recessed
indefinitely.

RETURN TO REGULATORY CENTRAL FILES
ROOM 016

Regulatory Docket File

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ROOM 016

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