UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of:	]	
COMMONWEALTH EDISON COMPANY	]	Docket Nos. 50-456 OL
(Braidwood Station Units 1 & 2)	]	50-457 OL

Bethesda, Maryland

Monday, March 24, 1986

Deposition of:

ROBERT F. HEISHMAN,

a witness herein, called for examination by counsel for the Applicant, pursuant to notice and agreement of counsel as to time and place, at the offices of the Nuclear Regulatory Commission, Maryland National Bank Building, 7735 Old Georgetown Road, Bethesda, Maryland, before MARILYNN M. NATIONS, a Notary Public in and for the Commonwealth of Virginia At-Large, commencing at 9:00 o'clock a.m., when were present on behalf of the respective parties:

APPEARANCES:

On behalf of the Applicant:

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Washington, D.C. 20555

C O N T E N T S

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EXHIBITS

PROCEEDINGS

MR. GALLO: Let's go on the record. This is a deposition of Messrs. Heishman, Hooks and Georgiev. This deposition is in the Braidwood licensing proceeding and is a continuation of the depositions taken of various CAT team members who performed the inspection, I should say, the inspections at Braidwood.

This particular deposition has been arranged in the cooperation with staff counsel and I appreciate it. It is now nine o'clock which was the announced start time for this deposition. A representative of BPI, the intervenors in this case, is not present. I think we ought to give him at least ten minutes before we start and I suggest we do that. Do you have any objection, Mr. Treby?

MR. TREBY: No, I have no objection. I would like to note for the record of this deposition though that staff counsel and the three witnesses requested to be at the deposition are present.

MR. GALLO: Let's go off the record.

[Whereupon, a short recess was taken.]

MR. GALLO: On the record. Please swear Mr. Heishman.

Whereupon,

ROBERT F. HEISHMAN,

having been called as a witness on behalf of the Applicant, was first duly sworn, was examined and testified as follows:

EXAMINATION BY COUNSEL ON BEHALF OF THE APPLICANT

BY MR. GALLO:

Q Please state your full name and business address for the record?

A Robert F. Heishman. The business address is U.S. Nuclear Regulatory Commission, Washington, D.C.

MR. GALLO: Let's go off the record for a moment.

[Discussion off the record.]

MR. GALLO: Back on the record. I have been furnished a copy of Mr. Heishman's professional qualifications and I would like to have it marked and attached to this deposition transcript. We will mark it as Heishman deposition exhibit number "1."

[Whereupon, the document previously referred to was marked for identification as Heishman deposition exhibit number "1."]

BY MR. GALLO: (Resuming)

Q Mr. Heishman, I have your statement of professional qualifications but I have a few questions with respect to them. Your statement of professional qualifications indicated that you attended Upper Iowa University. Where is that school in Iowa?

A Fayette, Iowa.

Q Is it still called Upper Iowa University?

A Yes, sir.

Q Did you graduate from that school?

A No, sir.

Q How long did you attend it?

A I really attended the university on campus for one month. The rest of the time I was enrolled as an off-campus student in the off-campus degree program.

Q Did you major in a certain curriculum?

A Business Administration.

Q Business Administration. How long were you an off-campus student?

A About five years.

Q Were you able during that five year period to earn credits towards a degree?

A Yes, sir.

Q How many credits did you earn?

A I am sorry, I can't give you the exact number. I just don't know.

Q Can you give me an approximate number? I am not really seeking an exact number.

A Yes. I have enough credits -- well, let me rephrase it. I need six semester hours in order to graduate.

Q That would give you a degree in Business Administration?

A Correct.

Q Did you attend any other college besides the military school?

A I took courses at other colleges but not in attendance.

Q Did you take any engineering courses?

A Mathematics courses at George Washington University in the late 1950's.

Q Is that the extent of what you might call engineering courses?

A Yes.

Q When did you join the service?

A January of 1949.

Q Were you an enlisted man or an officer?

A Enlisted man.

Q Can you describe for me generally the -- you say you graduated from the Army Nuclear Power Program. Can you describe that program just in general terms?

A Yes. That program was a 52-week program. Basically a third of it was academic subjects. It was taught in Fort Belvoir, Virginia. The second third had to do with physical qualifications at both a simulator and the SM-1 nuclear power plant which was also located at Fort Belvoir. The third portion was physical on-the-job training for operator and maintenance technician qualifications.

Q How long were you stationed at Fort Belvoir?

A Oh, I was there on a number of different assignments. The total amount of time at Fort Belvoir in the 20 years I spent in the military was approximately 12 years, not all of which was assigned to the nuclear program.

Q Did you run into Mr. McGregor?

A Oh, yes.

Q You say from 1959 to 1969 you were a member of the U.S. Army Engineer Reactors Group serving on numerous military reactor systems as operator, supervisor and plant manager.

Were these service reactors that provided power and steam to military bases?

A Yes.

Q You were actually a reactor operator in connection with some of those plants?

A Correct as well as the other positions mentioned.

Q What was the size of these power plants in terms of megawatts?

A One was the SM-1 reactor at Fort Belvoir which had a net electrical output of about two megawatts. One was the MH-1A floating nuclear power plant which had a net electrical output of ten megawatts. One was a gas cooled reactor program which was a research and development facility in Idaho and its intended net output which we never achieved was 750 kilowatts.

Q You joined the AEC in 1969, is that correct?

A That is correct.

Q You have worked, I guess, at the AEC/NRC from 1969 to the present?

A Correct.

Q Your present duties are branch chief?

A Yes, sir.

Q Your statement of professional qualifications

indicates what those duties are and I won't repeat those and I need not ask questions with respect to those areas as a result.

Your statement of professional qualifications indicates that during the period September 1981 through January 1982 you were the supervisor of the Performance Appraisal Team which conducted in depth team inspections of selected reactors in operation from the Bethesda office.

What type of reports are issued by this Performance Appraisal Team, are they the SALP Reports?

A No, sir. They are the so-called PAT reports. They are a forerunner of the Construction Appraisal Team inspections that were conducted at operating facilities so they were similar type reports that were issued but they dealt with operating reactors rather than construction reactors.

Q How long have you had supervisory responsibility for CAT team inspections in the mid-west?

A I have had responsibility for CAT team inspections since their inception in late 1982 not only in the mid-west but throughout the United States.

Q All right. Have you participated in the actual inspections?

A Yes, sir, but I must define participation for you.

Q All right.

A My participation varied from being the team leader in some of the early inspections when we were just developing the program to a point where I would go for the beginning of the team inspection and conduct the entrance interview and some discussion about what the intent of the program was and then to participate on the final portions of the inspection to review the findings with the inspectors and to basically conduct the exit interview at the conclusion of the inspection.

Q Did you do any actual inspection in the plant in the various disciplines that the CAT teams typically inspect?

A I would not characterize what I did as inspection because while I went out in the plant and reviewed with the various inspectors what their findings were and looked at physically the hardware in a number of cases it was restricted to those areas where they had made some findings and I was looking at the findings in order to get a better understanding of what their problem was.

I would not characterize what I did as the responsible inspection of those activities.

Q Would it be fair to characterize your role as a management role?

A Yes, sir.

Q The role we have just been discussing and the role that you have just described, was that the role that you played with respect to the Braidwood CAT inspection?

A Yes, sir. The Braidwood inspection, basically Mr. Keshishian was the team leader and I functioned as I described the latter part of my description of what was occurring.

Q That is you participated in the entrance interview and the exit review as well?

A And a few days at the end to look at the problems that had been identified up to that point.

Q Do you have a copy of the CAT team inspection for Braidwood?

A Yes, sir.

Q All right. I just want to identify it for the record to make sure we are looking at the same document. My document has at the beginning a two-page letter signed by Mr. Vollmer for Mr. Taylor and then there is a service list and an executive summary entitled, "Appendix A," potential

enforcement actions entitled, "Appendix B" and then the report itself signed by you as approving it on February 15, 1985. Do you have that document?

A Yes, sir.

Q Could you identify for me the portions if any of the report that you actually wrote?

A Counsellor, I can't identify any specific portion of this report that I provided the initial writing of. I guess in order to answer your question the best way I know to do it is to tell you how I approached my role in this report.

Q Please do.

A Basically the individual inspectors would make their initial drafts of the report. They would provide it to the team leader. The team leader would draft the front portions of the report, that is the letter of transmittal and the Appendix A and B that we talked about earlier, the executive summary and the potential enforcement actions.

At the time of that particular part of the process he then would provide to me after he had reviewed it, he would provide me the draft document. My method of reviewing these reports is that I basically will take the individual sections of the report, I will review them first and provide any

comments that I might have about those for clarity or for understanding, for editorial content, back to the team leader, through the team leader to the individual inspectors who would then resolve those comments.

Following that period of time I would then concentrate in the front of the report and I would perhaps make more suggestions to the front of the report than I had in the back because in reality this was to document some of the things that had gone on in the exit interview which I was responsible for and had participated in and as such, it is not unusual for me to re-write if you will or change some of the things that are in the first part of the report.

I cannot tell you, however, specifically for the Braidwood report what I might have done in terms of what words I changed, what paragraphs I re-wrote, these kings of things.

I have done 15 of these and I cannot separate them out specifically to tell you which specific parts, but that, in general, is the way I do business.

Q How do you record your comments? Do you send a memorandum to the people with your comments? Do you use that approach?

A No, sir. They provide me with a copy of the report

that is double spaced and I have a nice red pencil and I mark all over it in terms of what I think needs to be done and that is returned to them and I don't even keep a copy of it myself.

Q I see. Is it my understanding that you do not have in your possession copies of the draft versions of the Braidwood CAT team inspection report with your comments written on them?

A That is correct.

Q I am going to ask you before we delve into the CAT team inspection a little more deeply, I am going to ask you some general questions.

Why did the NRC establish the concept of CAT team inspections?

A I mentioned earlier that there was a program called the PAT team or the Performance Appraisal team which was basically a similar type program for operating facilities. In 1982 we went to the Commissioners with a proposal that said that we were having difficulty performing the number of inspections that they had requested that we perform because of getting qualified staff plus the fact that the Institute of Nuclear Power Operations, INPO, had started doing a similar type thing and we went with a recommendation to the

Commissioners that said that we ought to reduce the number of PAT inspections that we were doing down to four or five a year from some higher number of ten or 12 that had been planned which we had not been able to accomplish.

They approved that recommendation but at the same time directed that we take some of the resources that we had not been able to gather to use for the PAT program and start a similar type program for reactors under construction.

In mid or late 1982 we went back to the Commission with a proposal that said we would perform four construction appraisal team inspections per year and that generally these inspections would be conducted by a team of so-called experts made up of people from the NRC staff as well as consultants and they would concentrate on the hardware of the power plant as opposed to what the general inspection philosophy had been prior to that of looking at programs and a lesser amount of hardware.

So this program was designed to be a program which would spend a great deal of time looking at the completed hardware of the power plants as opposed to a programmatic look.

So we started that program in the fall of 1982 and

to date 15 of these inspections have been conducted.

Q Do you know what prompted the Commission to establish CAT inspection programs?

A They stated to us that the intent of the program was to try to determine whether or not these power plants were being constructed as designed and there had been some difficulty with plants under construction during and prior to that time which indicated that perhaps there were some problems in this area.

So my understanding of their intent was that this program was to provide some added assurance that indeed these plants were being constructed as designed.

Q What is your understanding of the purpose of a CAT inspection and in particular, let's use the Braidwood inspection as an example?

A The prime reason for the construction appraisal team inspections is to determine whether or not at that facility the plant has been constructed as designed. There are some other issues that the Commission put into their directions that have do to with the evaluation of a similar type program that INPO has and an evaluation of whether or not the region has performed the specified inspection.

Q Is it also a purpose to determine the caliber and quality of the management of the project?

A That is one of the things that we have tried to do in different ways because in our judgment it is germane to whether or not the facility is being constructed in accordance with the design.

Q Is the CAT team and indeed you in your role as supervisor, are you able to on the basis of a CAT inspection determine whether or not the facility is being constructed as designed?

A Nothing is absolute but in my judgment we are able to provide a good measure of how well the facility is being constructed depending on, of course, the status of the facility at the time we are there and when that is combined with the other efforts that the Commission does, the regional inspection efforts and the licensing reviews, then I think it is indeed a good measure, a part of the overall Commission review prior to licensing.

Q If I understand your testimony, the CAT inspection report would be one building block in determining whether or not a particular facility was constructed as designed?

A That is correct.

Q I think one of your team members characterized the CAT inspection as a snap shot in time. Would you agree with that characterization?

A That is realistic.

Q What does that term mean to you?

A It means that what we are doing is during the four weeks that we are physically on site with this team of approximately 15 people, we are looking at various parts of this plant that has been constructed to date and we are determining or making an evaluation as to whether or not it is in accordance with the design and as such, what you are saying is that for this point in time, for these systems that we looked at, here is what it looks like, so, hence, the snap shot concept that you described.

Q Was that a fair characterization of what was done at Braidwood by the CAT?

A I think so, yes.

Q Are you familiar with the intervenor's QA contention in this case?

A I have read the contentions. I must admit I do not claim to have studied them to the extent that I am an expert on them.

Q Are you aware that some of the sub-contentions are based on the items of non-compliance and other items noted by the CAT?

A Yes, I am.

Q Although Mr. Treby's witness list does not indicate it, I will ask the question anyhow, are you going to be a witness in this case?

A That is up to Mr. Treby, sir.

Q Are you aware at the present time whether or not you are going to be a witness?

A I am not aware, I should say. I didn't want it to be misconstrued that I am not going to be a witness. I am sorry.

Q Now you indicated that you reviewed a draft of the Braidwood CAT report before it was issued and you also were not certain of the comments that you might have made because you had looked at approximately 15 of these reports and that your comments kind of blend together.

The area that I am interested in, in particular, is the letter that Mr. Vollmer signed for Mr. Taylor and in particular, the last paragraph on the first page. For the record, Mr. Keshishian indicated that he had drafted this

letter and sent it to you for review and comment.

Do you recall whether or not the draft you received had the last paragraph in it which noted that the major areas of concern to the CAT were items one and two?

A I can't remember, counsellor, whether or not the draft contained those specifics or not. I may very well have added those specifics because those are the specifics that I discussed with the utility during the exit interview.

Those are also the specifics that I discussed with ACRS at some subsequent meeting that they had. Those were the major areas of concern to me based on what I knew about the facility, based on what the CAT inspectors had told me during meetings and what I had reviewed in the report.

So I could have built that paragraph. I just don't know.

Q All right. Is it fair to say that you are the driving force behind these two concerns listed on the first page of the Taylor letter?

A I don't know whether I would call it the driving force. Those particular items are the synopsis of my concern that I got out of this inspection, the major issues. So with that as the case, then perhaps as you characterize it, it is

correct.

Q Mr. Keshishian testified that based on your comments at the exit interview he incorporated these two concerns being aware of your point of view if I could use that phrase and I draw from that that you are the primary author of these two concerns as opposed to either Mr. Keshishian or your team members McLellan, Compton and Serb.

Would you agree with that or not?

A Yes. I think that is fair.

Q All right. Now I have some questions about the basis for those two concerns. Let's try to take them one at a time.

The first concern indicates that a concern regarding the dependence on the final walkdown inspections late in the construction program to identify and resolve problems -- now what is your concern in that area? That is a poor question.

What is the basis for your concern? What are you worried about with respect to walkdowns that occur late in the program?

A What happens a lot of times in these nuclear power plants, during construction someone will identify that here is a specific problem that needs to be addressed and get resolved

prior to the licensing of this facility. There are many different ways of handling those types of things. The normal way that I would expect is if you find something is wrong, you either fix it or you identify that it is wrong and put it on some sort of a list to make sure that it gets fixed at some future time prior to the time that you are ready to license or operate the plant.

What happens in a lot of cases and what was told to us as being one of the solutions that was going to be used at Braidwood was that we know that these things are there, that they will be identified during the final walkdown just prior to turnover to the operations facility.

That concerns me from the standpoint of if you go into these power plants, you will find that as they are constructed space had a tendency to be filled, the ability to look and identify various things will become more difficult as the spaces are filled and as things are put in front of other things and so my concern in this area was built around the fact that it is more difficult to identify and correct problems as you get more and more hardware in the facility.

That is not to say that it is not possible or that it cannot be done. It says that it is more difficult. It is

more difficult to inspect and the opportunity for things to slip by and not get corrected increases as these things occur.

That is the basis for stating this as a major area of concern to the CAT.

Q You say that the CAT inspectors had advised you of various walkdowns that apparently the applicant was going to rely on to deal with the comments and the proposed items of non-compliance. What is your recollection as to the number and kind of walkdowns that were planned in response to the CAT team findings?

A I cannot recite to you specifics that are contained in the details of the report wherein the inspectors were informed that this was going to be reviewed or solved or corrected during walkdowns.

I can give you some general areas that have occurred not only at Braidwood but other places, but I cannot testify to you, sir, that these are the specifics from this particular plant. I cannot do that.

Q The report itself does identify one area. The walkdown question is raised in section III of the CAT team inspection report having to do with the inspections of mechanical construction equipment or the installation of such

equipment. It is on page III-3.

A (Perusing document.)

Q It is at the top of the page and it is also at the bottom of page III-2. You might want to take a minute to read that. It might refresh your memory.

A (Perusing document.)

This particular one is one that is not the first time we have seen this, it is found in a number of other power plants as well and the areas where the piping is installed in such a manner that thermal clearance checks, how much is the pipe going to move, is there enough clearance there, not only is it very difficult to predict from an engineering standpoint.

It is sometimes very difficult to measure during the testing of the systems. So what we have generally been looking for is to find where they indeed have specified, the engineers have specified, some clearances that are necessary as a target and then to see whether or not people identify during the construction process that indeed these do or do not meet those clearances and then as a final check, these walkdowns can be effective.

I think the thing that we had concern about here was

that what they were really depending on was the final check to do all of this as opposed to it being something that they would do during the course of construction.

Similar type things occur in the electrical area where we start talking about separation of conduit from cable trays and cable trays from cable trays and divisions and so forth.

These are the general areas where it is usually found that people say, "I will do that at the end." My concern is as I explained earlier.

Q Now still focussing on the mechanical equipment inspections, if I recall correctly the CAT inspectors found certain discrepancies with respect to installed pipe supports and restraints both in terms of installation discrepancies and also the spacing requirement that you refer to in your previous answer.

Is that a fair recollection of what they found?

A Yes, sir. That is my recollection.

Q The CAT inspections occurred in December 1984 and January 1985. Do you have any judgment as to the amount of mechanical installations that had occurred with respect to pipe restraints and supports by that time?

A My recollection is that a high percentage, greater than 50-percent, of unit 1 had been installed during that period.

Q As I recall, since I have been in the QA litigation business, there is usually two types of corrective actions, one is prospective and one is retrospective. Is that correct?

A Yes.

Q If I understand the prospective corrective action, they were to at least with respect to clearances amend the installation specifications to include a specific requirement for the necessary clearance. Is that correct?

A I am not sure what corrective action they specified. I would have to research that with the regional people to see what it was. That is a normal thing, however. I can't be specific for you, however.

Q All right. Now with respect to the installed systems given the CAT finding, a retrospective corrective action would be necessary, isn't that true?

A That is correct.

Q How would you with respect to in particular this spacing requirement, that is spacing between mechanical systems or any other installed system, how would one determine

whether or not the proper interval between systems was in place for installed systems?

A Again, I will have to speak generically because I can't recall the specifics at Braidwood. However, if indeed as we discussed earlier they had gone back and amended the specification to specify these are the kinds of clearances that should be put there, then of course the inspection process would be looking to see whether or not the already constructed items met those clearances in addition to whatever physical measurements and checks were made during the testing program of heat-up to see whether or not those particular clearances had been adequate and that the system reacted as anticipated and as designed.

Q You indicate that the inspection process would have to determine the proper intervals and space for the as-constructed items. Wouldn't you determine that through a walkdown?

A Well, yes, you could to specifically answer your question. However, the more desirable thing is to make it apart of the normal inspection program that you do as you are doing it and then the walkdown becomes a verification, if you will, or a check of that process as opposed to the process

that had been in effect prior to the inspection.

Q You indicate that the more desirable approach is to have QC inspection verify that the installation intervals are in place as you are doing it.

A Yes, sir.

Q That wasn't possible given the CAT findings for installed systems that already had been installed prior to CAT inspection, was it?

A That is correct.

Q So somehow you would have to re-inspect that activity, wouldn't you?

A That is correct.

Q Wouldn't you do it through a walkdown?

A That would be a normal way, yes, sir.

Q Then in this area, would it be fair to say that your concern would be as to the timing of the walkdown?

A The timing is important. The kind of people who did it, the kind of instructions that they got, the kind of training they got, all of those things, counsellor, would be important in terms of making sure that we ended up with what the designer indicated.

Q Does the concern that you indicate on the first page

of the Taylor letter extend to the qualification of the individuals conducting the walkdown or is it limited to the timing of the walkdown and not taking other corrective action that might be more appropriate?

A I don't think it was intended to limit other than to provide the limit that says we have to make sure that ultimately this system is constructed the way the designer intended it to be and that it will serve that function.

So the concern was intended to say, to get that done becomes much more difficult if you wait until the end but as I said before, that does not mean that it is absolutely not possible.

Q You were worried about interferences from other systems so that the inspectors couldn't see discrepancies and that sort of thing?

A Yes, sir, and how diligent are the inspectors. All of that goes with it. I can't restrict it to just do it on December 25th as opposed to last August.

Q You have mentioned the diligence of the inspectors, is there anything unique about a walkdown that would require an inspector to be more diligent than an inspector might have to be in connection with a normal QC inspection?

A There is one thing that comes to mind and that is the fact that if as an inspector I am trying to inspect the clearances on this piping system and I am doing it at the time when this system is being installed, I can get to it. I can see it. If they have scaffolding there in order to put it up and to do all those things and at some later time when I do a walkdown, there may be other things in front of it. There may not be the scaffolding there. It may be more difficult to get to and so the diligence of the inspector may be important or more important at that time in that he has to overcome some other obstacles that wouldn't be there originally.

Q You mean diligence in climbing over things to make sure he is able to see well.

A Whatever it takes to do the job, whether it be physical location or lighting or whatever.

Q With respect to the walkdown we have been talking about in the mechanical area, are you aware of walkdowns that were planned for this particular matter identified by the CAT on pages III-2 and III-3?

A Only in general terms, counsellor. I remember discussions with the mechanical team wherein they had looked at, I believe, from my recollection some draft procedures that

said how these were going to be done and the kind of people that were going to do it and in that they were draft procedures at that point in time, they had some concerns about whether the adequacy of those procedures although we could not and did not make a complete evaluation because they were not complete at that time.

Q Are you aware that Phillips, Getschow, the mechanical contractor at Braidwood, has completed its walkdown of the pipe support systems that are the subject of the CAT inspection on page III-2 and III-3?

A I am aware of it from the standpoint that the regional people have told me that they have been satisfied in terms of getting these systems ready for some of the tests. As to whether or not it is 100-percent done or not, I don't know and that is the basis of that information.

Q Are you aware that Sargent & Lundy plans to conduct a walkdown of what they call the hot pipes for these thermal clearance checks in the near future?

A That is a normal thing. I would be surprised if they didn't but I cannot say that I was absolutely aware that Sargent & Lundy were going to do it.

Q What does the term that I used, "hot pipes," mean to

you?

A It means that we are getting the systems heated up close to the design temperatures and then determining whether or not they have expanded as designed or as predicted or whether or not they have perhaps not quite gone in the same direction they anticipated.

Q Is one purpose of the three-inch pipe-to-pipe and pipe-to-structure clearance to accommodate these so-called thermal -- how would you characterize it? Let me get that.

A Yes. I think that those clearances are normally there to accommodate any slight errors that might have been made in the direction or the magnitude of thermal growths on the pipes.

Q That is the term I was looking for, thermal growths.

A All right.

Q Does that mean when these pipes heat up they tend to move depending on the forces generated by the temperatures of the fluids inside the pipes?

A That is correct.

Q You mentioned the walkdown in the electrical area for Braidwood specifically. Can you be a little more specific?

A When I talked about that, I intended that to be a generic type thing. Now whether or not that was Braidwood, I can't answer. I don't recall.

Q Are you aware of any other walkdowns planned at Braidwood specifically besides the ones we have been talking about?

A No, sir. I cannot give you a specific.

Q Were you aware at the time of the CAT inspection -- at the time of the exit interview of any other walkdowns than the ones that you have testified to today?

A All I can tell you is that I would be surprised if there was only one walkdown planned if I would have made the statements that I made. I would suspect that there are more of those and that there are more areas that we were informed of, but I can't tell you specifically what they are at this time, Mr. Gallo.

Q At the time of the exit interview, do you remember what the projected fuel load date was for Braidwood?

A No, sir. I don't.

Q If I was to mention April, 1986, would that refresh your memory?

A That is the right ball park but I don't recall

specific months. We were talking about some time as I remember in 1986 but the dates all run together on me. I am sorry.

Q Are you aware of the present fuel load date for Braidwood?

A It was written on my blackboard but I can't withdraw it right now from memory, no, sir.

Q Would the date September 1986 refresh your memory?

A I think that is the ball park, yes, sir. It was the fall of 1986.

Q Let's assume that at the time of the exit interview for the Braidwood CAT that the fuel load date was projected to be April 1986 and let's also assume that the present fuel load date is projected to be September of 1986, does that approximate four or five month time interval affect in any way your concern about the walkdown?

A I don't believe so. That kind of delay seems to be somewhat normal as far as nuclear power plants are concerned. The best plans seem to go awry one way or another. It does help from the standpoint that it gives them a little more time to do the kinds of jobs that we were concerned about that had to be done.

So from that standpoint, I guess there is some comfort there.

Q You indicated in your earlier testimony that your concern about the conduct of walkdowns late in the construction of the plant was based in part on your experience at other plants, is that correct?

A That is correct.

Q Can you relate to me that experience?

A One in particular at the Waterford facility, they found that during the walkdowns that they were doing on some of the conduit and cable tray separations, they thought they had identified those areas that were problems and we went in with an inspection and we found a number of additional ones that they had not identified which caused them then to go back and do further walkdowns and in fact required that some hardware had to be physically changed in order to meet the requirements.

A number of other plants had experiences which required additional engineering efforts to justify what was there rather than what the original intent was. My recollection is that they included plants like River Bend and WNP-2.

Q Out of the 15 plants, are there others besides these three that experienced that kind of situation?

A I am sure there are but those are the ones that I remember specifically. There were very few plants, my recollection is, that did not offer the correction that said we are going to pick that up and correct that in the walkdown.

It got to be and still is a comment that gives me concern when I hear it because of the difficulties that are created as a result.

Q At Waterford, you indicated that the CAT had inspected for, I believe, electrical separation with respect to cable trays and conduit.

A That is the one that comes to mind, yes, sir.

Q That is for the necessary separation that is required by, I think it is, IEEE-384.

A Two-seventy nine, yes, sir. It is the separation and then the way the particular utility chooses to meet those standards will dictate what the required space is. The kinds of things that they do is to physically separate and to install barriers between and those kinds of things in order to meet those kinds of requirements.

Q Now the utility at Waterford thought that they had

satisfied those criteria as a result of their inspections that were conducted after installation or had they conducted a walkdown themselves?

A They had conducted a walkdown and basically that is the way -- in other words, they had used some of the same philosophy that says for those particular concerns, we will catch that during the walkdown as opposed to identifying individual examples of where that criteria is not satisfied during the routine inspections.

Q I see. So they had consciously decided to postpone verifying compliance with the electrical separation criteria until after the systems were installed, is that it, and then verify it through a walkdown?

A Correct.

Q I see. Had this walkdown occurred before the CAT team had arrived on site?

A Yes, sir, in the specific areas that we found the difficulties.

Q Yes.

A As part of the CAT team effort, we try to determine and try to inspect those areas that have gone completely through the system designed to make this construction process

work in every case that we can. In other words, we try to get to the end of the process if possible to see whether or not the process has worked.

Q You indicated the CAT team went in and they conducted a sample inspection and noted some clearance violations if I can use that word.

MR. TREBY: I object. It is not clear to me whether we are talking about Braidwood or Waterford?

MR. GALLO: We are talking about Waterford.

MR. TREBY: Then I object also on the grounds of relevance. The plant at issue here is Braidwood and not Waterford.

MR. GALLO: These questions are probing the basis of Mr. Heishman's opinion which he expressed in Braidwood. The Waterford experience serves as one significant pinnacle of that opinion and that is the basis for the questioning and the relevance to the proceeding.

MR. TREBY: My objection is noted in the record.

MR. GALLO: All right.

BY MR. GALLO: (Resuming)

Q Let me restate the question.

A Please, sir.

Q The CAT at Waterford inspected a sample of the cable trays and conduit to determine if the necessary electrical separation existed, correct?

A Correct.

Q You found that it did not in some instances?

A Correct.

Q Was the utility's corrective action to conduct yet a further walkdown to check for these electrical separation requirements?

A Yes, sir.

MR. TREBY: Just so that the record is clear, I have a continuing objection to this whole line of questioning about Waterford.

MR. GALLO: I understand.

MR. TREBY: I won't interrupt your questioning with an objection each and every time but just so the record is clear.

MR. GALLO: All right. Did you get Mr. Heishman's, "yes" to that question?

(Reporter indicating an affirmative response.)

BY MR. GALLO: (Resuming)

Q Which walkdown or perhaps it was both that your

concern about the conduct of a walkdown at Waterford late in the construction activity, did it relate to the walkdown that had occurred prior the CAT team inspection or did it relate to the subsequent walkdown that was required as a result of the CAT team inspection or did it relate to both?

A It related to both. My concern is based on the fact that when the inspection process that is intended to identify deviations from the design is completed and deviations remain, then there is reason for concern and the concern, the amount of concern, would somewhat depend upon the magnitude or the amount of deviations that existed after the inspection process is finished.

Now if indeed the process is to identify these concerns on the basis of a walkdown and that is completed and a subsequent inspection by myself or anybody else identifies that the process was not adequate and there still exists some deviations from the design, then I am concerned about that and I am further concerned about anything that happens subsequent to that to get it into the design concept.

So the answer to your question would be that I am concerned about any or all of those walkdowns that were completed and allowed things to continue to be outside of the

design envelope that had been specified by the engineer.

Q Given the CAT inspection results at Waterford, the second walkdown was necessary, wasn't it?

A Absolutely.

Q So you are only concerned that it is effectively implemented for that type of walkdown?

A Yes.

Q If I understand your point, you are concerned philosophically if a walkdown is used to verify compliance with design requirements as opposed to QC inspection at the time of installation? Is that correct?

A That is the major portion of my concern, yes, sir.

Q Do you know at Braidwood in the mechanical area and in particular, the three-inch separation, pipe-to-pipe and pipe-to-structure criteria, do you know whether or not at Braidwood they intended to substitute the walkdown and I mean at the outset now for QC inspection at the time of installation?

A I don't know it for a fact. I surmised that based on the information that we had that said first of all there was in the criteria that they were inspecting to, there was some question about exactly what was intended and secondly,

the fact that they had done those inspections and when we found some additional ones and asked questions, the response was we will catch that during the walkdown.

I cannot say what their original intent was. I don't know. All I can do is speak from the facts as I know them.

Q In your experience is it common for piping systems to be modified during the course of construction?

A Yes, to varying degrees. Generally, it is not unless there is some major design change, there is generally not any major modifications.

Q But re-routing occurs as a normal course of construction activity, is that your experience?

A Not generally in the larger piping systems. In some of the small bore piping, yes, that is not an uncommon thing. But in some of the bigger piping systems, it is rather uncommon for a routing to be changed significantly in my experience.

Q Weren't the piping systems that were under consideration in the CAT team inspection on page III-2 and III-3 primarily small bore piping systems?

A I don't know. I see on page III-3, they talk about

a platform being supported off a one and a half inch diameter pipe but then we are talking over here less than three-inch pipe-to-pipe and pipe-to-structure clearances. So just on a quick reading, it would indicate to me that there is some three inches which is a pretty good sized piping system.

MR. TREBY: Excuse me, just to clarify the record. When you said, "over here," you mean the bottom paragraph on page III-2?

THE WITNESS: Correct. I am sorry.

BY MR. GALLO: (Resuming)

Q We were talking about whether or not during the course of construction pipe re-routing occurs and I think you agreed with me that it is not unusual to have it occur during the course of construction at least for small bore piping.

A Correct.

Q If a small bore piping system is installed and QC inspected at the time of installation and they look for the three-inch separation criterion to see whether or not it has been complied with, that is the way you like to see it done, is that correct?

A That is correct.

Q Now let's assume that that same piping system is

re-routed in some fashion and it is re-routed and now again it is QC inspected and again compliance with the three-inch criterion is satisfied or at least verified by the QC inspection, now would that happen or could that happen with respect to every piping system and again, we are talking small bore?

A Sure. It is possible.

Q I think my question was a little obtuse. Isn't what I have described true only with respect to the installation of safety-related small bore piping systems?

A It goes a little bit beyond that in that not only are we concerned about the separation of safety related piping from other safety related piping but we are also concerned about some things that are so-called not safety related but important to safety or the two over one, so-called, criteria that says things that have the potential for damaging a safety system must also be such that it will not create or cause problems with the safety systems.

So in general, you are correct. The only thing that I want to qualify is that there are some other special circumstances other than safety-related piping that are of concern.

Q What is your understanding of the application of the three-inch pipe-to-pipe or pipe-to-structure separation criterion? Is it just between safety systems or is it also between safety and non-safety systems?

A I don't know. I can't answer that question.

Q Except for purposes of my question that it applies to both that a safety-related piping system, again small bore, if the specifications require must maintain a three-inch interval at least for hot pipes between any neighboring structure or other pipe whether it is safety related or non-safety related and with respect to the installation of a safety-related piping system, it should be QC inspected at the time of the installation.

A Yes, sir.

Q Now along comes six months later the installation of a neighboring non-safety related piping system, will that be QC inspected to determine whether or not it has been properly installed?

A If the system is properly -- that is the inspection program or system is properly established, then it will some how be incorporated such that the requirements for these piping systems that are safety will be inspected to make sure

that the design is complied with whether it has to do with other structures, other piping systems, other things.

Now it can be done in many different ways. I have seen it done in many different ways but in some manner, it involves an inspection to make sure that when something is installed in the neighborhood of a safety system, it cannot infringe upon the design of that system.

Q Isn't it generally true at Braidwood that the installation of non-safety related systems are not QC inspected at point of installation?

A I don't know that as a point of fact but that is a general statement that is true at most plants.

Q That is true generally?

A Yes.

Q All right. So if the non-safety related system is installed after the safety-related piping system and the non-safety related system as a result of that installation impinges on the three-inch criterion, that won't be picked up at the moment of installation of the non-safety related system, will it?

A Not by the inspection process, no.

Q All right.

A But as I mentioned before there needs to be and generally is such things like a specification to the craftsman that installed it and the foreman and the other people that says, "Hey, you can't do this." The verification of it, the inspection portion of it is the part that doesn't always occur.

Q But if the craft personnel inadvertently installed this system too close to the safety-related system, it would not be picked up as of that time?

A That is correct.

Q But you point out that nevertheless a licensee should be aware of this circumstance and try to accommodate it in some fashion in the inspection process.

A Yes.

Q How would you do that?

A They intend to do it through a walkdown at some time subsequent to that and I think that is perhaps a proper use of walkdown as opposed to the expressed concern that I had earlier of not only picking up these things that don't get inspected but also picking up those things that do get inspected.

Q So to compensate for this hypothetical situation

that we have been discussing, you would agree that a walkdown would be appropriate to check for the impingement on separation criteria by non-safety related equipment and piping systems?

A Yes, sir.

Q Mr. Keshishian told us about a meeting on March 10 and that you were in attendance at this meeting and it had to do with a meeting between yourself and your CAT members and the region to discuss the follow-through by the region on the findings of the CAT inspectors. Is that correct?

A Yes, sir.

Q You attended that meeting?

A Yes, sir.

MR. TREBY: Could we just be clear as to what year, March 10 of what year?

MR. GALLO: Eight-six.

BY MR. GALLO: (Resuming)

Q Do you recall this particular item that you were concerned about the walkdowns being discussed at that meeting?

A No, sir.

Q You do not?

A I do not.

Q Did you inquire of the region as to whether or not they had taken any action to determine that Edison was properly sensitive to the concern indicated in the Taylor letter on walkdowns?

A I don't recall during that meeting that we discussed that. I did not ask the question to specifically respond to your question. Whether or not that discussion or any discussions talked about that subject or not, it is not clear. It seems to me that something was discussed about that particular area and I believe earlier in my testimony I mentioned the fact that they were indeed doing some hot functional testing or some testing of some of the systems and that the region had informed me that indeed some of these inspections had been done.

I believe that is the source of that information but I am sorry, that is a little hazy.

Q Do you recall whether or not you got into any kind of discussion as to whether the walkdowns that were conducted were being conducted in a manner so that the QC inspectors or whatever personnel that were being used were being diligent to conduct their inspections in a manner so that they could overcome any clearance problems?

A I specifically remember some discussions that had to do with the BCAP that discussed those kinds of issues and the answer was that the regional inspection of systems that had gone through that really had verified that indeed the inspections had been satisfactory.

Q Do you remember what the subject of the inspections were that you just referred to?

A We were talking about hangers for both piping systems and HVAC systems as I recall. I believe we also were talking about some BCAP inspections in the electrical area.

Q Did the matter identified at the top of page III-3 of the CAT inspection come up specifically?

A (Perusing document.)

Not to my knowledge, no, sir.

Q Was either Mr. Compton or Mr. Serb at this meeting?

A No, sir.

Q Or Mr. McLellan?

A Mr. McLellan was at the meeting.

Q Do you recall him raising that question with respect to III-3?

A I don't recall.

Q If he had raised it, would you have recalled it, do

you think?

A I must admit the specifics that were being discussed there, I was more concerned about the overall and where we were and where were we going rather than the specifics so I hesitate to say that I would or would not have, counsellor.

Q All right. What is your concern with respect to the second point on the Taylor letter? You will have to bear with me, my copy has a marker through it.

A Would you like to use my copy.

Q Yes, thank you.

(Document proffered to counsel.)

MR. TREBY: May we go off the record for a second?

MR. GALLO: Sure.

[Discussion off the record.]

MR. GALLO: Back on the record.

BY MR. GALLO: (Resuming)

Q The witness has allowed me to use his copy of the CAT inspection which is more legible than mine and I appreciate it. What is your concern with respect to the ability to manage the large number, over 20, I believe, of the ongoing major corrective action programs as noted on the Taylor letter?

A Mr. Gallo, my concern there has to do with -- my experience is that the construction of an nuclear power plant under so-called normal circumstances is a very difficult tedious management chore.

So when I became aware of the fact that there were a large number of ongoing corrective action programs during the preparation for this inspection, I suggested to my team members that it would be good to look at -- try to get a sample during their inspection of things that had gone through some of these programs and perhaps some that had not.

Then in discussions during the course of the inspection and at the end, I found that indeed there were a large number of these programs going on plus the continuation of construction on those systems which was not involved in these corrective action programs.

My concern centered about whether or not the management would be able to continue to manage these ongoing construction projects and still try to go back and if I can use the phrase play "catch up" in terms of trying to correct those problems that had previously been identified.

Q Had your experience at other plants provided a basis for your concern?

A Yes, some of which were CAT programs and some of which were in other parts of my experience. So the answer is yes.

Q Can you identify for me where based on your CAT experience this concern had evinced itself?

A Yes. When we went to the WNP-2, the Washington Nuclear Plant Number Two, to do the CAT there, they had been involved in a number of corrective action programs to correct previously identified deficiencies that they were working on at the time we got there. They were very late in the construction process. The plant was almost completed.

I found that with all of the ongoing things, it was very difficult and indeed some of the findings that we came up with in my judgment were based on the fact that the managers had been so involved in correcting previously identified problems that some things just happened that they may have caught had they not had the involvement with all the other areas.

Q Did WNP-2 receive an operating license, do you know?

A Yes, sir. They did.

Q So apparently they were able to overcome whatever management problems they had in terms of your concern in this

area, is that correct?

A Yes, sir, they did.

Q I notice that Mr. Keshishian had found that at least in his judgment that Edison was entitled to a satisfactory management rating based on his review of the project management team at Braidwood. Is that your recollection?

A Yes, sir. In fact, he was rather complimentary to the management team that had been established.

Q Despite that rating and his complimentary attitude, you still had this concern with respect to the management of these programs?

A Yes, sir. With due respect to the best possible management, it is a very, very difficult task in my judgment to try to correct or catch up on things that have gone wrong and at the same time make sure that new things are going correct.

So it is a very difficult task and even though we found that they had established the best possible team by their description and we thought the team was very strong, I still felt that this was an area that they really were going to have to work very hard at.

Q Do you know whether or not the problem that you have

identified as a concern came true at Braidwood, were they not able to continue ongoing work and also do the corrective actions?

A The information that I have indicates that they were indeed able to continue work on the corrective action programs and new work and do them satisfactorily.

Q Where did you receive that information?

A The basis of that information is the recent SALP report that was issued and the discussions that we had with the regional people in the meeting that you quoted earlier in the testimony.

Q On March 10.

A Yes, sir.

Q Let's talk first about the SALP report. What was there in the SALP report that led you to conclude that the Braidwood activity was being conducted satisfactorily with respect to continuing on-going work and also proper corrective action activity?

A My recollection of the SALP report was that they had improved in a number of areas and that their SALP ratings were all two's except for two areas, one was a three which had to do with housekeeping and one was a one that escapes me now,

exactly what area that was in.

Basically that showed a much improved trend from the previous SALP ratings.

Q Let's return to the March 10 meeting. Was this matter discussed specifically by you with the region during that meeting?

A Not specifically with this title but the information that the regional folks were exchanging with us indicated that what they were doing now, in other words, the new work that was going on, their inspection program indicated that it was being done satisfactorily plus we discussed things like the BCAP and a couple of these other programs that indicated that they had been satisfactorily completed.

So that is the basis of them.

Q Are you aware that the majority of the major corrective action plans are completed?

A I have not asked that question and I don't have a basis for stating that that is true. I would assume with the status of the plant that that is the case, but I have not physically verified that.

Q All right. I don't want to put words in your mouth here so I want to be careful, would it be fair to characterize

the concerns that are indicated at the bottom of the first page of the Taylor letter as kind of a caution or a warning, "Look out for these sort of things"?

A I think I characterized them in the exit interview as being things that were concerns to me based on my experience at other plants and things that I thought deserved or required the most management attention on specific areas and I think that is what was intended in the writing and in the report was to tell Mr. Reed and anyone else who read the report that these were areas where we thought the owner of that plant really had to concentrate because they had the potential of creating the most problems.

Whether that fits the characterization that you had or not, I guess I don't know, Mr. Gallo.

Q That is fair enough. Returning to walkdowns, do you know whether or not your concern on walkdowns has in fact been realized with respect to the activities at Braidwood?

A I don't have a basis for responding one way or another to that question. I am sorry.

Q Do you know whether or not the problems and concerns that you saw with the walkdowns at Waterford were successfully overcome by that applicant?

A The only way I can address that is that I am not aware of based on the discussions that I have had with people any specific hardware changes that have been necessitated as a result of walkdowns?

Q At Waterford?

A At Braidwood. I know there was at Waterford.

Q My question was whether or not the utility at Waterford was able to overcome your concerns with respect to the walkdowns at that facility.

A I am sure they were.

MR. TREBY: Objection, relevance.

THE WITNESS: I am sure they were because they got an operating license.

MR. GALLO: Your Witness, Mr. Wright.

MR. WRIGHT: Can we take about a two minute break before we start.

MR. TREBY: Why don't I give you five.

(Laughter.)

MR. WRIGHT: All right, five minutes.

MR. TREBY: I think we need to get up and stretch.

[Whereupon, a short recess was taken.]

MR. WRIGHT: On the record.

EXAMINATION BY COUNSEL ON BEHALF OF THE INTERVENOR

BY MR. WRIGHT:

Q Mr. Heishman, my name is Timothy Wright and I am an attorney for the intervenors in this case, BPI. Well, I am an attorney from BPI for the intervenors in this case, Ms. Rorem, et al.

I have a couple of questions to ask you concerning the general discussion that you had with Mr. Gallo and the walkdown issue and the other question of the number of corrective action programs that are taking place at Braidwood.

With respect to the walkdown, I want to for my own understanding, understand what you mean or what your basis for your concern. I take it one of them was the fact that the equipment would be inaccessible, is that correct?

A Yes, sir. Inaccessible may be a little bit strong in that the degree of difficulty of looking at things or getting to things, I don't believe that it would be correct to say that things are completely inaccessible because you can always get to something by taking something out of the way or doing these things.

So my concern in responding to your question is to make sure that I characterize it properly. I think the

characterization is the degree of difficulty of doing things that would be easier at some previous time if I can state it that way.

Q All right. When you have a walkdown, a final walkdown such as that, is there also a problem with schedule pressure?

A Could be although again schedule pressures can be also just as available during the time that the initial work is being done. Let me give you an example. If you are talking about an inspection of a weld and we are going to inspect the root pass, the welder wants to go ahead and work on the rest of the thing so he is giving you pressures to inspect this weld and get out of the way so he can get on with his work.

Now we might say that that pressure from the welder is not as great as the plant manager wanting to get his systems tested and so forth, but pressure itself is there for the inspector during the process.

That particular portion of it does not concern me as much as some of the others. It is a factor, however, I agree.

Q Do you think it is more of a factor at the point in

time in which the final walkdown is done than it would be in a normal, let's say if the inspection had taken place a year or as soon as the equipment was actually fabricated?

A I am not sure if I would characterize it as being a great deal more. It probably would be slightly more but I don't think of any major significance.

Q Is it a possibility that when the inspection is done in a final walkdown that due to the potential of increased costs that they are more likely to take shortcuts?

A I don't believe so. I think that is possible. Let me qualify it. My experience, however, is that generally inspectors are more concerned about what it is they are inspecting and what the acceptance criteria is and whether or not they meet it as opposed to how much does it cost, how much time and how many dollars does it take to correct something if I find it wrong.

One of the ways that the regulations tries to protect against that, of course, is to not allow inspection people to be involved with or responsible for the schedule and these kinds of things. So I don't believe that would be a significant factor.

However, it is true that as you get the plant built

and get closer to the testing program then, of course, the normal tendency would be to get on with it and do whatever it is that you have to do to get it licensed.

So from that standpoint, it could be slightly more pressure although I think the pressures on inspectors are more continual if I might put it that way.

Q I think in response to a question from Mr. Gallo and I don't think I exactly have your quote down here but let me see if I can get close, you stated that you noted the two concerns in the letter because of your experience at other plants, is that correct?

A Yes, sir. That is one basis.

Q That was one of the bases?

A Yes, sir.

Q Could you tell me what the other bases were?

A Primarily because we had made some findings at this facility that indicated that there were going to be these walkdowns and it is just common sense and good judgment that says when you are building something that if you find that you are not doing it correctly if you identify it at that point in time and fix it or at least put it into a system to get it fixed, that it is more efficient, that you are going to have a

better product.

I qualified that, however, in my answer to Mr. Gallo and I repeat it, that that is not to say that a walkdown type of inspection is not a method of doing it. It is just I don't think it is the most efficient or the best way to do it and my experience as we previously noted says that you can get yourself in trouble by doing this.

So that is the basis of that concern.

Q Is a basis for your concern also the number of walkdowns that are being carried out at the facility?

A I don't believe that I could sanction that now and the basis of that is that I was hard-pressed when Mr. Gallo asked me the various areas that I was concerned about in the report and I just don't recall the number of cases or where they found that.

The real concern has to do with if you are going to perform an inspection process using a walkdown after you have completed your basic inspection process, it is a system that is questionable in my mind in terms of its effectiveness.

Q All right. I don't know that I understood that. If you use the walkdown as what?

A As the prime inspection.

Q All right.

A In other words, instead of identifying or doing it at the time you make the initial inspection and you say, "No, I am not going to take care of it there, I am going to catch it during the final walkdown," I am saying that that is not the best practice.

Q If the walkdown issues at the prime inspection and the walkdown takes place at the end of the job, would it be fair to say that in your opinion it would be more of an increase in cost and schedule pressure at that time than if it would have taken place let's say a year before?

A Again, going back to my previous answer on cost and schedule and pressures, I don't know that I agree that there is that great of an increase in pressures on the inspector at that point in time than what he has originally. There may be some but that is not a major concern of mine.

Q All right. With respect to the ability of the applicant to manage a large number of ongoing major corrective programs, I take it that it is your concern that they have the ability to manage that number of corrective actions while insuring that the current work is being done in a proper manner, is that correct?

A I think that is my answer, yes, sir.

Q Is there a problem with their being able to manage that number of ongoing corrective action programs?

A I don't believe so from the standpoint of -- I think with the corrective action programs going on, they have structured their organization such that they have concentrated management attention on those areas. So I think that was not my concern.

My concern was that if that was all they had to do, they probably were structured and could do that with a problem but then if you superimpose on top of that continued construction and making sure that that all happened, that was almost a full time job in itself and so you ended up with two full time jobs if I might characterize it that way as opposed to what you would normally expect.

I would point out to you, however, that based on some other answers to Mr. Gallo's questions it appears what I have now is that they have been able to do that and if that is the case, I congratulate them.

Q What did you see at Braidwood other than the fact that these 20 corrective programs ongoing and that they were still doing the current work? What else did you see that made

the instant deposition ceased.]

you have this concern?

A That was it. That is the guts of the whole thing if you will is the fact that they had this number of corrective action programs ongoing to try to fix things that they had identified that were some problems associated with and at the same time they were continuing with the construction in new areas.

That is the whole thing.

Q Other than the representations that Mr. Gallo has made to you earlier, do you have any other evidence that in fact they are handling the 20 corrective action programs as well as doing the ongoing work in a proper fashion?

A No, sir. The basis of that statement is as I previously testified to Mr. Gallo's question.

MR. WRIGHT: I have no further questions. Thank you very much, Mr. Heishman.

MR. TREBY: I have no questions.

MR. GALLO: That is the last word.

MR. TREBY: Thank you, Mr. Heishman, for attending and we will waive signature.

[Whereupon, at 11:05 o'clock a.m., the signature of the witness having been waived with the consent of counsel,

CERTIFICATE OF NOTARY PUBLIC

I, MARILYNN M. NATIONS, the officer before whom the foregoing deposition was taken, do hereby certify that the witness whose testimony appears in the foregoing deposition was duly sworn by me; that the testimony of said witness was taken by me and thereafter reduced to typewriting by me or under my direction; that said deposition is a true record of the testimony given by the witness; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this deposition was taken; and further, that I am not a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of the action.

marilynn M. Nations

MARILYNN M. NATIONS
Notary Public in and for the
Commonwealth of Virginia

My Commission expires January 15, 1989.

R. F. HEISHMAN

PROFESSIONAL QUALIFICATIONS
CHIEF, REACTOR CONSTRUCTION PROGRAMS BRANCH
DIVISION OF INSPECTION PROGRAMS
OFFICE OF INSPECTION AND ENFORCEMENT
U. S. NUCLEAR REGULATORY COMMISSION

I am Chief of the Reactor Construction Programs Branch in the Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Bethesda, MD. In this position, I am responsible for the development and maintenance of inspection programs for reactors under construction, evaluating the implementation of these programs by the Regional offices and assessing the effectiveness of these programs including the conducting of Construction Appraisal Team inspections at selected facilities. I have been assigned to this position since early 1982.

During the period September 1981 - January 1982, I was the supervisor of the Performance Appraisal Team which conducted indepth team inspections of selected reactors in operation from the Bethesda, MD office.

From February 1979 - August 1981, I was assigned as Branch Chief of the Reactor Operations and Nuclear Support Branch in the NRC Regional Office in Chicago, IL. In this position, I managed the inspection program for the reactors in operation in the midwestern U.S.

I was assigned as Branch Chief of the Reactor Construction and Engineering Support Branch from October 1976 - February 1979. This assignment included the responsibility for the management of the inspection program for reactors under construction in the midwestern U.S.

From October 1969 - October 1976, I served in the NRC Regional office located near Philadelphia, PA. During this time, I served as a reactor inspector for operating, research and construction reactors and as a first-line supervisor for these programs.

During the period 1959 - 1969, I was a member of the U.S. Army Engineer Reactors Group serving on numerous military reactor systems as operator, supervisor and plant manager.

I am a graduate of the Army Nuclear Power Program and have attended Upper Iowa University.