UNITED STATES
NUCLEAR REGULATORY COMMISSION

In the matter of:

Briefing On Sequoyah Operating License

Place: Washington, D.C.

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

Thursday, February 28, 1980

The Commission met, pursuant to call, for the above-entitled matter, before the Chairman John F. Ahearne, presiding.

BEFORE:

JOHN F. AHEARNE, CHAIRMAN

VICTOR GILINSKY, COMMISSIONER

PETER A. BRADFORD, COMMISSIONER

RICHARD KENNEDY, COMMISSIONER

JOSEPH HENDRIE, COMMISSIONER

P R O C E E D I N G S

CHAIRMAN ADHEARNE: The Commission meets again on a issue of rather substantial interest, not only for the specific plant, but for the general issue. This is on the Sequoyah Nuclear Station. It is my understanding that it is in that past few weeks the Commission has met several times on this; before I go much further on it, let me ask for a action required by the Sunshine Act, we are have a briefing on Sequoyah Operating License and I would like to take a vote to hold on less than one weeks notice.

(Whereupon, there was a chorus o' ayes.)

All right.

I was not here at the previous two meetings; Commissioner Gilinsky Chaired it at that time. My understanding was that the Staff was told to continue its review, whatever the issues they believed were outstanding, and at that time they felt that they had at least resolved the issues from their view to come to us with that resolution and presentation.

It is my understanding is therefore having received the request for this meeting, that the Staff is now prepared to do so, unless either Commissioners have comments.

Harold?

MR. DENTON: Thank you, Mr. Chairman.

We are prepared this morning to recommend the

issuance of a license for Sequoyah, this afternoon. As you know, we have been proceeding down the path of a stage process to this license. It would consist of a fuel load low power test phase, rather a fuel load zero power test phase than a 5 percent power test phase and then authorization for power. We have not completed our review of operation beyond the operation of 5 percent power phase, and in fact, there are still several outstanding issues to be resolved before beginning the 5 percent test. But, we have completed the review for fuel load and zero power test. And as the last item on today's agenda, I propose that we talk about the format of this authorization and the type of license that should really issue.

I have with me today the license, for one format and we can convert it to license in other formats as we see fit. If I could have the first slide. I will outline--the second slide, please.

I will outline the topics that we would like to cover today. I will go over the progress since the last meeting and the progress is that we have wrapped up all the parts for the review that were outstanding then. We will cover in some detail the results of the pressure vessel nozzle inspection that we required be completed. You may recall that this pressure vessel was fabricated in Rodder Dam and the French had found some problems with their vessels

and we wanted to be sure that this vessel did not suffer some of those defects.

We will cover a little bit about the turbine inspection, a program of this licensee. There is one pipe well that we want to look at further, and we will go into that further with you. Also, I want to cover the implications of the recent Crystal River accident, with regard to the loss of instrumentation displayed in the control room. This will not happen at this plant. We will go over the differences and designs between Sequoyah and Crystal River for you.

There were also some questions raised about control room design that were in a letter that we received from a-- in that area. I will also discuss the capability and the implications for ice condensers of evolution with large amounts of hydrogen and then, finally, at the phase we would be preapred to discuss the type of license that you would like to issued.

With that introduction, Denny Ross will begin the presentation.

MR. ROSS: The next slide. Since the last meeting, we had closed out all of the near term OL items, and when we get to the format of the license, you will see those items appear again in the proposed license itself.

COMMISSIONER KENNEDY: When you say "closed amount",

Denny, what are you saying?

MR. ROSS: That our satisfaction at the--TVA has provided commitments that meet the intent, are the words of the near term OL subset of the Action Plan.

They are documented in our SCR and also reprinted in the proposed licenses. We have three technical discussions, Harold mentioned. The second line on the side concerns the pressure vessel nozzle cracking, and we will start that in just a minute. And Jim Knight has six or eight slides that will discuss the chronology and the work done by TVA and the Staff judgment.

COMMISSIONER BRADFORD: Denny, if they have provided commitments that satisfy you, why does the relief an' safety valve test item order the Tennessee Valley Authority to commit to carry out a testing program?

MR. KNIGHT: Yes, sir.

COMMISSIONER BRADFORD: Why are you ordering them to commit to do something that will have already satisfied you?

MR. ROSS: The research, itself, for the relief and safety valve testing is a long and complicated program that could take up to a year and a half. A lot of utilities are going in with EPRI to do the research NEUREG 0578, the short term lessons learned report, which first surface this problem alway in vision that it would take a long period of time

and the Action Plan clearly stated that what was needed at this point was a commitment designing--constructing the research facilities performing the test to do the analysis took a long period of time. Along the same item, the NRC is proceeding side-by-side through research to provide some of the redundant type test data. A commitment was all that was in vision at this time.

COMMISSIONER BRADFORD: But, why would not for the purposes of the license, you just order them to carry out a testing program and let them furnish you with a commitment?

MR. ROSS: Well, I think we are in a matter of style, not substance. If we ordered them a license and they came back and said we discharge that function by commiting and laying out the program that they are going to participate in, there is no substantial difference, there is just a matter of style.

COMMISSIONER BRADFORD: Well, but all of the other conditions in the licensing, say TVA shall establish, shall implement, shall provide, and on this one you say that they shall commit to do.

MR. DENTON: I think what Denny is saying is he was following exactly the words in the Action Plan which required a commitment. But, from my standpoint, it could just as well read, shall carry out a safety valve and relief valve test program.

COMMISSIONER HENDRIE: Well, provided the language

allows perfectly reasonable option of people who have similar interests in relief and safety valves to gather together into a single, jointly fund--single test program.

COMMISSIONER BRADFORD: Yes, but you have that concern whether you are requiring a commitment to do it or whether you are requiring it to be done.

CHAIRMAN ADHEARNE: I think you might as well make the change.

MR. DENTON: All right, we will make the change.

MR. ROSS: We mentioned the third item about the turbine inspection that there should be one before we get into the significant power production. We will have a discussion by Rodney Satterfield on the relationship of the Sequoyah design to the potential--for the Crystal River event of a few days ago. The third technical discussion we propose this afternoon has to do with the ice condenser at Sequoyah with respect to hydrogeneration and mitigation measures should large quanitities be present.

Then we have also updated the safety--the supplement of safety evaluation. That is our progress sinse our last meeting.

COMMISSIONER GILINSKY: Let us see. We also talked about augmenting the operators at the plant with Westinghouse personnel experienced.

MR. ROSS: Yes, sir. The SRC reflects, the updated

SCR reflects the fact that there will be augmented experienced people working on own-shift alone--

COMMISSIONER GILINSKY: Could you comment on that as you go through them, as you get to that point in the list?

MR. ROSS: Yes. We have some separate slides on that subject that we can provide at the appropriate time.

Okay. I would like Jim Knight to start in on the subject of the pressure vessel nozzle cracking.

MR. KNIGHT: May I see the first slide, please?

Just a brief chronology of so-called under clad cracking that has occurred through the years. Going back to 1970 where a type of cracking was characterized as "reheat cracks" occurred. These were cracks that resulted from the cladding itself. And in 1972 the Kussmaul type cracks were cracks that occurred actually in the welds and then '79, the Framatone cracks.

Just speaking broadly of all of this type of crackings, they are all very small, typically very small flaws. The framatone type cracks were the largest of this class that could be seen in this state. Could I have the next slide, please?

The brief chronology of how we got to where we are today, here speaking to you on this subject, during this part of the licensing process and starting in September when we heard from the French that they had found these problems in

the Framatone vessels through the information memo that we sent to the Commission, the internal Staff actually took place November 15. The operating experienced memorandums, the meetings with the nuclear, with United States Power, because the one vessel that had been fabricated Framatone to was Prairie Island.

The consensus of the Staff being that the type of cracking that was experienced Framatone had been prohibited, if you, by processees which were inforced by U.S. manufacturers that is much closer control over the heat input, during putting on the the application of the cladding.

On December 13 there was a letter from Westinghouse that informed us that the vessels that had been fabricated at Rodder Dam Dry Dock Company before Westinghouse, were under consideration. This was based on a review that Westinghouse made of the cladding processees, the control of pre-heat or the absense of post-heat and pre-heat while the cladding was being implied. And I show here that February 6, the actual receipt of the January 31 letter, informing us that the Watts Bar Vessel had been examined and there were a number of indications but not Framatone type of cracks. We found a number of indications, themselves, somewhat disturbing. Realizing that the UT, ultrasonic inspection technique, being used here is a very sensitive technique. Far more sensitive than that than the one that is normally

used. But you would expect a number of small indications that you might not see otherwise. But, still it seemed less that there was enough there to cause us to reconsider our previous feelings that the vessels that we were concerned from the licensing stream were all right. And, I think, the references the internal memo, written by myself, actually saying that we would--February 11, perhaps conclude that we ought to take a look at the Sequoyah. May I see the next slide, please?

And on the 20th we had telecon with TVA to discuss what I think that we can properly characterize, is a confirmatory inspection. At that time TVA had promised--well, they had looked at one nozzle and saw no Framatome cracksf but they did see re-heat cracks. If you remember that first slide, re-heat cracks were something that we first say back in 1070. These cracks occurred at an intersection of a strip cladding when it is applied to the nozzle.

CHAIRMAN ADHEARNE: Jir, are you going to take a minute at some point to explain the difference between those two types of cracks?

MR. KNIGHT: Yes. Perhaps, it is best to do it at this moment.

CHAIRMAN ADHEARNE: There might be a couple of people who do not know the difference.

MR. KNIGHT: Okay. I have some slide that are on--perhaps--they are highly scamatic, but they will give a much better feel for the type of cracking that we are talking about.

On the 22nd we met with TWA to review Srquoyah and our conclusion based on their techniques that they were using, the results that they had seen to date, was that the Watts bar vessel was just not a good enough sample. The differences between vessels, even the nozzels of the same vessel are sufficient--can be sufficient enough so that prudence dictated, looking at looking at all the nozzles of Sequoyah. And that has been done and the record was filed on the 26th, and we reviewed those reports and, as I will show you in a moment, a number of indications were found but all of them are well within the code allowed. They perturbed some people who were not familiar with the process to realize there are such a thing as allowable cracks. But, in fact, if they are quite small, quite small crack are virtually unavoidable and items like major pressure vessels and years of experience and analytical results, can demonstrate that they will not grow during the life of the vessel and therefore they are innocuous.

CHAIRMAN ADHEARNE: So with a 10-year inspection program which might off hand, appear to be very long period. You are saying it is adequate for this type of crack growth.

MR. KNIGHT: A very conservative estimate of the size of the crack and its growth rate would indicate the absolute--maximum growth of the range is 4,000ths of an inch over 40 years, and such a growth is totally innoceous. The 10-year inspection interval is, as you say, may seem long, but

actually, it is quite conservative. But it would tell you is you, in fact, saw some growth that was unexpected at that date, it still would be very small, but if you did see it, it should be inspected at shorter intervals. But it is simply not a percipitist process. It is a very long term process, if in fact, you see any growth at all. May I have the next, please?

Just to put us in context, we are talking about the reactor pressure vessel nozzles, the roll of nozzles that you see just above the core, indicated on that slide. And the next slide, please?

It is a section of the reactor vessel with one of the outlet nozzles circled. A slight enlargement of the nozzle, itself. And the slides that I will go to in a moment, we are going to look at the inside of that nozzle with the surface cut flattened down and the indications will be shown there. Would you move to the next, please?

Here is where we can talk about the differences in the cracking. There is the inside surface of the nozzle, which has been flattened out. The line you see going from right to left, the horizontal line, right back to--closest to the reactor vessel side, indicates a point where two types of cladding had been joined, the vessel cladding and the cladding of the nozzle itself had been joined by using a manual stick, a electro welding technique. It was at that point, where the so-called re-heat cracking occurred. If you

right-hand corner, there is an enlargement of that section. And you will see a number--a very small--linear indications running perpenducular to the line of the welding. This is classic of the so-called re-heat cracking. It occurs when you lay a second bead of weld over an initial bead, which is cool, and in fact,, you bring the surface just under the cladding up to an unfortunate metallurgical temperature, and you will get this small cracks on it. I said it has been reviewed at great length over the years and that type of cracking found to be innocuous.

COMMISSIONER BRADFORD: Why was this thought worthy of notice to the French reactors. Was it--had it shown up in more serious form there?

MR. KNIGHT: No. This type of cracking, this is a so-called re-heat crackingp this not what showed up at Framatone. We started off with a concern for the Framatone problem. The first nozzle inspected at Sequoyah did not show the Framatone type cracking, but it did show this which most people reacted to do saying well, okay, we know of that type and that is relatively innocuous.

MR. DENTON: This nozzle does not show Framatone type cracking, but we were not sure it was represented.

MR. KNIGHT: Okay. Let me see the next slide, please.

CHAIRMAN ADHEARNE: You are going to get to the

Framatone cracking to answer--

MR. KNIGHT: Yes. And I will do it with the next two slides, and then perhaps just a bit of discussion.

This was one of the other--this was next to the worse nozzle; there is others to be looked at. Unlike the single nozzle that had been reviewed before, there was nc sign of re-heat cracking. But, rather there was this random pattern of indications and each one of those little couses (?) represents a small crack detected by ultrasonic methods laying just under the cladding. And this random pattern is more typical than the Framatone type cracking.

In the final analysis, one would say, well, why is a Framatone crack different than a re-heat crack? If you get right to the guts of the matter, there is not difference. They are both cracks and they are cracks in the surface in th the heat effective zone, just under the cladding. The question is the process, how did the cracks occur, why did they occur, and do you know enough about that process, do you know enough about the phenomena that is occurring so that you have confidence that this--they are small cracks, they are a category or classified type of crack. Okay, let us see the next slide, please.

And this was the worse nozzle. I said that. The other nozzle that I showed you was the next to the worse. This is where there were a large number of these indications. It is our opinion, at least, the opinion of many members of the

Staff, it is typical of the Framatone crack.

Now the cracks found by Framatone were larger and that could be from a combination of things. Just that the-- it could be the particular cleanliness of the steel of the nozzle forging.

CHAIRMAN ADHEARNE: By larger, do you mean the order of magnitude?

MR. KNIGHT: No, the largest crack found here was measured at around 5/8 of an inch in length. Some of the Framatone cracks were 3/4 of an inch to perhaps a little over an inch.

COMMISSIONER KENNEDY: How deep?

MR. KNIGHT: Not--the process--the ultrasonic process cannot give you a direct reading of depth. But, it is pretty difficult to imagine a crack that is any deeper than you would find if you make a given length and you then make a semi-eliptical (?) crack. That would give depths here in the order of tenth of an inch, a little over a tenth of an inch.

MR. DENTON: No deeper, I take, Jim, than the depth of the heat effected zone right under the cladding.

MR. KNIGHT: That is correct. The phenomena is limited. Again, that is why I made a point about it is important to under the phenomena, it is important to understand what cateogory of cracking that you are talking about here.

CHAIRMAN ADHEARNE: But, you are saying that you

ended finding both re-heat and Framatone type cracks.

MR. KNIGHT: The cracks, even in this nozzle are showing, because of the size of these, they are all within the code allowable limits--

CHAIRMAN ADHEARNE: But as far as the terminology of the type of crack, you did find--

MR. KNIGHT: Both types of cracking--

CHAIRMAN ADHEARNE: So both are regular ones with this random distribution?

MR. KNIGHT: Yes. And, again, as I said, as it gets-- as the essense of the question gets to size, once you understand where the process is, and I feel we do and then we can examine the size of the cracks as we did and preclude quite properly that the growth during the surface life of the vessel, even given a very conservative look at the transient that might occur.

I think we have just two more slides that go a little further into the definition of a crack, and I do not think it is worth while, unless there are any questions.

MR. DENTON: Why don't you go to the one on the Framatone.

MR. KNIGHT: All right. What have you got next as a slide? There is a redundancy in this package. Yes, take that down and bring up the next one

MR. DENTON: Why don't you just describe it?

CHAIRMAN ADHEARNE: Why don't you just forget it?

MR. KNIGHT: It is in the package; it is a slide that characterizes the source of the so-called Framatone crack that results as no pulse from the--testing from a no pulse weld heat treatment. That the first weld deposit was made with the usual pre-heat and post, remember, now, we are talking cladding now, a thin layer of stainless steel laid on the surface of the vessel and the nozzle. And that the first weld deposit is made with a usual pre-heat and post-heat but if the suceeding pass or passes are performed without pre-heat, our post weld heat treatment and they are confined--these cracks are confined to the heat effective zone, they are produced by the second layer of cladding, and they are generally characterized as a cold cracking.

The slide goes on to say that the presence of a induced hydrogen during processing are manganese inclusion or carbon segregation, contributed factors, that might follow as a metallurgical new ounces (?).

In the final evaluation they said your concern has to be based on the size of the crack that is there, your understanding of the growth mechanism, which I think are commited over the past two years to standard practice and the finding that you will not see.

MR. DENTON: We cover this in some detail because there are number of vessels fabricated in that same shop that we will be considering in the future, too.

CHAIRMAN ADHEARNE: I gather as far as this issue of

e-heat type cracks, that is something that you are familiar with, as the first slided indicated back in the early '70s.

MR. DENTON: Yes.

CHAIRMAN ADHEARNE: So, you have seen them in some other vessels that you--

MR. KNIGHT: Yes, a number of others. Each time we evaluate each vessel.

CHAIRMAN ADHEARNE: Have of those vessels gone through long enough operations so that when you have had a 10-year inspection?

MR. KNIGHT: No sir.

CHAIRMAN ADHEARNE: Any of the vessels that you know of have been re.inspected to varify this prediction about cracks?

MR. KNIGHT: There is no--there has been--perhaps I do not understand the question.

CHAIRMAN ADHEARNE: The question is that you seem to know that some vessels have the re-heat cracks in them?

MR. KNIGHT: Yes, sir.

CHAIRMAN ADHEARNE: And your point is that it is a very small crack, and the understanding of the reasons for it being there, you feel are fairly well understood that the crack growth rate, your prediction is, is very small; therefore, the 10-year cycle is adequate. And my question is do we have any pressure vessel that has been put into operation where it started out with cracks and that there has been a re-check at

some X period after it?

MR. DENTON: There have been vessels which have undergone a 10-year inspection, but I am not usre whether any of those were identified as having re-heat cracks in the first place.

MR. KNIGHT: That is right. And there is a second consideration there that some of the cracks are so small that the inspection techniques would not have seen them. That goes with your question as this: re-heat cracking is not only just applied to nuclear cracking, you see them in petro-chemical--

CHAIRMAN ADHEARNE: Any time you have a large--

MR. KNIGHT: Large vessel of this type, vessels of this type with known re-heat cracks, have been in service, in strenuous service for years without--and that is the background as given in confidence and that one might call innocuous' of that type of cracking to my knowledge and I do not believe that there is any on the record there is failure or even leakage results from this type of cracking.

CHAIRMAN ADHEARNE: All right. Any questions?

MR. ROSS: To cover the conclusion, the letter we sent today had a brief statement in the cover letter that the flaws were acceptable from our standpoint and under current Commission requirements, but will require periodic monitoring and we included a three-page plus in reference supplemental evaluation which we will put--issue as some supplemental SCR.

CHAIRMAN ADHEARNE: They did mention that the luke one outlet nozzle was the one where it was, I guess the thin wall section--

MR. KNIGHT: Yes, the safe end area.

CHAIRMAN ADHEARNE: How thick is the wall there compared to your prior testament, I think, you said perhaps two-tenths of an inch deep.

MR. KNIGHT: The best estimate--

MR. ROSS: The answer is right on the slide.

MR. KNIGHT: Ron Gamble?

MR. GAMBLE: Three inches.

MR. KNIGHT: Three inches at that point.

MR. DENTON: Let us move next to a component that we expect not to crack but are inspected. Next slide, please.

MR. KNIGHT: Very briefly, we will require that there be a turbine inspection prior to power production before the end of--

MR. DENTON: There has been such an epedemic of terbine cracking, we wanted here to look just where the turbine goes into operation and the licensee agree to it.

MR. ROSS: This would be true to the other near-term OL plants that you will be seeing later on this year; it is not just Sequoyah item. Next slide.

MR. KNIGHT: Slide, please.

COMMISSIONER HENDRIE: That is a Westinghouse turbine at Sequoyah, as I remember.

MR. DENTON: Yes, it is.

MR. KNIGHT: It is an item concerning a pipe repair that was made on a pressure line--pressurizer leak line. And it is a matter of interest today, primarily because following additional Staff review, to the satisfaction of the team working on that matter, additional questions were raised within the Staff as to the certainty of acceptability of the repair. Let me give you just a little bit of a background. This was a pipe that was off the top of the pressurizer and it is prior to the pressurizer relief valve. During the high functional testing a pipe support, movable if you will or snubber, or type support, malfunctioned when the plant heated up and the pipe was bent. In order to maintain the loop-seal of that pipe, it was designed to be horizontal, the line of the pipe, and it was found necessary to restore it. The manner of restoring it was to use a so-called draw bead technique, a groove, in this case, two grooves and they are cut in the pipe and they are filled with weld metal. They are not cut all the way through, in this case, they were cut two-thirds the way through the wall ground out 270 degrees around the pipe. They are filled with weld metal and the weld metal shrinks and causes the pipe to move. The question here is one of whether or not you caused unacceptable sensitivization of the stainless steel in that pipe by the heat input into the welding. A team from the Staff has review it. It has been reviewed by our consultant interviewer,

people from I&E, and said the consensus was that it was an acceptable process. The critical part was carried out in such a way that you could not have acceptable sensitivi7ation in the material.

The questions which have raised are detailed metallurgical questions which I would characterize as borrowing on a rather clasic of differences of opinion you might get between metallurgist as whether this test is a good test or that test is a good test. Whether indeed you have seen enough. Each given individual has seen enough to be really satisfied. We felt here that prudence dictates those questions be answered. And we have Staff metallurgists who have the questions go down to TVA to examine the metallurgical samples and satisfy ourselves that all the branches of the problem are being covered.

CHAIRMAN ADHEARNE: I gather from the way that you have described it, I guess that there are some people in the Staff who are not satisfied with the welding technique or--

MR. DENTON: Let me say there are some differneces of views among the members of the Staff. What we are having done is some of the members with different views are going to the site or relook at the data--

CHAIRMAN ADHEARNE: Fine. That is what I was getting to. Will those individuals, at least, will be involved.

MR. DENTON: Absolutely. They will relook at the data and relook at the weld and it is a type of issue which

apparently can be fixed by propoer re-heating of the weld, if that is the term to be necessary. So while it is an issue of one that we have to follow up on, I do not see it as a barrier to the issuance of an authorization. That they could be remedied, if re-heating is necessary in place. Maybe you would want to speak, Jim, to the remedial type measures for--and it is not concerning the welds, as I understand it, but the metal that was not welded and the exact metallurgical state of that part of the pipe and whether is sensitized or unduly sensitized or whether it has to be re-heat treated some time.

MR. KNIGHT: That is correct. If the grooves are not cut all the way through the wall but the welding process will, of course, heat the walls, the concern was that the inter surface of the pipe might have been brought to an unfortunate temperature range. Some special corrosion tests were run, a mark-up was built and we tried it first on the mark-up. Some tests were run and it is my view, at least, it seems to be largely a matter of the interpretation of those tests, the feeling that they were properly interpreted.

CHAIRMAN ADHEARNE: Now, can the--whatever examinations required, retest or whatever your people are going to do, can that be done if the plant is going through this low part?

MR. KNIGHT: Yes, if in fact should be deemed it necessary to take corrective action, it could be done anytime the plant is in the--

CHAIRMAN ADHEARNE: Well, it is not so much to asking whether the corrective action to be taken, can the test be done?

MR. KNIGHT: No. The tests are metallurigical laboratory test on samples that are already available.

CHAIRMAN ADHEARNE: I see.

MR. DENTON: So I have not made a decision on the merits of whether this metal needs a change or additional treatment or not and would propose not to make a decision until the team returns again. But, since it is possible to do it during this phase of the fuel load, I do not see it as a barrier to issance.

This concludes Jim Knight's presentation, unless there are further questions for him.

MR. ROSS: Let us go to the next slide.

MR. DENTON: While we are setting down, I will mention that we discussed yesterday, the Bulletin that was issued regarding the diverse power sources for control room instrumentation. We have looked specifically to see how Sequoyah is arranged with regard to power supplies for instrumentation in the control room and Ron will discuss the results of that.

MR. SATTERFIELD: I wanted to cover the first four bullets there, cover just a few item on the Crystal River within itself. As you know the Crystal River event was initiated by power failure in a eye cabinet. N&I provides input to the ICS--

CHAIRMAN ADHEARNE: Intergraded control system. Some people might not--

MR. SATTERFIELD: Intergraded control system and also provided information to the control room display. The intergraded control system uses the information from the non-nuclear instrumentation. The cabinets put together with other information to control the reactor, to control the turbine, and to control the feedwater flow. The N&I failure failed a number of the displays in the control room and that was one of our real concerns as far as instrumentation was concerned. That hindered the operator's ability to monitor the status of the plant after the event.

The Sequoyah design is considerably different. Westinghouse uses the outputs of a single reactor protective channel for control purposes. But, in the control room all of the outputs of the reactor protective system are displayed, it is all the critical perimeters that come out of that channel. So that no single failure or a single can initiate a transient, but it cannot disable the other three channels that are displayed in the control room and we believe that is the very important characteristic of the Sequoyah design. I have listed on the slide a number of the perimeters that are displayed from all of the fort (?) of the reactor protective channels. The include steam generator level, steam line pressure, feedwater flow, primary loop, Delta T or change of temperature, the primary coolant flow rate, pressurizer level

in the pressure, and refueling water storage tank level. I think the bottom line is that while a single failure in the power supply can indeed initiate event in a plant like Sequoyah like it can in most plants. There is a fair amount of redundancy as far as instrumentation is concerned in the control room.

Questions? Next slide.

MR. DENTON: The next slide resulted from the comment, Commissioner Bradford, you provided us a list that identified a number of deficiencies in the Sequoyah control room on the basis of a review that was done last summer.

MR. SATTERFIELD: We received this memo late yesterday afternoon, and it list nine human factor deficiencies in the Sequoyah control room. We discussed these deficiencies with both TVA and with our contractor, Essex. Essex is the contractor that helped us in doing the control room design review that was performed earlier this month. Five of those deficiencies were corrected promptly.

COMMISSIONER BRADFORD: Corrected promptly yesterday or corrected promptly--

MR. SATTERFIELD: No. Four of the deficiencies were corrected prior to the time that we made our visit.

MR. DENTON: TVA apparently had this information for some time before we did.

MR. SATTERFIELD: Yes, they got it in the middle of July and they had taken some action. There was three items

that they did not correct. They were items that--

CHAIRMAN ADHEARNE: Peter, is that your--

COMMISSIONER BRADFORD: Yes.

CHAIRMAN ADHEARNE: Was that an EPRI consultant?

COMMISSIONER BRADFORD: Let us see. An EPRI consultant originally or a TVA00

MR. SATTERFIELD: It was my understanding with talking with TVA that the consultant for EPRI is come down--is fellow from MIT who has written an article on control room design, human factor deficiencies which all these deficiencies were included in by him.

Going on, there were three items that were not corrected immediately because of TA's concern that they might some negative impact on the operator. These deficiencies wtre also identified by the Staff Essex Group that went down. These include--

COMMISSIONER KENNEDY: When did they go down?

MR. SATTERFIELD: Early this month, the first week in February. They include the arrangement of displays providing neutron flux information. The problem with uncoordinated use of colors on pen recorders for steam generator water level; finally there was some concern about labelling and positioning the safety valve injection--the safety injection valve controls. Again, these were all items that we had found and we I breifed you on our review a couple weeks ago I indicated that there were certain items which were to be

corrected immediately, other items which we corrected later. These fall into the later category. We should receive from TVA the first of next month, excuse me, the first of April, some commitment from them on when and how they plan to correct these deficiencies.

CHAIRMAN ADHEARNE: I wonder if you could explain one point. Now you say that three items were not corrected immediately due to possible negative impact on operation. The plant was not in operation back in--

MR. SATTERFIELD: The operation was in training then. I think that in fearance, TVA made a judgment that the value to be gained from making some of the modifications probably were not worth the effort.

CHAIRMAN ADHEARNE: Changing the colors of pens?

MR. SATTERFIELD: In some cases a temperature a hot leg temperature was indicating--

CHAIRMAN ADHEARNE: No. I read the points, I am just--

MR. SATTERFIELD: Well, we came to the same conclusion that they really ought to be changed.

MR. DENTON: And they have agreed now to make the change.

MR. SATTERFIELD: The final item had to due with the numbering of feedwater heater controls. The feedwater heaters are lined up in such a way that the feedwater comes in cold one end and goes through a number of heaters and comes out

hot the other end. The feedwater heat--the heat supplier--the heat source for the feedwater heater is re-heat steam. The steam comes on it in at the other end flows the other way. The feedwater heaters happen to be numbered in accordance with the way the steam flows instead of the feedwater. I am not sure that the individual here will recognize that. I think the numbering steam for the feedwater heater is perfectly acceptable.

COMMISSIONER HENDRIE: You are really going to have them change that now?

MR. SATTERFIELD: No. What we have asked TVA to do is to adddress the deficiencies that we found, they plan to do that with a letter to us--

COMMISSIONER HENDRIE: Because as I remember those things, they are set up in the right way.

MR. SATTERFIELD: They certainly present to us--

COMMISSIONER HENDRIE: You got the level stuff on one side and the rate stuff on the other and the sensitive range where you come critical, the source range. You got the level and the rate channels two here, two here, and two in the center. And I do not see a much better arrangement than that frankly. That is, it seems to me that there are all kinds of permutations of that arrangement, but I find that with my own practice, that the one they have got is as reasonable as any.

MR. SATTERFIELD: I am sure that if TVA makes that

judgment they will certainly organize it. And, I think, there are a balancing of judgments that we are going to have to make in the future about whether or not these things have to change.

COMMISSIONER HENDRIE: Well, the pen colors, that is one I think would be used to be addressed.

MR. SATTERFIELD: Yes, it would be.

COMMISSIONER HENDRIE: I felt it was one of those things which challenges your instincts and you judge the good operators of how rapidly they can build their intuitions on whether No. 4 red is hot or cold.

CHAIRMAN ADHEARNE: That is perhaps not the kind of challenge that you should be concerned about.

COMMISSIONER HENDRIE: I think that that is much of the point of the human factors engineering effort to not make those challenges. But the flux instrumentation is a oeasonable enough array.

MR. ROSS: We would like to go onto the presentation sequenct--

COMMISSIONER BRADFORD: Let me address one other question about that. I take it that you have also concluded that nothing that would happen between now and April 1, would make it any more difficult to make whatever corrections. That is obviously true of the pens.

MR. ROSS: Yes. Okay, I wanted to put something in your presentation sequence a little bit out of order. Since we are on the control room, get Bill Cottell to come up, he is

resident inspector.

There is two matters. In the letter that we sent you today there is a license condition, it is on Page 4 of the proposed license and it is license condition 4C. And of the subject of 4C of shift manning, we note here that the TVA shall provide an additional senior reactor operator on the shift, and this is addition to what is in Table 521 of the technical specifications. I believe that last time we were down here, we were talking about the near-term OL item of two operators in a control room. That is the response to that, and TWA has agreed to that.

The other matter on the control room operators that we talked about just a minute ago had to do with the augmentation during the start up and low power tests and I want Bill Cottell to talk about that.

COMMISSIONER GILINSKY: Well, there arose from the fact that only two or three of the TVA operators that ever operated in a nuclear power plant--

MR. ROSS: That is what Mr. Cottell is going to speak about.

MR. COTTELL: That was one of the findings that I managed on it, TVA cooperated in, particularly the Sequoyah site. If I could have the slide marked Tall Collin No. 1 (?).

Okay. In an effort to increase the actual operating experience available on sight, TVA has made several changes to their shift organization in the form of augmenting personnel.

I would like to start, now, at the bottom. We had one concern that the operation supervisor of the plant staff had relatively little experience in regard to PWRs. TVA has brought in an individual with nuclear start up services incorporation with some 17 years experience, previously licenses in two large PWRs and two smaller PWR plants and in addition some 12 years of initial start up and operating experience in plants. This individual will act essentially as operations supervisor assistant with an overall management in fuel loading and test referral. I feel that that is an adequate augmentation in that respect.

For the concern of inadequate experience on part of the shift personnel, we move to the middle portion of the slide. TVA has brought in individuals from nuclear services incorporation who will act in the own shipt capacity, advisor ro the senior reactor operator. It is not the shift technical advisro, this is in addition to the licensee shift technical advisor.

There is a summary of the experience of those individuals; they have all been licensed with PWR type plant and for the most part participated in either start up test programs or extensive experience in re-fueling and low power testing programs.

In addition to that, the shift will be augmented at least for the fuel load and zero power test portion of the program that they are now approaching by Westinghouse

engineers. The slide shows the special augmentations support from Westinghouse, that is not a loading for each shift, that is the approximate total number of the special Westinghouse engineers that will be brought in. In addition to that there will be some Westinghouse assistants engineers. Such that there will be shift coverage by Westinghouse personnel as well. We feel--

CHAIRMAN ADHEARNE: Well, the nuclear services that group in the middle, there will be one in each shift?

MR. COTTELL: One on the shift.

MR. DENTON: I plan the satisfactory in compensation in this case. The next few plants that will come along will be operating plants, where we will not face this issue of a fresh crew without operating experience and I will try to readdress this issue by the time we face another plant that does not have a prior operating experience. I think that you have raised a good concern and , in fact, in recent order on Indian Point, you may recall, that we required that the the beginning and mid-year, all the new candidates for SRO must at least have some experience in ROs.

COMMISSIONER HENDRIE: I hink we will want to return to ths point wren we discuss going to full power.

MR. ROSS: Yes.

COMMISSIONER GILINSKY: I think we will want a report on--

MR. ENTON: Well, my thought of a full power

consideration would involve a review of a plant's procedures and the performance of the operators and take a whole listic view toward the entire operation during the low power program. We certainly include this as part of that.

CHAIRMAN ADHEARNE: You might even consider discussing with TVA the possibility of getting some operators full time with previous experience.

MR. DENTON: Yes.

CHAIRMAN ADHEARNE: Could I get a copy of this memo?

MR. DENTON: Certainly.

MR. ROSS: Anything else that the resident could help you with?

COMMISSIONER HENDRIE: I assume you will be working all three shifts during the start up period, Bill?

MR. ROSS: The overtime text spec does not apply to the resident.

MR. DENTON: Well, that is good that you should mention that we do have some help.

MR. COTTELL: We do have a second resident inside now and he is almost completed his training propram. In additon, for example, the fuel loading we will probably have two regional inspectors up out of the Atlanta office and will cover at least a portion of each shift, Dr. Hendrie.

MR. ROSS: The next subject we discuss is the hydrogen implication for this type of ice condenser containment. The Staff supplemental evaluation report in Section II

Paragraph B7, under the subject Containment Inerting, does provide a discussion and, I believe the Commission has recently received a memorandum from Mr. Denton on the subject of a proposed hydrogen control requirements. What we see as far as Sequoyah is concerned and as far as low power operation is concerned, is that hydrogen is almost essentially a non-profit. It you do look in advance, a 100 percent operation you can be more specific. Before--

COMMISSIONER GILINSKY: Let us see. You are saying it is a non-problem at this point?

MR. ROSS: 5 percent operation. I believe when we discussed relative risks, operation at 5 percent a couple weeks ago, there was some calculation of how long it take the core to heat up and it takes ten or twelve hours and if you have no emergency core cooling system. It would be very difficult to get hydrogen, especially in quantities that would take to produce a combustible mixture.

The regional design basis was five times the predicted metal water reaction from the LOCA analysis. Five times point three percent of these on and half percent. Of course it would give a less in a corbustible mixture of hydrogen, should that occur.

The Three Mile Island accidents results would certainly give a combustible mixture in the ice condenser containment and our slide shows about 12 percent. If this was of a result of a LOCA that produced steam, and the steam

tend to suppress the hydrogen burning.

COMMISSIONER GILINSKY: Let us see, that becomes an explosive mixture, doesn't it?

MR. ROSS: You would have to look at the chart of air, steam, and hydrogen to get the technical mixtures, is that on the Commission paper?

MR. DENISE: Yes.

MR. ROSS: There is a triangular chart and they should, if it is complete, we will look and have it in a minute.

COMMISSIONER GILINSKY: I am thinking of the high pressure case; I am sure the numbers are the same here. Why do not you go on.

MR. DENTON: Okay. With the best of my memo on hydrogen, was to recommend that we do inert the small GE type containment that are not inerting. That we establish rulemaking for consideration of remedial measures of ice condensers and large containments and maybe other types that fell into that intermediate category. Certainly for low power operation, there is little potential for fuel heat out and even less for hydrogen generaton. But this is an issue I expect to have to--that we will resolve going above a 5 percent power operation.

COMMISSIONER GILINSKY: You said burning hydrogen from 25 percent cladding reaction would not fail containment. Does that mean it would not exceed the rating of the

containment?

MR. DENTON: I believe that that is up to three times the design pressure. Let me ask Dick Denise; is that the number?

MR. DENISE: Yes. Commissioner, the 25 percent metal reaction would take the pressure up to about 36 pounds per square inch guage and that would be three times the design. Our assessment shows that it would not fail at that point but it would exceed the design. It would take 15 percent metal reaction to bring it up to the designed pressure of 12 PSI.

COMMISSIONER GILINSKY: And what is the relationship beteen design and three times design? How firmly established is that? I mean your conclusion is that it does not fail--

MR. DENTON: That is a number for our engineering branches who look at that as an ultimate strength and I think that that is a disadvantage--

COMMISSIONER GILINSKY: Their estimate, is that a generally accepted estimate?

MR. DENTON: Well, let me ask Jim Knight to answer it.

COMMISSIONER GILINSKY: At what point would it fail?

MR. DENTON: This was looked at in several of the safety studies and it has been a number that has been commonly accepted for this type of containment would be three

times the design. Does anyone want to address the origin of that factor?

MR. KNIGHT: If I may. We recently have also done some very specific analysis of license type ice containment. And we find that the factor like three tc, is a quite conservative number from Shellets, the standpoint of Shellet's shock will even go higher than that. If at that point where you could get to concern yourself, places around the shellet that ridgidize (?) by penetration of this type or thing. So we feel that is a very good number, it is not a judgment number because--

COMMISSIONER GILINSKY: What is the rating of the containment ?

MR. DENISE: 12 PSI gauge.

MR. DENTON: Now, to keep it in conttxt, there are two operating boilers that are not inerting yet, inerted as a result of fuel boilers to date. There is one ice condenser operating that is not inerted. Four ice condensers, there are several remedial measures that we have under consideration. ONe would be to inert that would have operational disadvantages.

COMMISSIONER BRADFORD: Are there inert ice condensers?

MR. DENTON: No, there is only one ice condenser now, and it is not inerted.

COMMISSIONER BRADFORD: McQuire is not?

MR. DENTON: They are not operating.

So another would be the addition of some sort of flammability suppressant and perhaps that would have to be combined with some sort of containment vending, also to keep the pressure under control. But, I would anticipate we would obtain the advice from the ACRS for this class of plants and for the large dry condensers in the course of a rulemaking proceeding or some other process that we recommend. But I do not see it as being a significant issue for 5 percent Sequoyah.

MR. DENTON: Let us go the next slide. To focus our attention on the license conditions, we have done a stage review and it is the issue that we began with is what should this vehicle be? We are prepared today to authorize today fuel loading and zero power testing. We think we could interpret in the license the four conditions that must be met before we go to 5 percent power testing and therefore could issue an authorization that would include the 5 percent. We are not prepared today to go beyond the 5 percent until we get the advice from the ACRS on power operation until we complete some other items such as the hydrogen and the control issue. But, the Commisssion discussed this the last time and did reach a conclusion as to your preference in this matter.

COMMISSIONER HENDRIE: I thought we were leading pretty well toward a single instrument that would carry us through the low power phase and be appropriately conditioned so that your apprcval was required to come off at a zero

power level and go on up to 5 percent or whatever would be appropriate maximum authorization in the instrument. And I presume that you could let us know when that occurred and if that we were interested in hearing how things were going we could your briefing. That seemed to me--it does seem to me to be a more useful step to take than to issue only an authorization for fuel loading and zero power testing and then we will have to come back and repeat the whole formal process in order to allow five--operations up to 5 percent or what is it a 170 megowatts you determine would be an appropriate level for the natural circulation tests that we want to include in this phase.

MR. DENTON: The four issues that need to be completed before we are prepared to go from the zero power test to a 5 percent, were supplied to the Commission but let me rename them. They were developing the procedures for the UHI system and the second one was completion review of vender review of the low power test procedures. OUr own review of the test program and looking at the one question about what bought some monitoring instrumentation was on. So these we would be the four conditions that would have to be added to the package for zero power, they would specify, they would have to be met before we be prepared to go above the zero power.

CHAIRMAN ADHEARNE: I wonder if I could, I gather we are now shifting into that type of discussion. I would

ask ACRS to have a representative here and Dave Okrent is here. I would like it, at least, since I was not at the previous meetings to ask Dave just to refresh us on what the ACRS position was with respect to Sequoyah at the present time.

Dave?

MR. OKRENT: Well, December 11, 1979 there was a letter sent to Commissioner Ahearne signed by the then Chairman Max Carbine, related to intro-low power operations in Sequoyah Unit 1 and the Committee excluded that there was reasonable assurance that the Sequoyah could be operated on entrance basis up to power levels, about 5 percent of fuel power, without under the health and safety of the public. And there were certain petitions mainly that the Staff was only to review the experimental program and insure itself that well safety related aspects were being dealt with appropriately. I am not aware of any reason that the Committee would have different view than it expressed in its letter of December 11.

CHAIRMAN ADHEARNE: So as far as you can tell it would be fair to say given what Harold as proposed today, that is consistent with what you recommended?

MR. OKRENT: Yes, it is.

CHAIRMAN ADHEARNE: Thank you.

COMMISSIONER GILINSKY: I thought we had pretty well agreed to the proposition that Bill had layed out here that we would go with one instrument part of avoid and

pilaphration (?) and authorizations, but that Harold would come and give us reasonable warning to what it is that he proposed to do. As far as moving into the low power test phase from the zero power test phase. It seems to be a reasonable approach to me.

COMMISSIONER KENNEDY: I agree.

COMMISSIONER BRADFORD: I would like to check off of some sort at the--between the low power and the zero power and the 5 percent limit. It simply has to do with my efforts to sift through the NTOL conditions, the SCR and the license itself, and get clear in my own mind just where the differences are and what the Staff's basis is. There has been some sort of a blizzard on this in the paper in the last week or so and I can raise examples of the kinds of concerns that I have. None of them would stand in the way of fuel loading and zero power testing, and maybe none of them stands in the way of 5 percent either, but I would like to have a check off list done.

MR. DENTON: I would propose the 5 percent vechile and let me come back and brief you when we are getting near the decision on the change and I also plan to brief the ACRS on our review of the test program, for example.

CHAIRMAN ADHEARNE: Well, that is part of what they requested. Peter, would that--

COMMISSIONER BRADFORD: Yes. Let me give you an example of the kind of question that I had in mind. I gather

you do not plan to go right down this slide, let me just jump to the third--Denny, can you explain in general terms in some cases of the license you actually reference the SCR and in other cases, take for example your condition H, this is on shift release turnover procedures. You have quite a detailed type of check list in the SCR, but quite general language in the license itself and what I would like to do is get some f[illegible] for why in some of the conditions you would reference the SCR, specifically, and as to others you would have a fairly specific section in the SCR but a very general section in the licensing.

MR. ROSS: Let met get Dominic Vassello to get a little supplement information.

MR. VASSELLO: This was H?

COMMISSIONER BRADFORD: H, yes. H is an easy one.

CHAIRMAN ADHEARNE: Please use the microphone.

MR. ROSS: I believe the one point that we ought to start with is putting this type of license condition in is somewhat of a learning period for us also. We intended to try to summarize the phrasology of the Action Plan. It maybe that in each case we mark consistently with respect to depth in material. In any case, the depth of the material is deeper here than it has been in other places.

MR. VASSELLO: Right. Wrat was intended was in the very beginning of that part 4 we tried to make clear that each one of those items does refer to the SCR, even if it is

not specifically called out. And so on H we meant to imply there that you go to IC.2.

MR. ROSS: I turns out that I, roman numberial IC.2 is an SCR part and it is a near-term OL thing and that have the same designation.

COMMISSIONER BRADFORD: Okay. So what you are telling me is that the inspector as he looks through to see what has been done will be inspecting against the SCR--

MR. VASSELLO: Yes, because it was difficult unless you wanted to reproduce enerything in the SCR. And so we tried to devise some scheme for tying each of the near-term operating license items to something that an inspector could go to.

COMMISSIONER BRADFORD: And now let me ask the question. Supposing that the licensee wants to change the check list that is referenced here, does he now have to go through the process of in effect, amending the license?

MR. VASSELLO: Yes. He cannot change that without requesting that from NRC--

COMMISSIONER HENDRIE: Is the check list in the SCR?

MR. VASSELLO: I would have to check.

COMMISSIONER HENDRIE: If it is not, then presumably you would not, you are simply required to have one. But if it was, then you would be stuck.

COMMISSIONER BRADFORD: But, there is more detail in

the SCR by quite a lot than there is--

MR. ROSS: If the SCR is not going to reproduce the check list, then I think within reasonable grounds the licensee could make a change, the resident would be informed. But I do not think a reasonable change would need a license amendment. If he dropped the practice altogether then, yes, that would be a violation.

MR. DENTON: I would see if he could change the check list provided the intent and the SCR description was met for the inspector's satisfaction.

COMMISSIONER BRADFORD: Provided that we provide it was consistent with the language within the SCR?

MR. SHAPAR: I guess the only tie in for the provision in the SCR is the reference IC2; is not that right? If you wanted to tie it further, I do not think that that is a good enough--if you really want to tie them down, that is good enough to do it at least without some ambiguity. Look, if I understand your point, the way to do it would be to say somewhere in the body of it in accordance with the provision of IC2, if that is what you want.

MR. BICKWIT: That is what you have done in some cases and not in others.

COMMISSIONER KENNEDY: That it says at the beginning each of the following conditions references the appropriate section of part 2 of the supplement to No. 1 of the safety evaluation report.

MR. BICKWIT: I would not read that as saying incorporates all the terms of the SCR by reference.

MR. SHAPAR: I would not either.

MR. VASSELLO: Well, it can be done but that was the intent.

COMMISSIONER BRADFORD: Has ELD been involved in--

MR. ROSS: The strucure of these licensed conditions is a participatory effort between Mr. Vassello and ELD representative and the worked a couple of weeks very hard to get up the nerve to mention the enforceability job of the inspector easier.

MR. DENTON: If you would like, we can have Howard give us clarifying language for that and--

COMMISSIONER KENNEDY: Before we do that, now what is the effect of doing that?

CHAIRMAN ADHEARNE: According to Don that is what is making it consistent with they intended.

MR. VASSELLO: I believe that was--the intent was to have each one of these conditions refer back to--

COMMISSIONER KENNEDY: Refer back, I know it does. But, was it intended then by reference to incorporate all of the text of the SCR?

MR. VASSELLO: Yes. It is my understanding--

CHAIRMAN ADHEARNE: Of the sections of the SCR.

MR. SHAPAR: The section that it refers to it.

MR. VASSELLO: The section that refers to it, yes.

MR. DENTON: We were certainly more careful in writing the technical specifications of the licensing condition than we--in terms of the legal import of them than we usually are in our descriptive material in the SCR. And I think that you raised a good point. The text of the SCR may not be in all cases as precise, at normal license conditions.

COMMISSIONER HENDRIE: Or it may be a trifle to detailed for a reasonable licensed conditions.

COMMISSIONER KENNEDY: It maybe so detailed that the licensee will not be able to make reasonable changes in his operating procedures even without him getting a license amendment. And I do not think that that is what our intent would be.

CHAIRMAN ADHEARNE: Let me reiterate the answer I got. The question was was it the intent. So my understanding, the answer was when that license was written and the SCR that goes with it, it was really intended that that--

MR. DENTON: Well, that is certainly true, but let me finish the introduction. The only point I was making is that we have had discussions about how lengthy in detail the tecnhical specifications were becoming and the SCR is another 100 feet of document or something. That where this is we have carefully crafted the Text Specs to reflect the condition. Now in the SCR we are going to reference another 100 pages or something through this--let me clarify. Certainly I do not disagree at all with what our intest was it is just

a question--

CHAIRMAN ADHEARNE: Could I at least ask the author?

MR. VASSELLO: Well, part author, yes.

This cover, part 2 of the SCR and for each one of those near-term operating license requirements, there was a position and in a number of cases there were clarification of that, of those positions which were sent out to all operating licensee and the near-term operating license applicants. Then there was a discussion as to how the Staff interpreted those and how we approved those. And so the intent was to go to that place of where the Staff stated it interpretation of resolution and have that implement that item.

MR. ROSS: Let me give you a good example--

COMMISSIONER HENDRIE: I suspect since a number of these items are an ongoing developments in terms of the Action Plan and the Staff interpretations and so on, that you do not mean to fix at this time permanently for Sequoyah whatever the interpretation is at 3:40 p.m. on 28 February on a given item. But, rather if a given item develops as these things have a habit of doing, for their elaborations, [illegible]al better ways to get the thing done and so on, you would hope to have Sequoyah do it the better. It raises the question then as to how precisely do you want to incorporate the language of the--sepcific language to each of the present SCR supplement 1 here as a licensed condition. I would think

on those matters which are pretty specific to the low power test phase and hence, have a rather limited life in terms of the license for the plant of a long term, that you could stand to suffer some inconveniences, but I would think it would not be a good thing to build in a form that would have to endure for many years in the license of this plant, material which will get out of date rapidly and then have to altered by an amendment process which turns out to be cumbersome enough to give us some problems in processing and the licensee some problems in reasonable flexibilities.

So, there is a--you are working between two horns of a regulatory dilemna. On the one hand you like good specificities so that the inspectors have a fairly complete and specific list of items to inspect against and force against; on the other hand to the extent that you do that in great detail, you make the license a very inflexible and incumbersome object to deal with considering the fact that our only mechanism for changing it are also fairly cumbersome and in an administrative procedure sense.

CHAIRMAN ADHEARNE: All too, Joe, but we are only addressing a license up to 5 percent.

COMMISSIONER HENDRIE: Well, I wonder how--whether I just suggest to the Staff that there are items here which will clearly carry on and apply for the longer term than they exercise a certain amount of caution and how much language in whole part from the SCR at the current, the SCR supplement--

MR. DENTON: To avoid the need for us to go back and rewrite the SCR I would propose that we make the Part 1 binding here for the short term license I think would not be undue burden for the period of operation that we invision. We will have to take a more careful look at it the next time.

COMMISSIONER HENDRIE: My concerns really relate to the full term, full power area and anything that carries from this part into that.

MR. VASSELLO: It was intended that way for the time being that we use that approach.

COMMISSIONER BRADFORD: You are both right; that is, that this license for this period of time for this plant at the same time, the dilemna that is being discussed is for all plants. For their length of their life. And my own sense of the balance between enforceable conditions and flexibility and commitments, the drift is it has been a little too much on the unenforceable size in the past, so it is an area that I do have a continuing interest to see tighten up. But for perposes of today's discussion, I think the point that has been made this applies that is license for this time is a perfectly good basis to go ahead.

MR. DENTON: Could you perhaps ask what you see in OLD that would provide the text that would tighten it up--

COMMISSIONER BRADFORD: Let us see. You may be all right.

MR. BICKWIT: I would change the word reference to

to incorporate the terms of the SCR bylaws.

MR. SHAPAR: Or just say--

CHAIRMAN ADHEARNE: Yes, I think that should be dealt with within their capability.

MR. BICKWIT: With little struggle.

COMMISSIONER BRADFORD: Certainly either one individually.

COMMISSIONER HENDRIE: It may not be within their capabilities, it may not be within their joint capabilities.

COMMISSIONER KENNEDY: Let me ask, since we have now--

CHAIRMAN ADHEARNE: Why don't you speak up?

COMMISSIONER KENNEDY: Since we have discussed two separate licenses, that is this one for this period with presumably a second new one for anything beyond this point. What is the administrative procedure associated with that?

MR. BICKWIT: My view would be that we would not have a licensing action in the sense that it would to be noticed depend opportunity for hearing would have to be provided.

COMMISSIONER HENDRIE: It would not.

MR. BICKWIT: I would not. That has been done with respect to full power operating license, a full power operating license state many years ago that will serve to ride through the process.

CHAIRMAN ADHEARNE: Ed, did you have some issues

that you wish to raise?

MR. HANRAHAN: Yes. There were two issues that I think that we should keep in consideration as we decide on this. The operator training experience and emergency preparedness. I think on the first, you should have a clear discussion on that, and I think a good deal of that arises from the lack of clarity of percision on our own part in the requirements that we were seeing. The decisions were made last fall on a Staff Paper, the Action Plan is called for improvements and operating training and qualifications have tended to be footnoted and grandfathered in certain ways and we have taken a lot of credit.

CHAIRMAN ADHEARNE: I have circulated a memo to the Commissioners to see if I can kind of get an agreement on that to clarify that.

MR. HANRAHAN: On the other hand, TVA has fulfilled the requirements that were placed at any one time, so they certainly cannot be faulted for not doing the right thing. On the other hand, one might be disappointed with TVA since they have operating nuclear means. They did not choose to staff Sequoyah with the age-a-deric (?) own experience personnel.

The only outstanding thing that they have scheduled is that we retest some of the operators to meet the latest criteria by April. Another point there is whether we choose to wisr to make that commitment on their part or

requirement of the license be issued.

In emergency planning, I think we should specify the power limit, if it is 5 percent or to whatever it is to which the present plant is adequate.

COMMISSIONER GILINSKY: On that earlier point, do you have any comment on the augmentation of the control room staff to the addition of a number of experienced persons?

MR. HANRAHAN: Well, I think that should eleviate the lack of experience by having the experience people there. The only problem that rises, is that they are of a mind of people, they are advisors, but that is in an operation mode where that should be accurate.

COMMISSIONER GILINSKY: Do you have any thought about requirments to moving to full power should that staff be augmented on a permanent basis through the addition of operators with experience in other nuclear plants? Or is it satisfactory that the operators gain the six-month experience or whatever it will be.

MR. HANRAHAN: If you have that amount of experience--

COMMISSIONER GILINSKY: Because if we feel the first ought to happen we ought be warned by TVA now. That was your point earlier.

CHAIRMAN ADHEARNE: Yes.

COMMISSIONER GILINSKY: And it sounded like a good suggestion to me.

MR. DENTON: Well, there are three ways to get

experienced operators. You can hire them from another company, or take them out of your own operation, you can recruit them from the Navy - which I would not recommend--

COMMISSIONER KENNEDY: I would not even recommend hiring them from other companies where you are putting requirements on them so that they are all import (?).

MR. DENTON: Or you can have a bottom entry program which is what TVA had which tends to grow their own so to speak. This has been permitted in the past. I think the historical record in the case, is that there are less turnover in the TWA type program when people are augmented from the bottom. We will not face this issue--

CHAIRMAN ADHEARNE: Really, I think Ed's point was, at least as I understood was, that perhaps TVA might consider putting of their Browns Ferry people --

MR. DENTON: But they would have to go through--

COMMISSIONER HENDRIE: I think it would be a bad idea. I do not think that you want to pull people out of a boiling water reactor operating rescheme and try to cram them over to this PWR on the basis of having one set of controls of a nuclear power plant, you are now ready to drive all nuclear power plants; it just does not go.

COMMISSIONER GILINSKY: Well, let us see. If that is right, then there isn't nobody on that stuff with experience in operating the kind of plant--

COMMISSIONER HENDRIE: Nobody has experience

in operating Sequoyah.

COMMISSIONER GILINSKY: Wtll, nobody there has experience operating a PWR, at least that is what we have been told.

COMMISSIONER HENDRIE: The augmented staff from nuclear services--

COMMISSIONER GILINSKY: Oh, right--

COMMISSIONER HENDRIE: --Westinghouse have a lot of time on Westinghouse plants for loop plants in particular.

COMMISSIONER KENNEDY: Can we confirm that in fact, I do not recall having been told that none of those qualified operators had ever operated on a PWR. Now, that maybe true--

MR. ROSS: That is what we told you, yes, sir. We have two of the license people were Brown's Ferry people--

COMMISSIONER KENNEDY: Okay.

MR. ROSS: --and I think some of them had had some old experience but nothing of a recent PWR--

MR. DENTON: And, of course, they have all at least spent three months in training at operating PWRs.

MR. ROSS: But the so-called obversation training--

COMMISSIONER HENDRIE: My impression is that this Sequoyah operating group had been in training so long that--

COMMISSIONER KENNEDY: If they do not go to work they are going to loose their skills.

COMMISSIONER GILINSKY: No. I think to get back to your other point, I think that getting these extra

experienced individuals, was a very useful product of our discussion.

COMMISSIONER HENDRIE: I think it is and I think that it is the kind of support that each new station needs as it come along. But I really think the group that has been trained by TVA for this plant, including Watts more simulated time, their own facility that has even been ruled in the past and some time half operating PWRs, of course, is their training. By the time they come through this four to six months of low power work that additional advisors on hand, why I have confidence that they will be in good shape and I do not think it would be helpful--the real comment I am making is that in view of that I think it would be unhelpful to the organization to impose further requirements for deviated pullovers and boiler water people from Brown's Ferry just because they have benefit control of a live machine. It is substantially a different machine and they have to face a years training before they become--

CHAIRMAN ADHEARNE: Joe, do you feel similarly that it would be unhelpfal if they were to hire people with PWR operating experience?

COMMISSIONER HENDRIE: I expect any operation would be glad to have additional people with good experience. Most organizations are glad to get people with good experience. If you propose to cram those people in and push down in the hierarchy, people who have been in training for Sequoyah

itself, for four or five years, I think that is apt to have a very depressing effect on the operating staff around, be a negative for safety. My impression is that they have a pretty good coew down there and in terms of effective management and leadership that human organizations do not do violence to it. It ain't broke. Don' fix it.

CHAIRMAN ADHEARNE: It has not started yet.

MR. HANRAHAN: I did not--I want to make clear. I was not suggesting that the Brown's Ferry people ougght to be transferred over to Sequoyah, that was not the point. The point is that, you know, some time in the past those things could have happened.

CHAIRMAN ADHEARNE: Well, I still think it would be useful for inspiration of how could they get some people with operating experience of PWRs?

MR. DENTON: I think by the time that they complete the low power testing program with national circulation and loss of offsight power and eight other abnormal conditions, they are going to be better trained for some of the aspects that we are interested in than people who have sat at the controls.

CHAIRMAN ADHEARNE: Ed, you had one other.

MR. HANRAHAN: That was to specify how the limit we believe that the emergency plan is adequate for and it is understood.

CHAIRMAN ADHEARNE: I think that is specified in the

txcrange of letters; isn't it?

MR. HANRAHAN: No, I do not think it is.

CHAIRMAN ADHEARNE: You mean the percentage. It was--

MR. DENTON: Well, I think it has been implicit by 5 percent all the time that is what all the discussion has been about.

COMMISSIONER BRADFORD: You passed over a recommendation earlier with regard to the retest program, that that should be --the commitment already exists, but that it should be in the license--

MR. HANRAHAN: We have considered doing this, yes.

COMMISSIONER BRADFORD: Any reason that we ought to do that?

MR. DENTON: Well, the recall program is necessary through some other mechanism, automatic recall program, I think a year after you gotten your license--

MR. ROSS: Well, we point out that the recall program that TVA is commited to it, it is on Page 132 and it is coming out soon and we are going to monitor the examination and the new criteria is going to be used and this is only about six weeks away.

MR. DENTON: But the recall program is spelled out in some Reg Guide or some other place.

COMMISSIONER BRADFORD: Their commitment to it

as a basis in present NRC regulations apart from the licensee.

MR. DENTON: Let me ask Don Skovholt for what were some of the basis of the recall program is?

Don?

MR. SKOVHOLT: The requirement to have a recall qualification program in inherrent, as far as giving you our regulations and TVAS submitted a document describing the program which is run satisfactory.

CHAIRMAN ADHEARNE: Any other questions?

MR. BICKWIT: I have some small ones that I think could be dealt outside this room. They are small technical questions involving the wording of the license.

CHAIRMAN ADHEARNE: Okay.

COMMISSIONER BRADFORD: Were you going to take up the policy statement as well?

CHAIRMAN ADHEARNE: Well, I was actually--my list of people, I had ACRS, OPE and then OGC. I was going to turn and ask that question but Peter if you--

COMMISSIONER BRADFORD: No. I just wanted to know if you were going to take it up before, after, or not at all. If your way of picking it up is to turn to Len, I will just keep rigrt on rotating.

CHAIRMAN ADHEARNE: Len, you had been working on a policy statement in the event that we did take action, where do you stand on that?

MR. BICKWIT: We have three concurrences with respect

to language which is very similar. I do not know where the other two offices stand.

CHAIRMAN ADHEARNE: I see.

I think the issue before us is then to address the authorization to go to the rescheme of the zero power test and low power up to 5 percent. The information that I have read, heard, I read the transcripts of the previous meetings leads me to believe that I would go for the authorization.

Vic?

COMMISSIONER GILINSKY: I would approve.

CHAIRMAN ADHEARNE: Dick?

COMMISSIONER KENNEDY: I would approve.

CHAIRMAN ADHEARNE: Joe?

COMMISSIONER HENDRIE: Very much so.

CHAIRMAN ADHEARNE: Peter?

COMMISSIONER BRADFORD: Well, I would approve with the understanding that Harold will be back--

CHAIRMAN ADHEARNE: Will be back, yes.

COMMISSIONER BRADFORD: Also with the point that is certainly made in the policy statement but I would not want to loose it here either that as far as I am concerned at least this autrorization is not, and while I cannot help what the otuside world makes of it, the Staff and the licensee should not interpret it as being the end in the holt in licensing. To me that is conditioned on the Commission's business, sorting

its way through a host of other actions including further ACRS review, including the action of other areas and I certainly would not want this very limited approval that has been taken--that the Staff, anyway as an indication that the licensing holt was over.

CHAIRMAN ADHEARNE: Well, I think it is very clear We have been very explicit, I believe, on what we have approved. The ACRS and their recommendation was very explicit and they have not yet come back to us with that additional kinds of statements.

All right. Thank you.

(Whereupon, the meeting was adjourned at 3:40 p.m.)