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NUCLEAR REGULATORY COMMISSION

ORIGINAL

In the Matter of: ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

GRAND GULF NUCLEAR STATION UNITS 1 & 2

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UNITED STATE OF AMERICA

NUCLEAR REGULATORY COMMISSION

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

GRAND GULF NUCLEAR STATION UNITS 1 & 2

Cultural Arts Center,
Auditorium,
Jackson, Mississippi

Friday, September 18, 1981

The meeting was convened at 8:30 a.m.

MEMBERS PRESENT:

David Okrent, Chairman
Meyer Bender
Jesse Ebersole

DESIGNATED FEDERAL EMPLOYEE:

John McKinley

SUBCOMMITTEE CONSULTANT:

G. Schott

P R O C E E D I N G S

September 18, 1981

8:30 a.m.

CHAIRMAN OKRENT: Good morning. I am advised our modern electronic equipment is working and we can begin the session.

The first item on the Agneda this morning is Utility Capability and Organization.

I assume we will have a presentation by Mississippi Power and Light, and then we'll have comments by the Staff.

DONALD C. LUTKEN

MR. LUTKEN: Good morning, My name id Donald Lutken, and I'm President of the Mississip Power and Light Company.

And I want to generally go over the organization and capabilities. I hope you all had an enjoyable visit down at the Plant yesterday. I hope you found everything in order.

First, I'd like to kind of bring you up to date as to what we are. We are part of the Middle South Utilities, as you probably know. We are one of four holding companies, and Middle South Utilities is not new in the nuclear industry per so, and we have two units in operation in Arkansas, one unit under construction in

Louisiana, and of course the two units under construction here in Mississippi.

Our President of Middle South Utilities, Mr. Floyd Lewis, is an undustry leader in the nuclear industry, particularly after the Three Mile Island incident. He was instrument in setting up the institute of nuclear power operations and nuclear phase of the analysis setup, called NUSAC and Nuclear Electric Insurance, Limited, a new insurance evolved in assure more protection to the companies in case of incidents, and more recently the Utility Nuclear Power Oversight Committee.

Another subsidiary of Middle South Utilities is Middle South Energy, Inc., the owner of Grand Gulf, as you know. We, our company, Mississippi Power and Light Company, acting as agent under contract to Middle South Energy, Inc. to design, construct and operate the Plant.

Mr. Lewis is the President of Middle South Energy, Inc., and I'm a Vice-President of Middle South Energy, Inc.

We also have another service company in the Middle South Utilities System, called the Middle South Services, and it is just what it says it is, a service company with four operating compies. It has various departments of expertise in these particular areas that will help the four operating companies.

Dr. Clark Gibbs is Vice-President of Middle South Services Nuclear, and is also Chairman of Atomic Industrial Forum Committee on Reactor Safety, and Dr. Gibbs is also a Vice-President of Middle South Energy, Inc.

In this particular service company we have engineering, quad insurance, fuel management, insurance expertise and construction expertise that help us and the other three operating companies.

Now, more specifically, my comp[illegible] our company, rather, we became involved in Grand Gulf in 1969m tge katter oart if '69 and 1970.

From the inception it was believed that we could build the power for the Grand Gulf units by ourselves, and as you probably know we started off one unit of Grand Gulf, and its sister unit. The system to it was drawn in our public company in New the New Orleans public service territory, the second unit of Grand Gulf.

So we were in the nuclear business by ourselves from the very beginning. We selected a architest and engineer, and we think we selected the best, Bechtel; and we selected one of the major N triple

S suppliers, GE, for our nuclear steam supply system.

Since that time, as you well know, both units have been moved to Grand Gulf. It became obvious that we could not finance them, a small company such as ours, and Middle South Energy, Inc. was set up as a financial arm to provide the money for Grand Gulf.

I myself have been involved in the selection of the architect engineer, and also N triple S supplier, and have reviewed the project through its entire management from its inception.

The policy of our company in the very beginning was to construct and operate the Plant in the safest and most efficient manner, not only primarily, really, for the protection of our employees and the public, but also the financial, to protect the financial health of our company.

We have continued to follow it, top management has continued to follow the project at Grand Gulf; we have weekly reports that are submitted to us; we have monthly reviews; we have presentations from both the Middle South Energy Board and Mississippi Power and Light Company Board and the Middle South Utilities Board, monthly.

Some three years ago I instituted a meeting monthly with top management of GE, Bechtel, and our company, to be sure that we were not letting anything fall through the crack in trying to keep this unit on schedule as best we could.

More recently I have excused myself from those meetings, and they are conducted now by Mr. Norris Stampley, and I meet with them quarterly to be sure that I am kept up and involved with the progress of the Plant.

Additionally, we have semi-annual meetings with all plant supervisory personnel, and this has been since the inception of the plant.

I believe we have recruited and trained, and are training rather, a fine group of people. I think we can look right here and see that we have a real fine representation of the supervisory personnel and the engineering personnel that will run the Grand Gulf Plant.

We have many experienced of BWR and BWR persons who've gone through intensive training, offsite and onsite, and involved people will go into more detail about this, but we have one of the first utilities to contract with Mississippi -- Memphis State University, to conduct onsite classroom type training at the Grand Gulf site.

We are a company that has a union. We've had a union, the IBEW has represented our crafts since 1939. We have a great relationship with the union;

presently we have just ended a two-year contract with the union, and they are now negotiating for another two-year contract.

We were one of the first utilities to first recognize that we needed to simulate onsite the activities of our control room, and we purchased one last year and it should be delivered in June of next year. It's a Singer Simulator, and we think it's one of the best.

We are presently building a building to house this unit, as well as to make an all purpose building the EOF Center, Training Center, Engineering Center, and Visitors Center.

It has been the policy of our company, I guess, ever since it was formed, to give a person responsibility and also the authority that goes along with that; and we have done this to our key project personnel.

Since the inception of the Plant we've changed our organizational structure some several times. I guess we've changed it really to fit the need of that particular time and the talents of our people.

The most recent change was made on January 1, 1981, where we assigned our Senior Vice-President -- incidentally, we only have one Senior Vice-President;

that's Norris Stampley -- the sole responsibility of completing the Plant and getting it into operation.

He has two people reporting to him now, one on the construction side of the chart, and one on the operation and licensing side of the chart.

We will change once again as necessary for the operating of the Plant, and that is presently under review, and we will resolve -- I understand there is some question about the engineering and the testing concern, and that will be resolved prior to fuel load, and we will submit supplements to the NRC covering these changes.

It's kind of unique in that we have a group of very talented people, and we try to put them in the proper slots at the proper time, and be sure that the Plant is completed and then can operate safely and efficiently.

The organization, I think we have a real strong organization, as far as top management is concerned. I understand that there is concern that we, myself and Norris, don't have any BWR experience, and we would like somebody sitting at our elbow to advise us, to be sure that things are going correctly at the Plant, and we will supply that person, either through contract or permanent type person with that experience.

Our nuclear plant engineering department is being staffed, and we will be functioning smoothly before fuel load.

MP&L policies as far as the media is concerned, has always been that we've been available to the news media; we've tried to supply them with factual up to date information, and I think we've done a fairly good job through the life of this plant, and actually I guess through the life of our company.

More recently we had a media day in Grand Gulf; we had some 50 odd correspondents both from the Louisiana area and the Mississippi area, and they spent all day out there, and I think they got a real good handle on what we are trying to do through nuclear power.

In addition to that we've established speakers bureaus that have gone all over the state, telling our story, telling the nuclear power story and what the company is trying to do to further the advance of nuclear power and supply adequate electric power for the development of our State.

Incidentally, we have also probably taken that into the schools, both in the elementary, secondary and the colleges, and we've had real fine response.

Our emergency responsibilities, I think are moving along real well; we've had great cooperation from the Federal Agencies; and we've had real fine cooperation from the the State Agencies, Mississippi and Louisiana, and also the local Agencies in Mississippi and Louisiana. And also the media has cooperated real fine.

Our people are participating in an industry boost. They belong to umpteen technical societies, and we are members of the BWR holding group. So all in all. I think we have a fine organization. We have the capabilities to operate the Grand Gulf Nuclear Station in a safe and efficient manner.

Thank you.

MEMBER BENDER: Mr. Lutken, could I ask a couple of questions?

MR. LUTKEN: Okay. There you are; I was looking for you.

(Laughter).

MEMBER BENDER: That's about the way it is in a reactor plant; you don't know where the signals are coming from.

I'd like to ask a couple of questions about the management philosophy item. We have frequently raised questions about the need for advisory support to the management, technically.

Now, in committing yourself to get some advisory help, have you given thought to the type of advisory help that you think you need?

Are you going to because the NRC requests you, or have you given any thought yourself about how to have that skill on hand?

MR. LUTKEN: Well, I was really surprised when they said we ought to have one particular individual, more or less like you say, sitting at the elbow of myself and Norris, and then they said we can learn in one year; we could turn him loose after one year.

We thought that we had that skill, or those skills in the power plant itself, or either in the nuclear engineering staff that's located here in Jackson, that could give us that same type advice.

One individual, to me, for a year doesn't mean a heck of a lot. I don't believe I could learn that much about BWR in one year, and feel real comfortable with it.

I think we have to build it into our staff, and from there we could draw -- I'd feel more comfortable.

MEMBER BENDER: Well, I wasn't aware that that's the way in which the NRC staff has established the advisory capability needed for utility.

MR. LUTKEN; Well, I'm talking about just one man, you know. They say after a year we could have absorbed enough to feel comfortable. I think we have it within our staff itself, that we have adequate, well qualified people that could advise us, and be sure that we were operatint the unit correctly.

MEMBER BENDER: One of the things that I had an impression about was the INPO and its formulation, would have established some way of providing some kind of management systems and developing.

There is a need for advisory help for a man with tunnel vision, was half the problem at BMI, and so that people do need to look at things from the outside, but it seems to me that rather than establishing -- you've got a man on hand who may be handy-dandy, but it seems to me that there ought to be some way in which the management or an organization as big as this could present the picture of how it gets its advice.

Having a few people in town is helpful, but if they're subordinate to you and they're not free wheelers, their advice may be a matter of what does the boss want to hear.

MR. LUTKEN: Well, that's true. But I would think that INPO, plus the fact that we have the nuclear capability within our service organization, service company, from there we could draw on that kind management advice that I would feel, you know, comfortable with.

MEMBER BENDER: Well, we'll certainly hear more about that this morning. I just wanted to make a couple of points about preliminary facts.

Thank you.

JAMES McGAUGHY

MR. McCAUGHY: My name if Jim McGaughy. I'm the Assistant Vice-President for Nuclear Production, Mississippi Power and Light Company.

I would like to take some time to describe our general organization in terms of organizational units and how they function.

And then I would like to discuss primarily the support aspects for operating the plant, and what our qualifications and capabilities are in the support aspects.

After that, I will ask Ken McCoy, our Plant Manager, to talk about the qualifications and experience of the people who he has that will be involved in the operation and maintenance of the Plant.

So, all the people that I will take about are all -- when we get to that part -- are all involved only in the support aspects of it. Ken will talk about the experience and qualifications of the operation and maintenance people.

Displayed here is the organization which Mr. Lutken referred to, which he placed into effect on the 1st of January for this year. This thought process, which he doesn't always share with me, but I think it goes something like this, and that we had two big efforts that we needed to do.

One was to get the design finished, redesign the Plant and get the design finished, get the Plant built, and get the Plant started up. He put that under Mr. George Rogers, who came to us from -- well, directly from Middle South Services; prior to that from Georgia Power Company, where he was construction manager for building the hatch plant.

Also under Mr. Rogers, we have our Startup organization. Our Startup organization is headed up by Mr. Randy Hutchinson, who has some 13 years experience in nuclear plant startup both in the Navy and with us.

He has a staff of about 6 startup engineers at MP&L plus about 40 some-odd hired consultant type startup engineers who are in his startup group.

Also under the site manager is Mr. Ted Cloninger, who was earlier over in the manager nuclear plant engineering job that we will talk about in a minute; and Mr. Cloninger then, is our man for resolving and directing the engineering efforts of Bechtel and General Electric Company, and he has a staff of people, which I will talk about a little more later, who are there to direct that effort with both Bechtel and GE.

And then we have a construction organization which is headed up by Mr. Ben Stewart and consists of people in Mississippi Power and Light Company organization and the Middle South Services organization.

Over on this side of the house if all of the elements that are considered to be permanent. Mississippi Power and Light Company employees, permanent organization, the organization in place to operate the Plant.

Here of course, is the Nuclear Plant Manager; this is Mr. McCoy, who will describe his organization some later.

And the manager of Nuclear Plant Engineering, and Nuclear Plant Engineering Group has been formed in the last two years. Its function is to assume design control of the Plant, as systems are turned over to the Plant Manager.

He will work through his Staff and through hired engineers who have design control to approve any design changes, and perform the design for any design changes, design modification engineering to the Plant.

Also under this man is the operation analysis group, which is the independent safety engineering group.

MEMBER BENDER: Is that place filled now?

MR. McGAUGHY: Yes, it is, and I'll introduce the man to you in a minute.

MEMBER BENDER: All right.

MR. McGAUGHY: Here is our Manager of Quality Assurance. Our Quality Assurance Program have, of course, both construction Quality Assurance Program and the operational Quality Assurance Program, both of which comes under Mr. Tom Reaves, whom I will also introduce to you in a minute.

The elements of that organization both in the general office to do programatic type of work, audits, and an organization in the field which audits the field organization and the operating organization.

Under our Manager of Nuclear Services, we have our group that handles contracts, cash flow, this type of thing, the serious end of the business.

Our Nuclear Fuel Section, which looks to contracting, purchasing of fuel, licensing of fuel, design of reload fuel.

Our Nuclear Records Group, which handles getting the records turned over to us from Bechtel and control of the records that we generate.

Iyr Nabager of Safety and Licensing Group, which consists all our interfaccs with the NRC, with the exception of I&E, which is generally handled by the Quality Assurance Group.

In addition, supporting us of course with GE and Bechtel, Middle South Services; other MP&L departments which constitutes a direct service to us is the Nuclear Accounting Group, which does only accounting for the Nuclear Department personnel, security, and all the other support groups, and any other contractors that we may have.

I would like to now talk a little more specifically about each group and what some of the capabilities of these groups are, and introduce you to some of the people who staff these, who are the leaders in these groups.

MEMBER BENDER: Mr. McGaughy, you are going to say something about the numbers of people at some time?

MR. McGAUGHY: Yes I am, and then I'll give you a summary when I get through.

The first thing I would like to talk about is that we have engineering support capability, we have put those engineers in the groups where the engineering support is required, as opposed to have one engineering group off somewhere who supplies all engineering support.

For instance, under the Plant Manager, we have an engineering support group. Some of them -- I don't think any of them are here; they will be here this afternoon. Some will give presentations this afternoon.

There's a total of 17 people in the engineering group for the Plant Manager. Now, these men are responsible for doing engineering type work that's of primary interest to the Plant Manager. Such as, human factors reviewed in the control room. It's his control room, and if he wants to operate, he doesn't want someone somewhere else telling him how to do this.

It serves inspection, and the number of programs that are conducted in the Plant Manager's own engineering group. The total of 17 people in that group at this time, the man who heads that up is their Nuclear Support Manager, and under him, who is the Support Manager is a BWR SRO certified man who has a number of years experience, and came to us from being a field service engineer with GE and has done both turbine work and much nuclear work. He came to us directly from Duane Arnold, who was earlier at Peach Bottom and other stations.

Some of his people, Al McCurdy -- Al, I

don't think is here. Al has about 16 years experience, nuclear experience, was a qualified Navy operator. Since that time has gone back to school and has been with us for over 10 years, working in this group, and he will talk to you this afternoon -- this afternoon I believe it is, about human factors, and will tell you something about the work that he is doing in that group.

So I've talked about here, Engineering Support, which is under the Nuclear Plant Manager. None of these men that I've talked about are involved in the operations and maintenance aspects..

Mr. McCoy will take about that, and he will talk about the experience involved in that group. When I give you a chart at the end, you can take the numbers that I give you and the numbers that Mr. McCoy will give you, and add them up, and you will get the total summation of our qualifications and experience.

MEMBER EBERSOLE: Mr. McGaughy, can I ask you a question?

MR. McGAUGHY: Yes.

MEMBER EBERSOLE: Where in your organization does the process take place; where as an organization yourself, do you examine the systems, the system interfaces, the physical disposition of the Plant, and you originate postulated possible problems and accidents, and set about resolving whether they are significant or not; and if they are, solving them?

In walking through the Plant, for instance, yesterday, we were commenting there on the physical disposition arrangement. And one of the things that was interesting was the disposition of control and rod drive tubes, in aspect to the recirculation water pipe.

There is a certainly reasonably postulated chance, if you agree, which is frequently tested, that you will have a LOCA; that y u will be unable to get a number of rods in that core. I'm using this only as an example.

Where in your organization do people, in essence, originate these things and solve them to their own corporate satisfaction?

MR. McGAUGHY: Well, of course it depends on who the person is. Let's say it was me, as a result of walking around the plant with you.

In that case there are several things that I would do.

Number one, I would ask our licensing people, what is the design basis for this; what studies have we been doing, or have been done from a licensing point of view, that have looked at this problem.

Number two, and that is under the services group. Number two in that case should go to the engineering group, which at this time could be either in the nuclear plant engineering group or under the project engineering, who is working directly with Bechtel, who would go -- the project engineering group would go directly to GE and find the design basis for that, and see whether that problem had been considered; and the nuclear plant engineering group would look at it, but they would not look at it necessarily through GE, but from an independent assessment, using their own capabilities to go look at that.

(Inaudible discussion).

MR. McGAUGHY: Mr. McCoy points out we also have a plant ADMIN procedure, which directs itself to that, and I would like for him to comment on that.

MR. McCOY: Ken McCoy, the Plant Manager at Grand Gulf.

We have a formal program at the Plant, called the Plant Control and Modification Program, and in that we have a formal procedure where anyone can initiate a request for a design change study.

Anyone who sees a problem, or notes a potential problem, such as we did yesterday when walking through, can initiate a sheet of paper that starts a design review.

That's first looked at by our technical group on the Plant's Staff, who put in any operational input, and then it's forwarded to the Manager of Nuclear Plant Engineering; and he either dispositions the design directly, or if necessary goes to outside contract help.

And there is a loop c'osure portion of that due, to get the feedback to the original.

MEMBER EBERSOLE: Thank you.

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MR. McGAUGHY: Our quality assurance group, as I stated, there are a total of 25 people in this group. Part of that group is located in Jackson and part in the field.

We have a total of 9 Engineers in the group, 5 other related Degrees, a total of 279 years of professional experience, and a total of 135 years of nuclear experience in this Quality Assurance Group.

Our Nuclear Services Group is located here in Jackson. We have a total of 14 professional or dingineer type people in that group. The total of the group is about 28 at this time, which includes some accounting people and other key people.

This group, you know if the group is located away from the site and doesn't get down to the Plant every day, there's some question about their involvement with the Plant and their knowledge of the Plant.

Each one of the people in this group, the professional people, we have sent through the Plant System Training, and learned the Plant Systems. We have sent each one of them to an abbreviated simulated course so they will have an understanding of Plant operations.

Now, let me -- I want to introduce you to some of the people, but I think if we do that all at one time, it might work out a little better.

Under the Nuclear Plant Engineering Group, we have a total of 21 Engineers, 2 additional people who are professional degree-type people, Physics, Chemists, several Draftsmen. This group is located at the site, independent of the Plant Manager.

Their job is to provide the design control and design modification services to the Plant. Our thoughts were that from looking at other organizations, that the Engineering Group would be better werved -- the Plant would be better served, which is the work product, if the Engineering Group was located at the Plant site.

For several reasons. Number 1, that's the location of the work product; that's where they're going to go to see what kind of design changes need to be done.

Number 2, in going around and visiting other people, we always noticed a definite lack of cooperation between the people in the field, the Plant people, and the people back at an Engineering Office somewhere else, in terms of understanding the Plant, and in terms of just understanding each other. We felt that if we put them there in the same location, that this would eliminate this type of misunderstanding, and I think we are doing it.

In the Startup Group, which will come under the Plant Manager before we load fuel, we have the Startup

Manager, who is not here today; he's down starting up the Plant -- with experienced, a number of experienced Engineers under him.

We have our Manager of Project Engineering, whom I will introduce to you, who has a number of years experience, and has a number of experienced Engineers working under him; some from our Company, some from Middle South Services.

Our Construction Organization, we have Engineers, 3 Engineers in that organization, and we talked for a minute about Middle South Services.

MEMBER BENDER: Jim, before you go on --

MR. McGAUGHY: Yes, sir.

MEMBER BENDER: I'd like to take a little time to discuss the matter.

You've got a Site Manager and a Nuclear Plant Manager up there, and there's a problem, as I see it, in the transition of reponsibilities from one to the other.

Is there a relationship established? Are you usually interfaced between those two?

MR. McGAUGHY: I am, through Mr. Stampley. However, they work together on a daily basis, and the thought is that, you know, as we gradually bring Startup over, probably elements of engineering; Mr. Lutken was talking about reorganizing; I am not sure what all he's going to do. But part of that would be that Startup would come under here, and this would be envisioned to wither away; and that's not any news to him. I mean, he came up here from Services, was the Construction Manager of Hatch, and looking at things, Construction work for Middle South Services.

We thought we needed him here. Mr. Lutken was able to get him, and you know, sometime in the next 4 to 12 months, this organization will wither away.

MEMBER BENDER: Well, I'm not trying to press that point. It's more a matter of understanding how the responsibilities of the two organizations are meshed together. So the decisions that are made by the Startup Manager are compatible with those made by the Nuclear Plant Manager feels he'll have to live with when he takes over the Plant.

MR. McGAUGHY: Well, I think that -- we have one of the parties here, of course, and he is the one who would be in position to complain, more than the other. So why don't we ask him to comment, and I'm not sure what he'll say.

(Laughter)

MR McCOY: Ken McCoy, Plant Manager.

I have no doubts about the clear responsibility and authority at the Plant. That's been made very clear to me by Jim and by Mr. Lutken and Mr. Stampley, directly.

My responsibilities are for the operation of the equipment, once it's turned over from the Construction Organization.

And the Site Manager is responsible for the construction of the PLant. I support him in that effort in any way possible. Once that piece of equipment is tagged over to Operations, it's my responsibility to operate it safely and to continue to maintain it properly.

The area that is probably the -- the area that is questionable in your mind if how we interface that Startup test activity with the operation of the equipment.

We do that by the organization that we have, such as the Shift Supervisor has overall responsibility. No tests are run without his approval. There is a test coordinator from the Startup Organization in the Control Room at all times.

He meets in the pre-shift briefing with the Shift Supervisor and says what test he would like to do. The Shift Supervisor actually runs the test. Our operators operate all the equipment, and so forth.

The Startup group says what testing activities they want to accomplish, and they are responsible for seeing that the test is carried out peoperly, and the proper data is recorded; and if the test needs to be repeated, getting it rescheduled.

MEMBER BENDER: Where is the test programed? Do you and the Startup Manager collectively decide on what the test program should be?

MR. McCOY: Yes, we both sign off on the schedule. In fact, my Operations Superintendent chairs the Plan of the Day Meeting every day that schedules the testing for the next day.

The Startup Manager proposes the testing; the Operations Superintendent authorizes it.

MEMBER BENDER: I think I'm not quite asking the question in the right way. I have no doubt that that's being done.

It has to do more with having some agreement on what the test program is supposed to display.

MR. McCOY: Yes, we do, and we review the test prior to its being run, for technical content to insure that the data that is being collected demonstrates to our satisfaction the proper operation of the equipment and the system, and also complies with regulatory requirements.

Then once the data is collected, it's first evaluated by the Startup Organization, and then the completed test package with all the results, is submitted to the Plant Manager, and my technical group reviews that, and if we have problems we resolve them, we rerun the test, or whatever; and the Plant Manager has the final Signature Authority to say that the test is completed satisfactorily.

MEMBER BENDER: All right, thank you.

MR. McGAUGHY: One group that provides us with many valuable services is the Middle South Services rganization in New Orleans.

This Organization consists of over 30 professional people in the Nuclear Activities Department. The Reactor Physics Analysis Group, which supports us by developing the code to model our core.

We have a Plant Systems Analysis Group, which does things like, for instance, they are developing for us a retran model that our people in our operations analysis group will use to run plant transients to run the plant.

But these detailed analytical development type work are done here at the Service Company in New Orleans.

The fuel supply group handles fuel contracts and this type of thing, to supply us favorably with fuel.

In addition, we have some staff here, too, who are supporting our project engineer group in the field.

There is an Assistant Manager of System Operations who assists us in a number of ways, including as a member of our Safety Review Committee, and he is a pipe line to the Chairman of Middle South Utilities System, for problems which he may detect in the operation of the Plant.

Now let me go through and introduce some of the people to you, and I will tell you about them, individually.

First, you met Ken McCoy, and he's our Plant Manager. Why don't you just stand up, Ken. And Ken comes to us with 16 years, 17 years at this point, with Nuclear experience from the Navy.

He spent 10 years in the Navy, Engineer Officer, Squadron Engineer, prospective Executive Officer

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before he came to us in 1974.

From our Quality Assurance Group I would like to introduce --

CHAIRMAN OKRENT: Excuse me. How much experience is there with BWR in that many years of experience?

MR. McGAUGHY: Well, now, Ken himself has not been in the operating BWR. He has been with us since 1974; he is certified SRO. He has been through our, of course, Startup Program, and is running his aspect of it, managing the operations of the Test Program.

Now, he will, as I stated earlier, he will in a minute get up and tell you about the depth and strength of BWR operating experience within his organization. I would like to hold that until he gets up here.

Some of the other people we would like to introduce is Tom Reaves, who is our Manager of Quality Assurance. Tom has been with the Company for about 20 years and has been involved with Quality Assurance on our Nuclear Project for about 7 years.

Larry Dale. Larry is our Manager of Nuclear Services. Larry comes to us, has been with us since '73. Just prior to that he was with TVA and did some work with Brown's Ferry, some work in nuclear fuel at TVA, materials accountability work, fuel design work. He has been with us since 1973.

Charlie Tyrone, the Manager of Nuclear Fuels, also comes to us from TVA. Charlie was the Startup Engineer at TVA and has been with us since '73.

Larry McKay is our Corporate Phealth Physicist. He will speak to you a little later about emergency planning. Dr. McCay is a PHD in Health Physics. He has taken the first two parts of his Health Physics Certification. I don't know whether he passed it, but he's still working here, so he must have.

(Laughter).

John Richardson --

REPORTER: Just a minute; this tape doesn't seem to be working.

(Tape was changed).

MR. McGAUGHY: John Richardson is our Manager of Safety and Licensing. John has been with us since '75, I believe. John came to us from Westinghouse. John was at the Alleno prototype, where he was instructor. John is certified SRO on grid and simulator; was at one time our Operations Superintendent at the Plant and we moved him up here, and he is our Manager of our Safety and Licensing Group.

Also under John is Sam Hobbs, who is our

Manager of Nuclear Safety. Sam comes to us from an Architechnique Engineer firm, and has a Masters Degree, and has a total of about 10 years experience in the design and licensing group.

We have Guy Cesare, who is our Manager of Licensing. He comes to us from the Navy. He holds an Engineering degree; he was a Navy Engineering Officer Watch, Submarine qualified Officer; he has a total of about 10 years experience in the nuclear business.

Tom Kerr here is our Manager, the head of our Business Services Group, who handles our contracts.

Also back here is Fred Adcock, who has a total of about 18 years experience in Mechanical Engineering. He's our principle Mechanical Engineer on Nuclear Plant Engineering Group. About 10 or 12 of that has been with Combustion Engineering through core work vessel design, vessel manufacturing from combustion in Chattanooga.

Bill Angle is a man who heads up our Operational Analysis Group. Bill comes to us from, most recently from LaCross, LaCross Boiling Water Reactor Plant. He was there -- it is a small organization there, and he was their head technical man and handled just about every aspect of Engineering Analysis, Licensing, Fuel, whatever, at that Plant. And he is going to be the man who heads up our Operational Analysis Independent Safety Engineering Group. Before his 11 years at LaCross, he spent 5 years at Betelle in the northwest; he spent several years with General Electric operating at Hanford, and before that was in the academic field.

Ted Clonginer. Ted is our Manager of Project Engineering, over on this side. Ted comes to us from -- he has a total of 11 years in design and construction experience, and he comes to us from Duke Power Company.

Here's Bob Fron. He is our Acting Manager of Nuclear Plant Engineering. He comes to us after several years with Bechtel.

I would like to introduce from Middle South Services some people that are helping us. Will Dr. Grissen (ph) stand up. He is employed with Middle South Services. He works in Mr. Cloninger's group.

Dr. Sherman, who works for Middle South Services, who spends most of his time doing work for us in all aspects of the project.

I would estimate that of the 30 people at Services, that we probably have 10 to 12 full time who are working full time for us, on an aggregate basis.

I guess that's all I have here. I would like to introduce --

MEMBER BENDER: Jim, may I ask you --

MR. McGAUGHY: Yes, sir.

MEMBER BENDER: I want a little better understanding of how the organization has grown.

MR. McGAUGHY: Of how what?

MEMBER BENDER: Of how the organization has grown. You've got a certain number of people who were here back when the Plant started. Like you, for example. I believe you were here.

MR. McGAUGHY: Yes, sir.

MEMBER BENDER: And a certain number of them came on board as the operation got bigger; and then some fraction of them were brought in with the anticipation of the fact that the Plant has to operate.

Could you give us some idea of what fraction of them were brought in?

MR. McGAUGHY: Well, as best I can. When we started out in 1971 -- well, the planning was before that; the bids with an interchange file were received on January 18, 1971 in New Orleans, and I was employed by Middle South Services at that time.

And as Mr. Lutken has stated, there was going to be one unit at NOPSI and one unit here, and I was serving as the interface between the two companies at that time.

So there were several people, probably 5 here at MP&L, Norris being one of them, who were working on the project.

We grew to probably 15 -- I moved up here in '73, and there were probably 15 or 20 people at that time.

In '75, at that time we formed a Plant Staff, and we were, our Group and QA and Plant Staff were probably well over 100 people at that time.

By '78, I would say we were probably up to 300 people. Now we have, in our organization there are over 400, about 400, and counting the other side, we probably have a total of about 500 people.

So it has been a pretty gradual, steady growth over the years.

Also, who's just come in, I'd like to introduce Dick Ambrosino, one of the people, our Support Manager at the Plant. He is a certified SRO.

And Allen McCurdy ~~(ph)~~, and Allen is our Technical Superintendent at the Plant. Allen will give his presentation later. Allen is a certified SRO and heads up the Engineering portion, and reports through Mr. Ambrosino to the Plant Manager.

I have a chart here that summarizes the experience of these groups.

Before I go on, there is one other group that

I did not mention, and that is the Construction, Engineering Construction Group at Middle South Services, which also provides us some support in the Construction side of the house. That's where Mr. George Rogers, who is the Site Manager, came from; and Vince Stewart (ph), our Construction Superintendent, came from -- Construction Manager, that is.

And they're included in that lump under Services, Middle South Services, which is 30 some odd people who are in the Nuclear Activities Department, plus the people who are in Engineering and Construction.

So what I've listed here is Engineering Degreed people, and people with related professional science degrees. I haven't listed anyone else, no secretaries or draftsmen or non-degreed people who are playing a support role, not operation linked; and they are located both here in Jackson and in the field.

Nuclear Support of course is the Department of the Plant Manager, of course. Nuclear Services Group Jackson; part of the Quality Assurance Group is in Jackson; the rest of the Group are located in the field.

So for MP&L a total of 70 Engineering people, 14 Related Science Degrees, and Professional Experience total 790 years, an average of 9 years.

Nuclear experience, a total of 456 years, or an average of 7.

And just for the information, we've put in Middle South Services. As I said, 10 to 12 of the Nuclear Activities Group work for us pretty much full time. For the Construction, Group, I'm not sure; I would think perhaps 5 work for us full time. And if you lump that in -- they're all available to us '' that gives us a total of 130, 1190 years Professional Experience; and something like 756 years of Nuclear Experience; and an average of 9 years Professional Experience.

MEMBER BENDER: Could I ask how that distribution capabilities compare with the sister organization? Is it about the same? Larger? Smaller?

MR. McGAUGHY: I would say that we are approaching what Louisiana Power and Light has; I consider us head of where Louisiana Power and Light may be at this time. Of course, they're behind us schedule-wise.

MEMBER BENDER: You are planning on loading fuel in December?

MR. McGAUGHY: December 31st.

MEMBER BENDER: This year?

MR. McGAUGHY: Yes, sir.

MEMBER BENDER: So you ought to have all of your team on board and running full gear?

MR. McGAUGHY: Yes, sir. Well, now we feel like we do, and we're ready, and we have a lot, we have a number of people, additional people that we want to hire.

For instance, in the areas of Engineering we would like -- it is our goal, and in our budget, to have enough people to do most of the steady state engineering design modification work within our own organization.

We don't have that many people yet. What we do have, though, is an organization in place, the procedures in place, to do some of the work in-house and to control the work done by Bechtel or other responsible Engineers.

Our organization would initiate any design control, would approve any design control, approve the budgets, and sign and approve the drawings as they come out for the systems that are under the design control of the Mississippi Power and Light Company.

And then we have also done successfully engineering designs of our own. We hope, and are actively and aggressively pursuing building up the capability to do most of that ourselves.

You know, most nuclear plants around the country in Bechtel, San Francisco or Vasco several hundred engineers which are supporting that one project. The philosophy of our company is that we want to do as much of that ourselves, because if you have someone else do it, number one, it costs more money; number two, experience that you can be gaining within your own company is lost. It goes to someone else.

We want that capability in our own house, and we are moving as fast as we can to develop it.

MEMBER BENDER: There are a couple of points that I would like to explore with you. First, everybody wants to have his own experience, and it's always better if you've got your own experienced people. We all agree with that.

But going through a transition period here; you've been relying heavily on outside organizations, and you're about to take off on your own.

One of the things we are all concerned about is that in assuming that responsibility, whether the people that are picking it up have the kind of basic experience that enables them to discern the risk they are undertaking in the course of making the decisions that they make.

I think no one is questioning whether they are individually skilled or not. They usually are. But we are thinking about a circumstance where a lot of other people have been doing the thinking, and that guy has to suddenly pick up the ball, and know that he has followed the thread of the original work approach, and the que:t . that I wanted to ask is how sure are you that you have the continuity between the previous plan, and what you plan to do in the future as you assume the total responsibility of this plan?

MR. McGAUGHY: Well, as I said, we have continuing contracts, both GE and Bechtel, who are the primary design agents, of course, in the original design.

And we feel like number one, that we have through our training programs acquired a good knowledge of the systems and design of the system, and design methods. But it it is our intent, especially on safety related systems, to do a lot of this work continues at GE and Bechtel, and we hope to take more of that on as time goes by.

MEMBER BENDER: That part of it is not quite what I'm trying to get, the fact that some are doing it at one place and some are doing it at another. This is not uncommon.

The question is, who is deciding that the right thing is being done. GE can sell a service, or it can accept responsibility. The same thing is true of most technical engineers.

MR. McGAUGHY: We, of course, are responsible for the safe operation of the plant, and we don't and never have intended to let that rest with GE or with Bechtel, or with anyone other than ourselves.

We have the legal responsibility and the financial responsibility for operating and maintaining this plant.

Any design change that is made to the Plant, of course, is approved by the Plant Manager, his Plant, and the safety review committee.

MEMBER BENDER: Well, let me use an illustration that is probably ridiculous, so don't get insulted by it.

Suppose you decided that you wanted to take out two relief valves, which you undoubtedly will not do. But if you did, what would be the process for deciding that that was or was not an acceptable decision?

MR. McGAUGHY: Well, first a design change would have to be initiated by somebody; and it could occur within the Engineering Group or within Ken's Plant Staff Engineering Group.

In a case like that, it would have to be an Engineering reason, an Engineering judgment, on why this thing s c d be done. Then an engineering design change would be initiated.

In this case, the Engineering would probably go back to GE for the Engineering to be done.

An unreviewed safety question, which this would most likely be, surely be, then this would go to both the Engineering, the OPS Analysis Group and Engineering, and to the Licensing Group, to look at it from a safety standpoint, at which time this, then, would have to be, then could come to a safety review committee to be approved.

I would really like our Manager of Project Engineering to give you some more detail, exactly how this would come about.

MR. CLONINGER: My name is Ted Cloninger, current Manager of Project Engineering for MP&L.

I would like to point out that we, at this stage in the transition of the project from the Heavy Construction, Heavy Contractor Engineering situation, we are in transition to our in-house Engineering.

We would like to point out that the Project Engineering Organization noted on that chart are MP&L or Middle South employees.

The expertise that we have gained in managing the design of basic plan will not leave. I hope I'm not going to get fired, and I'm going to be around.

We are in fact organizing, with our prime contractors, turnover organizational programs to insure that the in-house corporate Engineering organization will be cognizant of, not only the prime design criteria, but more subtle criteria that may have existed in the early stage of the project, that would lend itself to a gap or a gap in knowledge that you may be alluding to.

For example, there may be some lack of knowledge in the early design criteria, as far as structural engineering, etcetera. So we do have, and it a planned, well planned organization to turn over and have a transition to the in-house organization, and in fact we are organizing our prime contractor, two organizations that would have access to the existing Bechtel original design expertise.

We realize that this is not going to be an overnight thing. In the early stages there will be a reliance on the bodies, so to speak, at Bechtel and GE; but we feel like it will not be a huge step, such as overnight MP&L would have to make very critical decisions.

So that's not very quantitative, but that is our current plan. We have embarked upon that course of action to attack very sudden .

MR. McCOY: Could I make a statement?

MR. McGAUGHY: Yes.

MR. McCOY: Ken McCoy, Plant Manager.

I think that the philosophy that we've used throughout our organization is also applicable here, and that is that we have brought into the organization experienced people from outside, from all over the industry as best we can, into the key management positions, such as Ted in the Engineering Organization, who came from Duke and prior to that from the Naval Reactors Engineering Organization.

The same way in each of the groups. We have tried to bring in the experienced person, and then convey that knowledge that Ted was talking about into those people that have the experience to assimilate the knowledge on this particular Plant into their background.

The younger engineers coming up will hopefully be able to learn from those men that we've brought in from the outside. That's the basic philosophy.

MEMBER BENDER: How much are you interacting with the BWR on this group? How much do they contribute to basic knowledge?

MR. McGAUGHY: John? Perhaps John Richardson can help you on that.

MR. RICHARDSON: My name is John Richardson, Manager of Safety and Licensing for MP&L.

We have been an active participant in the BWR in this group since its conception back in the summer of 1979, following the Three Mile Island accident. I assume that's the one you're referring to?

MEMBER BENDER: Well, that's the only one I know about. The thing I have in mind, though, is if that group was set up largely to attack the problems that came up as a result of that accident.

But if you decided to make some kind of modification to the plant, is there a mechanism whereby you can touch base with the people that own similar systems and say, hey, we've decided to make some decision, some change in the Plant; what have you done about this? What kind of communication system exists for that?

MR. RICHARDSON: Well, besides the normal communications with any of the utilities, any problems that come up which we feel may be generic, we may be able to draw on the experience of the other utilities, problems which they have brought up before the utilities and the owners in the meeting.

In addition, on a day to day basis we usually can form a communication between the utilities and GE through the notepad system for input.

In addition, if there is any major problem that's experienced at a utility, we have the possibility of energizing regulatory response group.

MEMBER BENDER: All right, but that's kind of procedural. That's not quite what I -- I'm not quite as comfortable with that kind of answer as I would be with something that says, I know 4 different superintendents at 4 different operating plants, that I could call the ball and get a response.

(Several people talking at once)

MR. McGAUGHY: Of course, that exists through the notepad system, plus .

MR. RICHARDSON: Yes, we have established that kind of informal contact with other BWR's, and the formal contact in the owners' group, the one that I've been most familiar with, my Operating Superintendent has been very actively involved in the development of the GE emergency procedures, the symptom oriented procedures.

He has participated in all of the meetings, and has brought back to us the shared knowledge of all of the BWR's that are operating, on how to handle emergency conditions.

We recognize the value of that, and we are developing those contacts.

MEMBER BENDER: Thank you. That's what I had in mind.

MR. McGAUGHY: At this time I would like to ask Ken, now, to come up and talk about his operating organization.

CHAIRMAN OKRENT: Excuse me, before you do that, would you tell us some time the nature of the Offsite Safety Review Committee, or is there one?

MR. McGAUGHY: The Offsite Safety Review Committee -- that's the one we're talking about, and we also have the Independent Safety Engineering Group, the Operations Analysis Group. I will tell you a little bit about both.

CHAIRMAN OKRENT: Tell me about the Offsite Safety Review Committee.

MR. McGAUGHY: Okay. The Offsite Safety Review Committee is chaired by me. On that Committee is the Plant Manager Mr. McCoy; the Manager of Nuclear Services, Larry Dale; the Manager of Safety and Licensing is the Secretary of the Group; the Manager of Quality Assurance, Tom Reaves, is on it; the Manager of Nuclear Plant Engineering, Bob Fron, is on it; the Corporate Health Physicist, Dr. McKay, is on it; there's a representative Manager of Nuclear Operations, Mr. Sharp (ph) from Middle South Services, is on that Committee.

CHAIRMAN OKRENT: Now, how do you decide what constitutes the kinds of backgrounds, the kinds of experience, and the kinds of temperaments that you want on that Committee?

MR. McGAUGHY: Well, let me say one other thing. We have under consideration, and this is not from any product of NLR, because they haven't asked any questions on this subject. But we are considering, and have not yet formulated how we are going to do that, if putting representatives, some or a few, from local Universities, Mississippi State, for instance, Engineering School; perhaps in some position on the Committee, other perhaps some outside luminaries such as the gentlemen who've qualified for ACRS, or these type people, if we can find them.

We have not really formulated that portion of our planning yet, although that is something that we are considering.

In addition to that, it also is in our plan for whatever issues may come up for discussion, that the Committee has authority to obtain outside consultants, much as ACRS does, I guess, to look at specific issues that might come under review.

CHAIRMAN OKRENT: You've answered a question, but it's somewhat a different one.

MR. McGAUGHY: Okay.

CHAIRMAN OKRENT: And what I --

(two people talking at once).

MR. McGAUGHY: Well, let me specifically

answer the question.

The way the Committee is constituted, it is constituted by job position names; there are certain qualifications for those jobs, and that's how it is.

CHAIRMAN OKRENT: Well, I listened fairly carefully to what you said was the experience of the various people, and my recollection tells me that there is not a strong metalurgical background among those who are involved. I don't mean fuel, I mean other things.

I may be wrong, but you can correct me.

MR. McGAUGHY: Well, obviously --

CHAIRMAN OKRENT: I think it's thin in Nuclear Safety, with all due regard to your Secretary. I think it's thin in system behaviour of things like BWR's, as I understood it; and I think it's thin in people whose job is not a line job, and who has to worry about making waves; if you know what I mean.

MR. McGAUGHY: I know what you mean.

CHAIRMAN OKRENT: And so when I asked about how you approached setting it up, what I was wondering was, had you said, what do we need on this committee? and then, how will we get it? instead of what I would look upon as a managerial approach of -- well, it's logical to have the head of this group, and the head of that group, and so forth and so on.

MR. LUTKEN: Jim, may I make a comment on another aspect that we've just discussed within the last couple of days, and it speaks to your response.

And that is, we think there is a lot of merit in going to another utility who has an operating Plant, and getting an operations person from them to sit upon our Committee, and often they have one of our operations people serve on theirs.

That is, somewhere that we could bring in more operation experience to the Committee.

CHAIRMAN OKRENT: Well, I think that's a good idea. That would certainly be useful in more than one way, I would imagine. So --

MR. McGAUGHY: Well, to answer your question, yes, we have given a lot of thought to this recently, and we are now, the Committee meeting and functioning. And we're saying, well what is it that we're really trying to do?

We had modeled what we had recently set up, based on what utilities have done in the past, and now we're asking ourselves, what is it in addition that we really want this Committee to do.

I don't have any concrete plans or proposals to give you today; but yes, we're taking these things up that we think need to be, that we have not formulated additional plan of additions, based on those thought processes.

CHAIRMAN OKRENT: Let me make one other observation, if I can. This is scheduled to be the first BWR-6 going into operation in this country.

It's also an operating group that hasn't run another BWR on your own system, although we have some people who are experienced.

What we know from general experience is some tendency for things to turn up the first year or two, anyway; and then, you know, just like I'm holding for Lutken to buy the first year of a new car, because of what they didn't find back in the trade.

You may have some of those things; and so we have a combination of potentialities that, at least in my mind, call for special over and above the ordinary kind of measures, rather than the average.

This is my own opinion, and we've seen it elsewhere turn out, not always purposely in these situations.

So I think there is some more thought needed along these lines. It might be --

MR. McGAUGHY: Probably to be put before the Operating Organization --

MEMBER BENDER: One of the things I always hoped that INPO might do was provide some guidance about such matters. Presumably, it represents the best knowledge of the industry as a whole and has been set up as a way of showing that the industry has a strong competence to manage the business.

I find a notable lack of insight coming from that side of the industry, in helping to make such judgments. I don't think this Committee sitting here is particularly adept at deciding what your Review Committee ought to do.

But it's trouble is that the basis for selecting such a group is not a paramount question, and I'm wondering why you're not pressing INPO to give you that kind of guidance.

MR. McGAUGHY: Well, of course the initial efforts have been directed more toward operator qualifications.

MEMBER BENDER: Well, that's what everybody says, but I don't think that anybody that's in the nuclear community thought that that was going to be the reason why INPO couldn't do more than one thing at a time. They had to qualify operators, and therefore there wasn't anything else for it to do.

And I'm troubled about it, myself. That's the end of my thought.

MR. LUTKEN: It's a point well taken, and I do not know what is being planned. I do know that next week an INPO group is coming in and critique operations of preparedness procedure, and are going to spend the week with us.

So there will be some effort to go into other areas. I believe the Committee is substituting one that well would be best, and maybe in that process.

I don't know, but we are beginning to see some movement into areas other than just operator training qualifications.

MEMBER EBERSOLE: May I comment? I guess along the lines of determining what the corporate philosophy might be in the following aspects.

I guess your problems can come from three or four directions. I think it's the floodability yards you are going to be dealing with, and they already -- you're going to have your own personal experience with this Plant.

A third step, which I think is important, has nothing to do with NRC; it comes from your own corporate investigation of design potentials for trouble, which you do yourself.

I'm not sure that you feel comfortable, or even imposed upon by the burden of Federal Regulations that are put on you down at the Plant. You may think that you are well off indeed if you can comply with those; as a matter of fact, many of you who wish you didn't have to comply with them.

I would like to know hcw you feel in a corporate philosophy sense, about making your own investigations about some snakes in this design that might undo you.

You know if the industry marched into the jungle with its big guns, and as long as it didn't have any shoes on, the sankes would get it. And there are snakes in every design, of which we can mention a few here in these investigations.

I have in front of me, for instance, an IE bulletin that says, it has now been found, and it's been a long suspicious matter, that gate salves can be closed on dynamic loads, like they're supposed to.

You have some critical valves in this Plant which are minor little things, but the whole Plant Safety rests n -- I'm thinking, for instance, of the RCIC steam line, isolation valves, which if you had prolonged steam flow will ruin your station, unless I find out otherwise.

The reactor water cleanup system, which handles quite a sizeable blow of hot water of the core; if that line should break, I have no personal confidence that the array of valves which are supposed to intercept that flow, will in fact work against the dynamic steam flow, as they're supposed to.

I would like to hear whether you look with suspicion on how it's going to start, and if the QA man looks at the specifications for such a valve and says, where are the specs that have to do with hydrodynamic loads? Where are the tests that illustrate that this thing would work? And what are the, over the 30 year lifetime of the Plant, where is the validation that it even had the ability to work in the first place, that it still has it; since most valve tests, aas you well know, is just the idling, unloaded motion of the valves from one extreme to the other, position.

I'm getting at, what is your corporate intuition that's needed for making your own personal investigation into the design ethics?

MR. McGAUGHY: Okay. First, as you stated, there is a trememdous amount of work that we do as primary response to the Regulatory people, and one could argue that perhaps this certainly does have an effect of taking our lines of thoughts away from looking at things independently to assess the problems.

One way that we do this is under the

procedure outlined by Mr. McCoy.

Another way, of course, is in our Quality Assurance Program. Mr. Reaves, could you comment? Tom Reaves is our Manager of Quality Assurance; how they look at this.

MR. REAVES: We have capabilities for anyone during the construction process on file, essential to the 55-B, and we have several that's been filed on designs, where someone felt like like the design area itself might be in question.

Our program requires that if have an allegation, or something of that nature, that it be documented and treated as a non-performance and run through our non-performance control system.

MEMBER EBERSOLE: Does this mean that you analyze specifications for functional adequacy?

MR. REAVES: Quality Assurance does not.

MEMBER EBERSOLE: Well, what does your corporate organization do about this?

MR. McGAUGHY: One of the jobs of our Independent Safety Engineering or Operational Analysis Group will be, of course, number one, to develop the capability to understand the systems and to look at system operation from the indepdent standpoint.

But in addition they will develop the

capabili'y to look at individual components specifications t se d deed they meet not just in that criteria, but what t ntent of the service is and whether they are adequate to meet the service of this design modification plan.

MEMBER BENDER: Let me comment, though. You've got hundreds of valves, for instance. And a valve is a valve is a valve. It's just where it's placed that it takes -- whether it has to be good or not.

Where are the people who know the implications, understand the implications of these valves failing to function properly?

Where in your organization is the realization that if these things don't do what they're supposed to do, then you're in big trouble?

MR. McGAUGHY: Well, now the realization, is is a simple question. Number one, the realization of the importance by the Engineering Group and the Independent Safety Engineering ip; of course the people that maintain the valves and operate them are the ones who immediately become aware of whether these things are actually going to function right or not.

MEMBER BENDER: Remember, they never function when you need them most.

MR. McGAUGHY: Okay. They isolate -- these particular isolations --

CHAIRMAN OKRENT: Maybe I can put the comment in a different way, since I don't think Mr. Ebersole will do it. He used to have the job of looking at these Plants (Laughter) and trying to figure out what was wrong with them.

And that's a very impossible kind of job; you make enemies with everybody else in the company, and it doesn't have much future with regard to getting up the ladder, either.

(Laughter)

But do you in fact even have anybody in the Company, or group of people who have that job; is another way of phrasing his question.

MR. McGAUGHY: We'll ask Ken to comment on that.

MR. McCOY: Ken McCoy. I'd like to comment on this. Yes, this is one that we have given a lot of thought to, and I do think it would be aggressor philosophy.

Number one, we have tried to relieve the people that are responsible for evaluating performance in the Plant from much of the day to day regulatory administrative things. We have done this by a set of tools, if you will, to keep up with all the regulatory requirements, and people to do that, without distracting our Technical Engineering Group.

We have in that Group 17 Engineers on my staff, a group that is dedicated -- what we call the Plant Engineering Group, to the performance of the Plant. We have tried in instill in these people, not the normal, what I would call the fossil plant performance kind of background; but that they always start with an understanding of the safety analysis of the entire Plant.

And then the Engineers have responsibilities for specific systems within the Plant. It is their responsibility to look for potential problems, and identify potential problems, much the same as Mr. Ebersole did in walking through the Plant yesterday.

We have inplace procedures to get those evaluated with the proper depth. We don't have that depth in our Staff, but we think we have enough knowledge to bring to light a lot of these kinds of potential problems.

We have brought many of them to light during our Construction Program. I am sure there any many snakes still there, and we're still looking.

In addition, we are trying to develop within that Operation Analysis Group, a broader kind of search capability. That's why we've gone to the Retran Codes for that Operation Analysis Group.

We'd like to, if we see an anomoly in a Plant transient that was not anticipated, we would like to go to the Operation Analysis Group and request a detailed study of that. What are the implications? Was that due to a faulty performance of a valve that was not anticipated. Those kinds of things.

I don't know that there's any way that you can address this problem that you are talking about, other than by management philosophy.

And that's what I'm trying to give you a feeling for; that we do think we have that management philosophy.

MEMBER EBERSOLE: Well, I didn't pick those topics without having looked into them.

I would suggest that next time we meet, that you tell us the result, to what degree you have accomplished --

(Reporter changed tapes)

MR. EBERSOLE: Did you get what I said?

REPORTER: I didn't get that last part.

MEMBER EBERSOLE: I said if we hypothesized that the main feeder water lines come apart, like at some suitable positions like after the main feeder water turbines at the pumps.

MR. McCOY: Those problems that you mention are not unheard of to us, and we will be prepared to address them at the next meeting.

MR. McGAUGHY: Now these figures that I have shown you are support personnel, and Ken will tell us about the Operation and Maintenance Program.

MR. McCOY: I'll start by just running through the Organization, and I realize that this is not your primary interest, so that we can talk further about -- this is the Organization structure of the Plant.

There is a philosophy in the structure, that is that the Assistant Plant Manager has the responsibility for all of the activities out in the Plant, work activities; and I'll talk more about that in just a few minutes.

And the Support Manager has the Staff responsibilities for the Plant. We have the Quality Superintendent at the Plant who reports directly to the Plant Manager. His primary responsibility under our Operations Q.A. program is Quality Control.

As you've already seen, our Quality Assurance Organization reports offsite. But we do not call him a Quality Control Superintendent. We call him a Quality Superintendent. The reason is that he is available to the Plant Manager to do reviews of Administrative

Programs to assure Quality, in addition to his Quality Control activities, and we do have formal procedures to do that.

We instituted a new administrative control procedure, and after a short period of time I asked him to do a review, a program review, and assess how well that administrative control had been carried out.

This is the Support Organization. As you can see, we have several typical administrative type activities here, but the real crux of his job is the technical support of the plant, and a Technical Support Superintendent reports to him, and we have broken up in our Technical Group on the Staff into 3 areas.

These areas -- we did this after visiting quite a few BWR Plants and looking at the technical workload in the Plant.

The first is the Maintenance Engineering, and we discovered that if you are going to do the maintenance and modification work properly, using well thought out procedures in doing maintenance; and I strongly believe that a well designed system is only as good as it is maintained.

If you are going to maintain it properly, you need an Engineering Group that provides those procedures, and that's what our Group does.

We have a Reactor Engineering Group who is responsible for the core management on a day to day basis. And in addition, the shift Technical Advisors report to this Group. I discussed part of this with you yesterday in the Control Room, our philosophy for having shift Technical Advisors to be qualified the same as our Engineers.

On BWR we feel that the operators can quickly get into a problem where they would like to have advice from a qualified Reactor Engineer. So we built our STA program on top of the Reactor Engineeringtraining that had already been provided to our Nuclear Engineers.

Then we have the Technical Engineering Supervisor. This is the Plant Engineering Group that I was talking about earlier, that does the plant performance and analyses of plant problems.

They have the Engineers assigned to specific systems; they review the performance of those systems; resolve problems; initiate design change requests; work with people in Plant Engineering to get appropriate modifications.

Then we have a Licensing Engineer that is just responsible for being assured that all our LER's and IE bulletin compliance is done properly, and so forth.

MEMBER EBERSOLE: Ken, may I ask you where is there up there, this unit I would say, that you are going to tell something like this: I don't want to have something hit me in the face; it's your job to see that that doesn't happen.

Who are you going to tell?

MR. McCOY: When you say something fly up and hit me in the face are you talking about --

MEMBER EBERSOLE: I am anticipating an event that gets very messy indeed.

MR. McCOY: Okay. I expect the Technical Engineering Supervisor to be looking at that, and looking for potentials, not just real problems that have already surfaced, but potential problems.

MEMBER EBERSOLE: So what's that man's background?

MR. McCOY: That man's background is that he was a Reactor Operator, Navy type, went back to college and got a Nuclear Engineering Degree, and has been associated with this project since its inception.

He did a lot of the licensing work initially, and is very familiar with the Safety Analysis of the Plant from the beginning. He worked in that area.

He has held numerous jobs in our Staff as we've gone through construction. In addition, he has gone through the whole Simulator Program with the Operators, and has obtained an SRO Certification. And that basically is his background.

CHAIRMAN OKRENT: Is he familiar with the -- in some detail -- with the RRSMAP Study on Grand Gulf that we were told about yesterday?

MR. McCOY: Whether he is familiar -- the RS..MAP Report, as you know, has not been issued yet.

CHAIRMAN OKRENT: Yes, but you obviously have the results, which I don't.

MR. McCOY: Yes. Let me introduce Allison Curry (ph), who is the Capital Superintendent, and I will direct that question to him.

Allen, are you familiar with the preliminary results of RSSMAP?

MR. CURRY: I reviewed the first draft.

CHAIRMAN OKRENT: I don't mean the results, but the detailed, you know, event trees and this sort of thing. I'm just trying to understand.

MR. CURRY: I have reviewed the first draft, but I have not seen the results yet.

CHAIRMAN OKRENT: I am trying to understand that when you say draft -- yesterday we heard a presentation from, I think Mr. Hobbs it was, in which he mentioned certain kinds of things that they might have done differently. That was a kind of detailed comment.

You have that kind of familiarity with the analysis, some kind of --

MR. CURRY: I believe some of those comments they've made probably came from --

REPORTER: Just a minute, please. If you are talking from the floor, it will not pick up, and I'm afraid I'm going to need these tapes.

(Speaker came to podium)

MR. CURRY: Do you want me to repeat this?

REPORTER: No, I've got what you said so far.

MR. CURRY: I believe probably some of the comments that you are referring to may have -- one that comes to mind has to do with maintenance on valves, double verification, etcetera, and the probability of that valve probably being left in a closed position after maintenance was done on it; that may have been some of the comments Mr. Hobbs talked about yesterday.

By the way, I was not here yesterday.

CHAIRMAN OKRENT: Okay, I'm sorry.

MR. CURRY: I'm just trying to recall some of the comments that I gave to him after we reviewed the study.

MR. McCOY: Dr. Okrent, since Al wan't here yesterday, let me comment that some of those points that our Manager of Safety was bringing out were originated by our Tech Group at the Staff, doing a review, and I do understand your line of questioning as to the depth that we understand the techniques used in those studies, and the importance of that.

One other comment that I would make is that the Operations Analysis Group is located physically at the site, and there is a close contact between our Technical Superintendent and the Operations Analysis Group.

And they have the tools to actually do those kinds of studies. Now, I'll have to be honest and say that we are just growing into that, but we intend to have that capability.

Next I would like to talk about the Line Organization out at the Plant. We did not arrive at this organization lightly, either. We visited a lot of Plants and talked to the ways the Plant could function best in getting the work done.

And as you know, it's become apparent since Three Mile Island that you need expertise, not only in Operation and Maintenance, but in Chemistry and Radiation Control on shift in the Plant.

So the Assistant Plant Manager has all the groups of people that he needs out there on shift around the clock to provide that kind of service. In addition, of course, we have the STA, which provides that link to the Technical Group.

I will talk about the individual groups here in just a minute. I am sure you are interested in the Operation Organization, so I will go to that next.

I think I had my slides backwards. This is the Organization; this is the Operations Organization.

Reporting to the Operations Superintendent we have two primary groups, that's the Radwaste (ph) Group. Our Radwaste Plant is located physically separate from the unit. We did not go into that on the Plant tour, but it's on the south end the turbin hall.

We have Radwaste Operators and a Supervisor that runs that Organization. We feel that that Plant -- and it is essentially Plant into itself, with interconnections to the Operating Units, deserves full time attention, so we have got a Supervisor and a group of Operators that run that Radwaste Plant. They report to the Operations Superintendent.

The Shift Superintendent has overall responsibility for all operations on the site, and for at least 2/3 of the time at the Plant he is my direct representative, and has the full authority of the Plant

Manager to act in my absence.

The Shift Supervisor is a SRO, and he is responsible for overseeing the operation of a particular unit. We'll have two Shift Supervisors when we have two units in operation.

Both the Shift Superintendent and the Shift Supervisor are management personnel who hold SRO licenses on the unit.

We have Nuclear Operator A's who are the Control Panel Operators and hold Reactor Operator licenses. We have two of those in the Control Room.

Our philosophy -- I discussed a little bit of it while we were in the Control Room -- is that there is one licensed Operator available to operate the Back Panels under the direction of the Licensed Operator at the Controls.

Another reason for that arrangement is our reviews of some studies that have been done in the last couple of years indicate that performance of Operating personnel on Control Panels deteriorates after about 4 hours or so, and so we intend to rotate those 2 individuals in the middle of the shift, so each one of them spends 4 hours on the actual Control Panel, but there is that continuity because they are both there for the entire shift period.

We have non-licensed Operator B's. They are the Operators who have completed the entire System and Component Training Program for the Plant, and they are now in training for moving up to the licensed status.

Then we have Auxiliary Operators, who are at a lower portion of the training program and are only qualified in particular areas of the Plant that they are working in.

This Organization consists of approximately 60 people.

MEMBER BENDER: Ken, with regard to the relationship of this Organization, or a part of your Organization; Maintenance, for example. What degree does the Operating Unit participate in organizing maintenance activities?

MR. McCOY: Okay. The maintenance activities, the scheduling of those activities and the organization of when they are going to be done to fit into the Operational Schedule, is done by the Operations Superintendent.

At the present time he chairs our Plan of the Day Committee at the Plant, which puts out the authorized work to be done. This includes includes the maintenance work.

Before Fuel Load we will be instituting a

Plan of the Day that will be chaired by the Plant Manager on a daily basis, and again the Operations Superintendent will make the decisions at that meeting on what he can support from the standpoint of meeting our overall goals for the Plant, and supporting the Plant conditions necessary for maintenance or protesting.

MEMBER BENDER: You can't read my mind. Let me try to expand my thought on that.

One of the things that I've noticed, and others, is that a large fraction of events that cause trouble in Nuclear Power Plants occur because of maintenance or the test organization doing something that the Operators are not aware of.

Or, they're doing something that the Operators want them to do, but the consequences of doing it were not well described, and I am curious to know how that understanding is developed.

MR. McCOY: I understand your question and I have made the same observation myself, so we'll try to build that into our program.

Number one, the Shift Superintendent personally approves and controls all work that's going on in the Plant, and all testing. You may have noticed yesterday, we have an Administrative Office for that Shift Superintendent, and he sits right outside the

Control Room, and he spends most of his time providing providing that kind of coordination for all the things that are going on.

The Shift Supervisor is the man that's directly responsible for the operation of the Reactor, and he is not detracted from his primary duties to do this coordination. I consider both of those things important, and that's why we have 2 management SRO's on shift.

We have administrative procedures set up such that no work or testing goes on without the knowledge of the Shift Superintendent, and he can stop any testing or maintenance at any time.

In addition he approves all clearances or tag-outs of equipment in order to make it available for maintenance. This is something that you can't -- you can put it in writing as a responsibility, but you just have to work continuously to get into people that we are trying to do this.

And that is the philosophy to our Shift Superintendents that they need to understand everything that's going on out in that Plant; not just tag out a portion of the Plant and say, Okay you can have that for maintenance.

They need to know; they need to review the

the maintenance work order and make sure that the maintenance is going to be done and doesn't have a potential to affect another system.

And so we have provided a place there, a separate area for him to meet with the people who are going to do maintenance or do testing, and discuss those issues; and we have provided a requirement that he actually sign the maintenance work order before work begins. And the signature means that he understands the work.

One other point there before I get away from it. We also look at it from the other side. We think that one way to prevent those kind of problems is by providing a good understanding of the Plant to the people who do maintenance; particularly our Instrument Control Group.

That Group has the potential of causing a lot of operational problems. So we try and put them through a very similar systems, goals, and understanding course as we do for our non-licensed Operations, in addition to their Specialized Instrument Control Training.

MEMBER BENDER: Well it still leaves open one piece of the problem. The burden seems to rest on the supervision, which is probably the right place to put responsibility.

But the communication between the people that are doing the functions down at the hardware and the people in the Control Room; it still seems to require more direct communication, because often the guy in the Control Room doesn't know what the man downstairs is doing.

Is there some kind of telephone understanding, or something of that sort that goes with that?

MR. McCOY: Yes. One of the things that bothered me when I looked at the design of our Plant; it's such a large physical Plant, that I had difficulty perceiving how the Operator at the Controls could be in contact with the people at the various work sites or Operators throughout the Plant.

We ended up addressing that problem by putting in a very reliable radio system and putting in additional channels, much more than other Plants. We have 6 designated radio frequencies, and each Maintenance Crew that goes out in the Plant has a radio.

We have one channel dedicated just to Maintenance, and the communications is there all the time between the Control Room and wherever the Maintenance is.

We also have a critical area, which we built in sound power foam circuits, which limit the amount -- like for instance when you're instrument calibration, when there's constant communication, you don't want that over radio circuits, so we do have sound power foam circuits in those locations.

MEMBER BENDER: All right. Thank you.

MEMBER EBERSOLE: Let me ask another question. Suppose I'm a workman in the Plant and I go into one of your battery rooms and I hear the exhaust fans rattling away, and I've got to make an immediate decision that I've got to shut it down and repair it, and it might take me a half a day or so.

Are there tech specs on this thing; is that --

MR. McCOY: Would you repeat what piece of equipment?

MEMBER EBERSOLE: This is the exhaust fans in the battery room. Well, I don't know myself whether they are or not. But let me go on.

It's easy for me to say at that time that that battery is on a saturation charge; and you're involving copious amounts of hydrogen.

How do you start out what you're going to do about that matter? What precautions are automatically instigated when a man says I'm going to repair the fan?

MR. McCOY: Okay. Well first of all, the Maintenance man cannot secure that piece of equipment without approval from the Control Room.

Realizing that there are time when emergencies dictate actions, and those actions will be looked at in retrospect, but the rules are that he does not operate equipment without permission from the Control Room.

The second thing is that in the particular case that you are talking about, that decision has got to be made by the Shift Supervisor for that unit, and he has that responsibility to provide the backup equipment.

In this case, what I would do in your specific case is get a red devil into the room immediately to provide ventilation while that fan was out. That would be his responsibility to do that; to see that it's done.

MEMBER EBERSOLE: Thank you.

MR. McCOY: I would next like to talk about the experience level of the people in the Plant. Let me get my slides in order here.

CHAIRMAN OKRENT: I wonder; I think we're about at 9:15 on the Agenda, but it's actually 10:30, and maybe, since I'm also going to want to hear from the Staff on this topic, it might be a good time to take a 10 minute break.

We'll resume with you and the members of the Staff on the same topic after the break. So, about 10 minutes.

(There was a short recess)

CHAIRMAN OKRENT: This meeting will again come to order.

MR. McCOY: I will now go into the qualifications of the Staff personnel, and I'll start by embracing an area that was embraced earlier on the Plant Managers.

In fact, I had 10 years of Navy Nuclear experience, including Senior Watch Stander on three types of Reactor Plants; a Reactor Training Instructor for several years at a prototype facility; and then I've had 7 years of commercial Nuclear Project experience in various management position during the construction of Grand Gulf.

I went through the Simulator Certification Program, the entire Operator's Training Program, and was certified as an SRO and BWR-6 simulator. I recognize that there is a weakness in my background. I have no BWR operating experience, and we tried to compensate for that in two ways.

The first is that I have spent time at operating BWR's, and I've visited quite a few different BWR's to get a base of experience, and in different types of operating conditions, such as refuels and normal operations.

In addition we've tried to compensate for that by building into the Staff an extra amount of BWR experience in the next levels, and I'll talk about that in a minute.

The Assistant Plant Manager has 4 years of Navy Nuclear experience and 12 years of commercial Nuclear Power experience. All of that is on BWR's.

He was the Shift Supervisor during initial startups of a BWR. Prior to that he had an Engineer on the Design and Construction phase. Then he was the Operations Supervisor of a BWR for 5 years immediately prior to taking this job. And of course he has owned an SRO license the entire time.

That particular plant was a nine mile point plant.

Our Support Services Manager, as Jim McGaughy discussed earlier, has a lot of years of commercial Nuclear Power experience, and all of that is associated with BWR types of plants.

He was employed by General Electric Company in various roles, including being on loan to a utility as a Maintenance Superintendent. This was Peach Bottom.

CHAIRMAN OKRENT: Could you tell me what else he did for General Electric?

MR. McCOY: Yes, he was a Site Operations Manager at Duane Arnold , which General Electric now provides a -- at each operating facility, they have a resident Site Operations Manager, I believe they call them.

He also did turbin installation work and check cuts for General Electric, and he was assigned by General Electric to Three Mile Island at the time of the accident to provide support at Three Mile Island.

Those are some of the things that I recall.

The Operations Superintendent has 5 years as a Reactor Operator, research reactor, at one of the National labs.

He has 14 years commercial Nuclear Power Plant experience. This experience has consisted of being a -- all of this is BWR experience, by the way -- of being a Reactor Operator, Senior Reactor Operator, a Shift Supervisor, and an Assistant Ops Supervisor on BWR's.

He was at Yankee's -- Yankee Vermont Plant as a Shift Supervisor during the startup and early operation of that plant.

Our Maintenance Superintendent has 3 years of Navy Nuclear experience, including qualification as an Engineer Officer of the Watch; 15 years of commercial Nuclear Power Plant experience, including working as a Startup Engineer on BWR's for General Electric, and as an Operations Advisor to utilities operating BWR's, again for General Electric; as a Simulator Instructor at the Dresden? Simulator Facility for General Electric, and his duties there included certification of license candidates.

The Chemistry and Radiation Control Superintendent has 5 years of experience as a Reactor Operation on a research reactor. He has a degree in Physics, and specializes in the area of Health Physics.

Prior to coming with us, he spent 7 years at Point Beach as a Health Physics Supervisor on that two-unit BWR. I might point out that it has been our evaluation that Point Beach has had one of the most successful ALARA programs and Radiation Control Programs, and it is not an accident that we went there to look for experience.

We have 7 Shift Superintendent. The 7 consist of the two officers [illegible] that you saw on the slide. Both of those men are qualified as Shift Superintendents, and 5 are normal Shift Superintendents.

They have a total of 37 years Nuclear Operations experience, and a total of 24 years BWR Operation experience.

They participated in the entire pre-operational program; all of these men have. This was one of the areas in the SER that was suggested that we might want to have some outside expertise on the Shift.

I would like to address that point. We realized that we needed to have Operational experienced people on each Shift. General Electric provides Startup Engineers who are Operational experienced and qualified on BWR-6 on our Shifts.

In addition, though, we felt that we needed to have that experience in our own organization, and the man that has the responsibility not in a consulting role. So what we did, we attempted to find Shift Supervisors who had been previously licensed on BWR's.

We were able to find 3 of those gentlemen. One was the Shift Supervisor at Quad Cities; the other 2 were Reactor Operators, one at Nine Mile and one at Hatch, and in both cases they were ready for promotion to Shift Supervisor positions.

And then we took 2 Engineers who had been through our program from the beginning, and had participated in the entire construction startup period. They went through the licensed Operator Training Program, including the simulator certification as SRO's, and then we sent them to Vermont? Yankee for 6 months, where they participated in, they actually worked for the Operations Superintendent there and were assigned their own shifts.

They were given line responsibilities,

including the refueling coordinators on particular Shifts during refueling outage, and we feel that that provided those gentlemen with sufficient experience to act as the Shift Superintendents.

Those are the 5 gentlemen that we are planning to use for the Shift Superintendent for the power ascension up to 100% while we gain that experience in our Staff.

We also have Shift Supervisors; five of these men; they have a total of 45 years Nuclear experience. Most of those come out of the Nuclear Navy experience, and I made the comment here that prior to 100% power operation, each Shift will have at least 1 SRO with at least 6 months BWR operating experience under his belt. And all participated in the pre-operation program.

That concludes my remarks on the Plant Staff and I am prepared to go into the next Agenda item on Training, if you have no other questions.

MEMBER BENDER: Just one point, Ken. You commented on the fact that Point Beach had a remarkably good record with respect to A LARA and Radiation considerations.

I wonder if you could give us some insight as to how you are going to determine whether your Plant has a good an ALARA approach?

MR. McCOY: Okay. I hope I don't get into trouble with Glen Reed (ph) for repeating some of his philosophies here that have led to success, as they have been second hand repeated to me.

In general, he attributes much of his ALARA success to a tight supervision of work in radiation areas. And in particular, awareness of all of the first line Supervisors at the Plant of Radiation Control procedures, and the necessity for maintaining exposure as low as possible.

An example of what I mean is that each Supervisor there, whether he's directly responsible for the work or not, is held accountable if he sees any bad practise, or too many people watering an area, or anything of that nature, that he takes immediate action to correct that and brings it to the attention of the Radiation Control personnel.

One of the things that I've seen that tends to happen in a large nuclear installations today, particularly large outages where there may be several thousand people on a site, is that that feeling of responsibility for maintaining radiation control is very difficult to get through to everyone.

He's attempted to do that by number one, maintaining the numbers of people during outages as low as possible; and number two, making sure that his first line Supervisors realize their responsibility to insure that that ALARA is taken out; is taken into accounting.

In addition to that, we have attempted to do the more traditional things in doing ALARA reviews of the design. We have a program to do that on a continuing basis.

We have made numerous modifications to the Plant in order to reduce potential exposures during maintenance on areas where we know we're going to have high maintenance, and the potential high exposure.

For instance, on the scram discharge volume, we're putting in a modification prior to fuel load that will put access ports on the scram discharge volume so that it can be hydrolased prior to going into maintenance on ACU areas.

That has been an area of high radiation exposure in the past on BWR's. So we looked at the design aspects. We have an administrative control program, which I feel incorporates the best experience in the industry today. We've looked at a lot of people's programs; we've had the INPO review our program; we've had American Nuclear Insurers to review our administrative controls for radiation exposure, and we think we have a good administrative controls program.

MEMBER BENDER: Well, if I were to ask you the name of the 6 things that contribute, that have contributed most to exposure in the BWR's within the last 10 years, what 6 would you list?

MR. McCOY: Okay. Number one, the largest area is in the maintenance area, the largest areas of exposures.

Things that have led to the highest exposures have been the modifications to the internals of the vessel, the feed water ______ modification jobs, and so forth. And I can't recall having read a --

MEMBER BENDER: I don't care whether you are right or not; I just want to know what your conception is of the 6 most important --

MR. McCOY: All right, that's what I'm giving you; I just want to be sure you understood that what I am giving you here is based on those kinds of reports.

The internals work that had to be done in the vessels has been a high exposure job. The work in the drywell area, particularly the ACU inspections that have to be done on every outage in a BWR have been high exposure jobs.

We have made a modification at Grand Gulf to cut down on that. We walked in on that rack yesterday; that rack is all pneumatically controlled, and we can reduce the number of people that have to be involved in that, and we can also speed up the removal of those devices.

We've also built a shielding device to go around the coupling spud on the CRD, which is one of the hot spots.

I've already mentioned the ACU areas as one of the areas of high radiation.

MEMBER BENDER: Let me pick one that will, the people on the site, and that is the Inservice Inspection.

MR. McCOY: Yes, we have addressed that and during the life of the Plant that is going to be one of our major contributors to the manual codes at the Plant. In particular, the difficulties are associated with the piping that runs through the drywell and the containment, getting access to those wells, particularly the ones near the vessel.

I mentioned to you yesterday that we use a remote device for doing the actual vessel inspection wells, but we have to be able to get into each of the nozzle areas and install a device on a track, and some of that work has to actually be done by men. We couldn't design automatic devices, so we expect that to be one of our major contributors, but we did design our program to try to minimize radiation, during the ISI program.

MEMBER BENDER: Well, rather than trying to ____ you on what the things are, if you were developing an ALARA program, and Mr. Reaves came in and said, I'm going to concentrate on making sure that I don't have anybody in the area that doesn't need to be there. I am sure there are going to be lots of arguments as to how many people need to be there and how fast they can get in and out.

What other people are worried about it besides Mr. Reaves? There's you, of course, but you're going to be busy.

MR. McCOY: Okay. We have a Radiation Work Permit procedure, and a part of that is any work that has a significant exposure will be reviewed by our HB Department, or Rad Controls Department, and reviewed for ALARA considerations. What can be done to minimize the exposure during this particular job, and that is a part of the Radiation Work Permit procedure.

In addition, we have on each shift a Radiation Control Technician, and that man is responsible for monitoring all activities that are going on, that may have exposures during outages , we're going to have more than one, but I am talking about normal routine. He's there to insure that proper RADCON procedures are being followed, and as I already stated, I believe that you also have to instill that in your line of responsible people.

MEMBER BENDER: Well, one last aspect of it and I will stop. Some of that usually comes from the regular failure, and what gets into the coolant.

Who makes judgment concerning what can go into the coolant, setting aside the tech specs, and whether it's wise to do anything about it or not?

MR. McCOY: Okay. Yes, that's a significant area that I didn't address. We are looking at that area very carefully.

The biggest thing that we can do at the Plant is to insure that the core is operated as conservatively as possible, and I mentioned we have an STA on each shift who is a Reactor Engineer.

In addition. we are installing an advanced core monitoring system in the Control Room. This has a CRT display that shows the thermal hydraulic limits in a real time basis, and it also has the capability to predict your limits after rod motion.

We expect to have that in during the first cycle of the Plant's life, and that will allow us to operate more conservatively.

MEMBER BENDER: Let me make an observation. You're looking around for the man that's going to advise you. If he thinks about those kinds of things, as opposed to being somebody that tries to figure out what the Operator is supposed to do, you may get a good overview of where your problem areas might be.

That's just a personal opinion, but another operator is not all that useful, and I hope you'll keep that in mind.

MR. McCOY: I will.

CHAIRMAN OKRENT: I think that we should hear from the Staff on the topic we've just been dealing with, Utility, Capability and Organization, and before we proceed on, we'll hear from them.

MR. SCHWENCER: All right. About all I can do is repeat what we have in the SER in Chapter 13. This gives the status of current review of the management operational levels for the Grand Gulf Station.

The Staff will be meeting with MP&L here next week on Points 3, 4 and 5 for more of an indepth review of these areas. There we'll look at the Staffing of the Plant as to the Nuclear Engineering capabilities, the level of experience, the Engineering support.

At this moment it's open, or it's an open issue. We will await next week's audit.

The nuclear experience looks good from a Navy background, but does need further support on BWR experience at the management level. We've recommended the use of advisor approach.

The Operations level looks strong. The pipe line for license examination may be short. The summary that has been given here is that MP&L is perhaps not the best, and they're certainly not the worst.

We realize that we have laid many new requests on the Applicant. MP&L is certainly responsive, and they agree that there are areas for improvement; and the Staff feels that they will be in a better position -- or MP&L will be in a better position after the audit is completed.

The results of this audit will be available before the mid October ACRS meeting.

CHAIRMAN OKRENT: What do you mean that MP&L will be in a better position after the Staff audit is completed?

MR. SCHWENCER: I believe that's based on the fact that MP&L has submitted more material, more resumes, perhaps made commitment for people on their Staff that when the NRC audit is completed next week, the Management Operational level assessment for MP&L will look better than it does in the SER at this time.

CHAIRMAN OKRENT: How do you judge the adequacy of knowledge and experience off of the Plant site? In what way do you arrive at a conclusion as to the adequacy in this regard?

(inaudible discussion).

MR. SCHWENCER: Okay, I don't think we're in a position to answer that question. The Licensing Qualification Branch and the Division of Human Factors has their criteria for judging the adequacy, and they will pe performing the audit and will be abailable to answer any of these questions at the Full Committee Meeting.

CHAIRMAN OKRENT: You mean they have some written criteria, or they arrive at a judgment after talking to the people, or what?

MR. SCHWENCER: I think we'll have to defet getting the right answer to that until the people from the Solids Group are available to us.

CHAIRMAN OKRENT: Well, how do you judge whether the people on site have sufficiently broad background? I know you're interested in having BWR Operational experienced, and I am not questioning that importance, but are there other things that you think should exist in the Plant Manager's Organization, and if so, what are they in broad terms? How do you assess whether these things exist now, or whether they will exist by the time it's needed?

MR. HOUSTON: I think we would have to defer the discussion of the general philosophy for them to respond to you directly.

MEMBER BENDER: This is not the first time that kind of question has been asked of the Staff. Why is it taking so long for the Staff to come down with some kind of clear answers as to how it assesses the operating capabilities?

Is that an unfair question to ask you, Al?

MR. SCHWENCER: Yes, I think it is.

MEMBER BENDER: Would you mind telling us whom to ask that of?

MR. SCHWENCER: Yes, we will take the message back; we'll be prepared to respond to that.

MEMBER BENDER: Thank you.

CHAIRMAN OKRENT: Mr. Ebersole asked about whether there was someone who had the job of trying to ascertain what -- it might not really be quite what we want from either an operational or a safety point of view in the plant.

In other words, our responsibility was to ask hard questions. Does the Staff have any position on whether there should be such a group somewhere in the organization of the utility that's operating a large nuclear power plant?

MR. SCHWENCER: I am not certain that we have a position, but in answer to Mr. Embersole's inquiry before, I think it's appropriate to look at the A-17 back on C-10, C-11, in which we talked about systems interaction in the nuclear power plants. And you will see there on C-11, in --

CHAIRMAN OKRENT: We're still looking --

MR. SCHWENCER: C-11.

CHAIRMAN OKRENT: Page C-11?

MR. SCHWENCER: In Appendix C.

CHAIRMAN OKRENT: All right, go ahead.

MR. SCHWENCER: About halfway up it says "Mississippi Power and Light has formed an Engineering Review team to review the "as-built" condition of the plant for potentially adverse effects on safety-grade equipment."

This matter has been pursued with the Applicant, and we've had one meeting with a couple of presentations, and more material to be submitted, and I am sure that we will have a resolution on that in the near term.

Whether this is a specific requirement by the Staff to have this kind of material, I am sure we look upon it as a desirous type of thing.

CHAIRMAN OKRENT: Well, I read that. I was pleased to see that Mississippi Power and Light is beginning something along those lines.

But there's really a question that's different from the one I asked. I think if you look at the kind of examples, it works okay, but they wouldn't surface from the kind of systems interaction they are talking about in this SER.

So again, I'm trying to understand whether the Staff thinks somewhere in an operating group there ought to be a group of unpopular individuals whose business it is to make trouble by asking, how do you know this is okay, or whatever, in fact.

MR. SCHWENCER: Dr. Okrent, I don't know that we have exactly in mind what you have suggested in posing your question, but there are a number of things; the availability of the shift technical advisors to --

CHAIRMAN OKRENT: Do you really think a Shift Technical Advisor as described here is going to serve that, that --

MR. SCHWENCER: No; no.

CHAIRMAN OKRENT: Then don't bring it up. Let's stay to the plan.

MR. SCHWENCER: I think the point is, I'm doubtful if any group that does precise what you --

CHAIRMAN OKRENT: Well, is there such a group within the Staff?

MR. SCHENCER: I would say Dr. Michaelson's group; I will say in that general category, yes.

CHAIRMAN OKRENT: And in fact Dr. Michaelson served that kind of a function at a specific utility, and I am just wondering, since the Staff has in its infinite wisdom as Commissioners of their system, have found it useful to interject that kind of activity within the Staff. I wonder if the Staff just has to go about just about anticipating?

I guess again I have to wait and talk to somebody else. We don't have the right people here.

What is it that the Committee is going to hear from the Staff with regard to the qualifications, then, of this Applicant, since the Committee will be discussing this in October. Is it that it is an open issue; that it looks like it's in good shape?

MR. SCHWENCER: I can give you a perception based on discussions.

CHAIRMAN OKRENT: All right.

MR. SCHWENCER: We were not prepared at the same day we put this issue out. The feeling was very strong that we needed to have the site audit prior to making our conclusions.

I think we can see forecast, in the light of the Safety Evaluation, the scenarios consist where we have some official documentation, but I don't foresee that there will be major deficiency.

What I expect is that we have confirmed that the Applicant's management organization is acceptable, and it's in that broad range of not the best and not the worst.

And we will be requiring augmentation both for the off site management levels as well as the on site shift capabilities.

Those things we have already talked about in the SER, and I expect that those will be confirmed and that we will continue to require unless something unusual in the way of additional justification is presented to the Staff during the audit.

CHAIRMAN OKRENT: Okay, but I just offer a question to Mississippi Power and Light. If the Plant Manager Staff, as I listened, it seemed to me that the backgrounds of the people was pretty strong in operations, one way or another, although there may or may not be enough years of BWR operation from the Staff's point of view, or others.

It wasn't so clear to me that there was a strong background in what I would call system behavior of BWR's; how these things behave thermal, hydrualically. I don't mean at the level of detail that they used in our LOCA calculation, but at an intermediate kind of level.

Am I wrong?

MR. McCOY: We have some experience that I did not bring out in that area. I think though, I would have to say that your perception is right. We are stronger operationally than we are in a overall systems interrelation kind of study approach.

For instance, one of the people that I did not discuss is one of our STA's who worked for some years with General Electric in core design and core analysis, transient analysis, and so forth. He actually was, I believe they call them a Project Engineer on the reload core, responsible for the design and transient analysis of reload core; those kinds of things.

We have some of those people, Engineers of that type of experience, in our Staff, but the specific area that you are looking for, someone that has broad experience in evaluating interrelation of systems, my opinion is, having searched the industry pretty well for people, those people are very difficult to come by or find, and I think that the industry has just come to recognize the need for those people more in recent years, and we do, we are trying to staff in that area, but it is an industry wide problem.

MR. McGAUGHY: Let me go on to say that in our search, the best man that we could find to do this kind of work is Mr. Bill Angle, who we introduced to you here, who comes to us from LaCross for 10 years, and from Betelle Northwest and from GE, and we have him in this operation analysis group.

They are independent of Ken and the Plant Staff. They are in a position, as you say, to make waves as far as he's concerned; and the kind of capability that he is developing specialized and thermal hydrualics reactivities and control transient analysis and the use of transient codes, and reactor systems behave. As I said, in the process of developing that group the Staff is there, assisted by consultants and Middle South in developing our retrend? model, and Mr. Angle is presenting and developing other models there at the plant.

MEMBER BENDER: Could I add a little bit of free advice? You seem receptive to it without getting mad.

MR. McGAUGHY: Yes, sir.

(Laughter)

MEMBER BENDER: And I don't often get a chance to give free advice.

It seems to me that as long as you're thinking about this advisor, that you might try to find somebody that understands what these kinds of capabilities might be, in order to help you assess whether your own organization has a good perception of what it needs.

Obviously, you're going to have to make those decisions yourself; he's not going to make them for you. But at least it's a way of getting some independent judgment concerning what an organization ought to have, and there might not be very many of those kinds of advisors around.

But the industry would benefit from having you, and you're as good a guinea pig as any.

MR. McCOY: I agree.

(Laughter)

MR. McCOY: Thank you.

CHAIRMAN OKRENT: Okay. Well, we're at 9:30 on the Agenda and by my watch we're 5 minutes early.

(Laughter)

CHAIRMAN OKRENT: So let's go on to the next item. I deliberately let the first topic go out of control, on the assumption that we could make up some of it later on, but we won't be able to keep doing that.

So let's tighten up the presentations on these succeeding topics.

MR. McCOY: I will try to keep it moving as rapidly as I can.

First, I would just like to give you some indication of our commitment to training. We've done this in the area of facilities staff. We've purchased a site specific simulator, and we established very difficult training goals, or standards if you will, for our training program.

The organization that we've established for training consists of a Training and Administrative Superintendent, who if you will, is the Human Resources Department Head on the Plant Staff.

Under him we have a Training Supervisor responsible for the scheduling and administration of the training programs on a day to day basis.

We have a Simulator Supervisor; I might add that this Simulator Supervisor was a Simulator Instructor on the General Electric simulator, BWR simulator, and then worked for Singer - Link as a Test Engineer and Design checkout of simulators for several years, including working on Grand Gulf simulator.

And then we have a Security Training Supervisor who came to us from Commonwealth Edison, where he was a security training man for that company.

I would like to convey our basic philosophy of training. First, we analyze the jobs, we teach the fundamentals and principles associated with that analysis; then we teach the specific job knowledge; then we demonstrate that knowledge on the job, by either performance in a laboratory or simulator, or in the actual plant, and that is documented by a formal check out procedure on fault-cards.

Then we have periodic reviews, updates, and evaluations of that program. I might say training program is divided into 5 stages; evaluate, formulate, educate, train, and feedback.

Evaluation consists of 2 phases; evaluation of the job, and this is done by task analysis and the regulatory requirements for that job.

And second, evaluation of the person. This is done by screening examinations for entry level people, determination of previous skills and background knowledge, and personal interviews.

We then formulate and write a training program; we review that against the task analysis and regulatory requirements, and we schedule the training.

We then educate the individuals. We do this by use of classroom instruction, simulator instruction, written study materials and self study, and laboratory training.

We have a INC laboratory, mechanical laboratories, chemical labs, and so forth, that we use for training.

Once a person has a basic education, then we train the person to perform the specific task, and this is done under supervision where possible in the laboratory or on the simulator, and where not, we do that in the Plant.

For instance, in maintenance jobs, the first time a person does that job, he does it under supervision, and gets signed off on it. And this training is directed and documented by qualification cards for each position on the Staff.

Then we feed back the results of our training program. We do it by review of the task analysis against the product we produce in the trained individual. We observe the trained individual, review our training program to correct problems identified during those first two reviews, and revise the program as necessary, and then retrain, as necessary.

I would like to talk a little bit about the selection process.

We started initially in 1975 with a selection process that we developed jointly with Memphis State University. That is now used by a number of utilities around the country, and it is a validated test program.

We use this for entry level for all the maintenance positions and for the operator positions. It consists of a series of written tests; it's a 6 hour writte. e. m, series of exams that test upon partially logical rea oning, reading comprehension, and verbal reasonir , mong some other tests.

In addition, there is an interview by an Industrial Psychologist on the suitability of that person for this type of work.

Then there's an interview by a responsible Supervisor on the Plant Staff for the person's attitu and work habits, and so forth.

And then we follow up these evaluations, and Memphis State does this in a formal program, to see how well these tests are predicting success on the job; not just success in completing the training program.

MEMBER BENDER: Ken, before you go on, just a question about this. You've evidently developed this approach for Grand Gulf. Is it used throughout Mid South Utilities?

MR. McCOY: I believe Waterford has started using that at the

MR. McGAUGHY: We had started using this several years ago; we had started using also in our fossil plants, because of the success that we were having with it at Grand Gulf. Now whether --

MEMBER BENDER: I am only using --

MR. McGAUGHY: We don't know whether --

MEMBER BENDER: -- this as a question because every now and then we try to think about how much use is being made of collective analysis.

In a big organization like this, where you've got a lot of nuclear power planta, one of the things you want to argue about is, well, does the collective experience get utilized?

And I'm not sure that this isn't a good example to point o and saying, well, if this big organization is working and continually on the know with each other, what it is doing, and I think there would be some advantage in looking at other things like this and saying, well, what is Mid South doing as a whole company?

MR. McCOY: The point is well taken. I will say that we have submitted all of our program to INPO as an example of a suitable program we included as task analysis.

Again, that's done by trained Industrial Psychologists from Memphis State University who come to the site and work with people to identify the task, and so forth; and INPO, one of their jobs right now is attempting to develop task analyses industry wide. We were ahead of that, so we have been providing them the information that we've acquired.

MR. McGAUGHY: Let me go on to say that in our system, the Middle South system, we have developed 3 organizations somewhat independently in terms of starting. There is a service organization in New Orleans.

Our system now is embarking on an intensive study to see, you know, are we really cooperating and giving as much of this combined knowledge as possible, has become a question that our Mr. Lewis has recognized, and has taken some steps to try to coordinate these efforts and to integrate them to some degree.

MEMBER BENDER: Well, the rate is not observed to be very fast at the moment, and I think the observation may be made after the TMI event, was that similar circumstances, there was not enough interchange in the organizations, and I think you will hear a lot more about that as time goes on.

MR. McCOY: I mentioned the formal training programs that we have. These are the programs that are in progress at Grand Gulf at the present time.

Just quickly running through them, the Operator Requalification Program, which begins next year after the people are licensed.

We have a Non-licensed Operator Training Program, and a Licensed Operator Training Program. We have a Shift Technical Advisor Training Program; a Health Physics Training Program; an Emergency Plan Training Program; we have a General Employee Training Program; we have a Radiation Worker Training Program for all employees that work in radiation areas; we have a Radioactive Waste Operator Training Program; we have a Chemist Training Program; we have Maintenance Technician Programs for each of the craft skills at the Plant; and we have a Security Guard Course Training Program.

We are continuing to develop training programs to address all of the skills that are needed. At the present time where we don't have those programs, we contract out for some of the people in our organization to acquire those skills.

That's what we have presently developed, and our goal.

MEMBER EBERSOLE: Mr. McCoy, on your Security Guard Course Training Program. I had an interesting experience one time when the Security people approached some of the technical people and said, what am I trying to protect?

You know, they were used to watching switch yards and hydrostate coal burners. And of course, the answer was somewhat shocking.

Do you train your Security work force in what they're protecting in considerable technical detail, or not.

MR. McCOY: No, I would say we provide them the general overview. We don't go into the details of the consequences of nuclear sabotage --

MEMBER EBERSOLE: It's administrative, then?

MR. McCOY: That's correct. We do address that, and we also in the Training Program, address the kinds of threats that they might be --

MEMBER EBERSOLE: Well, how do you instill in them a new feeling, which they have to have. They get rid of the old feeling that they had when they were looking at the switchyards. They've got to have a new attitude.

MR. McCOY: Yes. That's a good question and I don't know that I have the answer. I will take a look at that; I hadn't thought much about looking into that area.

As I did mention on Security Training, the man that we brought in to set up that program and get it going, came from Commonwealth Edison, where he had been doing this for a number of years on all their stations, so I kind of let him go in that area and develop that program.

One of the problems that you hear addressed frequently in the industry today is how are we going to acquire operator talent and maintain that. We tried to address that in Grand Gulf by not just developing Operator Training Programs, but developing a personnel development plan for operations people.

We hope we are looking at the long range and not just the short picture. But what we've got here is a typical development development progra . The years over on the right are cumulative years.

What we would like to do for the ideal person would be to bring in the operator trainee from

from Junior Colleges, typically with a technical degree from a Junior College; and I might add we have a good Junior College system in Mississippi, and that's where we are recruiting operator trainees. We have about, I guess 15 operator trainees, or something like that, right now, and that's where we do most of our actual recruiting.

He comes in, completes the screening program and goes into a training program to become auxiliary operator, and during this stage of his development, he is learning basic power plants, basic components, and principles of systems, principles of fluid systems, electrical systems, and so forth; and then his first qualification step is to qualify as an operator in one building, where he really operates under direction, to operate various specific pieces of equipment as directed.

From there he continues his training program, and I might add the training program is a continuous thing through this process, until he is qualified in all the buildings, on all of the equipment in the plant, and he gets then systems training, and system interrelation in much more detail than he did in his first presentation of that.

At each step, by the way, he is personally certified by the Operations Superintendent before he is allowed to assume those duties.

And we've got **fault** cards, as I was mentioning before, for each one of the things, so he documents the skills as he acquires them.

After about 5 years he should have progressed to the point of a Nuclear Operator B, which is an unlicensed operator that knows the whole plant; and he is put into an intensive licensing training program to prepare him to sit for a Reactor Operator License.

At that point, he moves into the Control Room as a Control Room Operator, a licensed operator in the Control Room, and we would expect that the average man there would have about 8 years experience, and **I have** **listed** the minimums there that come out of the ________ samples.

Also at that time, if he has supervisory potential, this is the point where he is selected and will move on into SRO training and supervisory skill training, and that's the point that he moves from the bargaining unit to management, if he is selected and promoted to a project job.

I might point out that we consider our Training Instructors equivalent to a Shift Supervisor. They have to hold an SRO on this particular plant, and that's where they should come from. We feel that it's important that those instructors have credibility with the Shift Supervisors that they are teaching.

This is not all the instructors, you understand; this is the ones that are responsible for that training program. They can call upon experts in various fields to teach different subjects, but we think our Training Instructors should hold an SRO in the Plant.

And then from that they can move to a Shift Superintendent or Operations Assistant, and ultimately go on up to an Operations Superintendent.

We have contracted with Memphis State University to provide a degree training program for our people, once they get to this Supervisory stage, so that ultimately they are not dead-ended. Once they've acquired all those years of experience, they, the ones that have a desire to get off shift work or to go on to other things can progress with an Engineering degree to move into other areas, for instance the OPS Analysis Group, or something like that.

So that's our long term plan for operators. I thought you might be interested in that.

MEMBER BENDER: Ken, maybe this has been discussed a number of times. It's just not clear at the moment just what functions are performed by auxiliary operators, and Operators B and A, but some organizations have started their training of those people into the

Rad waste operations, as being a job that doesn't require quite the skill of an operator, and I don't know what the present views are.

How do you look at those kinds of operations as compared to the Control Room operations; how do you assess this level of responsibility?

MR. McCOY: Okay. The auxiliary operators definitely have lesser responsibilities; they perform all their operations under supervision, under direction. But the Nuclear Operators B's are the unlicensed operators that are out in the Plant, and they take directions from the Control Room, but they are broader people.

They operate systems, direct auxiliary operators which valves to turn, which pumps to start, and things of that nature, on system alignments and so forth.

We consider that level the level of knowledge that a man needs to operate the Rad waste system. Presently we are using Nuclear Operator B's as our Rad waste operators. We are considering a separate classification, but the line of progression would be the same at that level.

MEMBER BENDER: No, I don't want to have a real opinion on it, but some people say that this scheme results in not having the best qualified people doing some very sensitive jobs that have to be done all the time; and I won't take any more time.

MR. McCOY: I understand. I would like to run through the operator, the Licensed Operator Candidate Training Program. These are the things that have been done for our License candidates.

They first go through a non-licensed training program; they through a nuclear power plant fundamentals that was taught to most of our people by Memphis State University men on site.

The details of all this are in the FSAR, Chapter 13-2. We then went through the Grand Gulf systems operations course at the RL level. We did reactor startups on research reactor. We went to Oak Ridge and to, and operated reactors there, and to Memphis State and operated their little research reactor at that point.

We had simulator training and certification by the General Electric Company at their simulators; and our operators went through an operator practises course or training, which included administrative requirements, a Plant Operation and Casualty Response Course, and Control Room training.

We provide a mitigation core damage course, which I will discuss the content of that in just a moment. We have provided increased training above our original fundamentals in areas of heat transfer, thermal dynamics, fluid flow. That was taught jointly by a team of one, a professor, a college professor in those areas, teaching in the classroom with a operator, who put it into terms that the operators could relate to.

Then we went through a licensing examination preparation. By the way, our people are preparing right now for their written exams, which are scheduled for October.

We went through a simulator refresher course. That's been completed. We're in the process of an exam analysis where we gave practise exams, including walk through exams, and that is just winding up right now, to evaluate where we stand on each candidate.

Once that's done, each candidate will be evaluated by an operator training committee, and certified by our Assistant Vice-President for Nuclear Production to the NRC.

We are also providing supervisory training to our senior reactor operators.

A little more on that non-licensed training program, this is what that basically consists of, fundamentals of principles course, basic operator practises course, **components** qualification cards, qualification on one building, and the Grand Gulf systems course; these, it starts from that point on, as he's now an auxiliary operator, when he qualifies on one building and then he goes into the nuclear operator B frame, which is still non-licensed, and covers a more detailed systems course, a plant operations course, and eventually he is qualified on all buildings. And then he's ready to go into the licensed operator training program.

I would like to also quickly show you our STA training program. This program has been completed. We have 6 STA's; they all have college degrees in Engineering of applied related sciences.

They started out to review their college level courses; then they went into Grand Gulf Systems Operations Course. They went through a Supervisory Training Course; then they went through the Station Nuclear Engineering Course, as they had not been through that previously.

They went through administrative procedures; they went through a plant operations course and went through all the operating procedures in the Plant and the way the Plant should respond; and a simulator training that was tailored specifically for STA's to look at transients and response of the plant and things of that nature; and then through a Core Management Engineering Course provided by General Electric, and a Core

Mitigation Course.

The Mitigating Reactor Core Damage Course insisted upon. I might add that this Course was developed in response to Mr. Denton's (ph) letter, and has been modified so that it complies with all the INPO recommendations for SDA, for core mitigation training.

I won't through those.

MEMBER BENDER: May I ask a training question? If I were to identify an accident that might be as significant as Three Mile Island, what other accidents would you want your operating staff to know about?

MR. McCOY: Okay. The way we try to address that is by the use of our emergency procedures, and my Operations Superintendent is next on the Agenda, and he's going to talk about these **sensor-operated emergency procedures**, but they break the kinds of emergencies that you can have in the Plant into several categories.

And then what we look at is ways that can lead you into one of those categories of an emergency. For instance, the **ADWA** type of event is a significant event that we should, that all of our operators should be aware of what his response should be should all the rods not insert **or spring,** and what kind of responses he might expect.

MEMBER BENDER: Well, that's one aspect, but there is the SL-1 event, and I had the opportunity to really look at the movie of the SL-1 event, which the ADC put together a year ago. A lot of propoganda in it, but nevertheless I found it quite instructive.

There's the event that occurred in England, the Winsdale? incident that didn't involve a reactor, but turned out to have some important radionuclei dispersal mechanisms in it.

There's the Chalk? River event, and I have to ask myself, what is it you train people on? I think there is some advantage in looking at what a particular reactor might do under certain circumstances. You needn't know about and such things, but there is also the question about how accidents propogate, and what kind of accident experience we have.

I have yet to see anything which gives enough of an overview of the kind of accidents that nuclear power plants have been exposed to. I could identify the one that's associated with forming a water reactor in India, that might be interesting to a lot of people; and somehow or other I think there should be some sort of overview of all the accidents.

MR. McCOY: I think that's a good idea, and I think that's something that we ought to bring up to INPO to develop for industry-wide training. The experience of major accidents all could be shown to all reactor operators, I think.

I've seen the SL-1 movies, and I thought they were very interesting, too. I have not seen some of the others you mentioned, but probably should have, and I want to --

MEMBER BENDER: Some of the others, you would find this information on it.

MR. McCOY: All right. Well, someebody ought to put together a standard presentation, and it ought to be updated periodically as more experience is gained. We'll take that on in the

MEMBER BENDER: I would think you might want the utility presidents to know about these, as well.

(Laughter)

MR. McCOY: If you don't mind my asking, who is the president of it?

(Laughter)

MR. LUTKEN: INPO is moving in that direction. We're getting more foreign countries that are interested in what INPO is doing, so we will eventually have an international and a national respond, informational type service, I guess, that will go out to all operators.

CHAIRMAN OKRENT: But back around 1964 or 5 there was Volume I of the Technicology of Nuclear Reactor Safety issued, and there was a Chapter in that book written by the late Dr. Thompson (ph) which reviewed a selection of the accidents that occurred up to that time, primarily in research and test reactors, and so forth.

I doubt that very many utility presidents and vice-presidents even know it exists.

(Laughter)

CHAIRMAN OKRENT: But I've read it, and it's quite interesting, and it perhaps gives one an appreciation for how circumstances can link together.

I mean I can remember an incident in my own career where I saw several circumstances linked together, and it certainly made me more wary.

MR. LUTKEN: Well, I'm certain that would be the case. From my background; I came up through the Power Plants, the fossil? plants, and so we had a camaraderie, I guess, of Plant Operators, that we did share this kind of experiences, particularly in the southeast.

This is the kind of thing you have to spread into the nuclear industry, so we know what Joe Blow experiences in one plant, and then we can take a look at our plant, and be sure that it doesn't happen here.

MEMBER EBERSOLE: May I ask you if you have studied the Brown's Ferry fire, and what lessons you draw from it?

MR. McCOY: Yes, that was -- oh, who are you addressing?

MEMBER EBERSOLE: Well, whoever wants to answer.

MR. McCOY: Well, yes, we did do an analysis after Brown's Ferry fire, and there were modifications made in our plant, particularly in the fire protection areas; also in the shutdown capabilities.

MEMBER EBERSOLE: Well, one thing that happened was that it sat there and stewed for 6 hours. The reason that occurred is there was ignorance in the Operating Staff as to what they were looking at.

MR. McCOY: Yes.

MEMBER EBERSOLE: Is that thing corrected? Does your training program include going beyond the knobs and switches, and pointing to the operators and saying, in the small area a hand grenade will do the whole thing; or else, it will only destroy one channel; or more appropriate maybe, a hose applied here is only division; I've got another one off on the other end of the building.

Do you teach them the physical engineering rationale for disposing equipment and separating the context?

MR. McCOY: We do teach that philosophy, but when you get down to the points that you're making, being specifically addressed in our training program, I think we can do better.

MEMBER EBERSOLE: Well, you may be faced with the same question; can I hose down this room?

MR. McCOY: Right. I understand what you are saying. What are sensitive areas of design from an operations standpoint?

MEMBER EBERSOLE: Yes.

MR. McCOY: I'd like to address one more topic, and that is the simulator at Grand Gulf. This has been an interesting topic for some people.

In particular -- I'm sure you are familiar with simulators, and I won't go into that, but we did try to make some improvements in the Grand Gulf simulator, and that's where I would like to concentrate.

We have improved simulation, which I'm going to go into detail on these a little more. We have some Instructor Console capabilities that were not previously available, including a Student Performance Monitoring System, which I'll talk about.

And we expanded the scope that was simulated in the Plant; a better training tool.

Some of the specifics that we've done is we've included more initial conditions. We have 27, what we call protected initial conditions already programmed into the computer that you can put the student into.

We have 11 spares for development over the life of the Plant. As different things become known to us that we ought to train people on, we can program additional initial conditions.

We have one dedicated initial condition that is just used to take what we call snap shots for the simulator, for the simulator instructor when he gets to a critical point in demonstrating something, or a student makes a mistake, he can take a snapshot of that situation and go back and make that an initial condition and run the event again.

We have backtrack capability. This was in earlier simulators; we've made it more extensive here, and we can go back 30 minutes at one minute intervals? and rerun the evolutions so that if an operator makes a mistake, we can go back and let him see what the consequences would have been of taking other actions, and so forth.

We have various speeds built in. Again, this -

has been done in other simulators, but we have expanded the scope of that. First we have real time; then we have slow time that is in several ratios. We have fast time that's -- slow time is perceived transients that occur in the reactor that you perhaps might not understand in a normal real time sequence.

The fast time is used for understanding long term effects on the Plant, such as Xenon, KD and hydrogen concentrations. But we've increased the scope of malfunctions. We have 160 generic malfunctions, over 600 individual malfunctions.

One of the past criticisms of simulators has been after the operators have trained on them for a little while, they know all the problems; so we have tried to get to the point that we have enough initiating conditions, and every time an operator sees something, it will be a different kind of condition, or it can be.

In addition, we put in a large number of what we call priloop alarms that are instrument failures, and things of that nature, and that's just more to make a realistic simulation available to the instructor in advanced training.

More specifically, some of the improvements, we've made use for the first time -- Singer has -- of a 3 dimensional Xenon calculation in the core model.

xenon is calculated at 172 points, corresponding to the LPRM locations. In the previous BWR-6 simulators -- and previous BWR simulators it was calculated as single term, the reactivity balance of the core.

We also have local xenon correction for rod work that's associated with that change. We have 6 groups of the KE, where previous BWR's had 2 groups of KE in the core model.

We have improved performance here in the fail scram transients, or the at loss transients. The earlier simulators didn't simulate the actual event very well. We made that a specification when we contracted our simulator.

We've improved the equations to show more realistic nuclear instrumentation responses, and we've improved the model to allow more of the nuclear steam supply system computer on demand programs, to be run by the operator to provide more realistic environment in the Control Room.

We also did some things to improve the boiler dynamics of the simulator. For the first time, we modeled the Singer Model, the RPB lower plumb mass volume areas, dynamic, where in the past that was treated as a constant, not allowed to be blown dry.

We go into larger type transients or

accidents. We have unique characteristics for each individual control rod, where on previous BWR-6 simulators they were programed as identical responses.

And we have expanded the rod control information system capabilities. They are more like the real system.

I won't go through all the rest of the improvements here. I would say that we did meet all the requirements the NS3.5 standard on the simulator. In addition, we looked at studies done by Oak Ridge National Labs and Brookhaven on simulators and their shortcomings, and we incorporated as many of those as was possible.

Some of those shortcomings have to do with developing engineering simulator models like Retran? or whatever, that cannot be run in real time at the present time, and those were not incorporated.

Are there any questions as to the program on Operator Training?

MEMBER BENDER: I just want to ask one question, not about the training program itself, but about who's running it. I think you went by the business of the training management business so fast that most of us really didn't absorb who's responsible and how it's being managed.

MR. McCOY: All right, I would like to

introduce John Custer, our Training Administrative Superintendent. John Custer came to us from Westinghouse, where he had been for a number of years. He holds a Mechanical Engineering Degree. He was qualified as a Senior Watch Stander on Westinghouse Navy Nuclear Prototypes. He was a Training Manager for one of the Prototype facilities there. He then went to Pittsburg and worked there in some of their Training Program Development for Westinghouse.

He came to us from that background.

MEMBER BENDER: In addition to his capabilities, which I think are not unusual for a guy that's training operators to run reactors; what advice does he get on these unusual kinds of things, like the training for STA's and things of that sort. Where does that knowledge come from?

MR. McCOY: Well, John just came in yesterday, is the reason he wasn't here yesterday; he was at a BWR Trainers Conference that was attended by Mr. Collins (ph) and the NRC, as well as the BWR people.

That's one example. John, would you like to comment on where you get industry input in your training programs?

MR. CUSTER: John Custer, Training Superintendent.

The primary input that we get is from the INPO recommendations. INPO specifically in the SDA training has issued guide lines for SDA training.

We took those and started out training program from that standpoint. And then as we looked at it further in dealing with the Technical Superintendent, Allen McCurdy (ph), we found we wanted to put additional courses in there above and beyond what IMPO had recommended as guide lines.

We added courses when we saw the length of the SDA course that we have. And then Ken McCoy had some courses that he also wanted to add in there, and you saw those also included in the SDA program.

Now one of the things that I did at the Training Conference was to talk with other Training Managers to see what they do in some of their programs.

To date our STA program is the best that I have found. In the last Training Conference, we were in the process at that time of developing this program, and we had it up to about 16 or 17 weeks at that time, and I compared notes with 2 other utilities, and one had a 2 week program that they thought was a little short. And another one was up to about 12 or 14 weeks.

MEMBER BENDER: Well, I'm not trying to judge the adequacy of your program. Everybody that I've talked to always says, his is the best or will be next week.

So I'm sure yours is quite good. Again, there is some interest in independent judgment as to what constitutes your program. INPO is certainly the right place for the industry to focus its position.

At the same time some advice from outside in other ways than just through the internal organization would seem to be an advantageous thing to do, although I don't necessarily believe it's mandatory.

MR. McCOY: I understand what you're saying, and by contact with other training departments we get some of that; we do get some input through INPO. We look at the notepad results that come out of significant events that have occurred, and try to include those in our training programs.

And I have to admit, as John pointed out, there, that as the Manager responsible I want to insure that my philosophies get into the training programs, too.

MEMBER BENDER: You are exactly right. I heartily defend that position.

CHAIRMAN OKRENT: We have Staff comments in this area.

MR. HOUSTON: I think in the area of training program as described in the SER in 13.2, the program described meets the requirements. We do have a qualifier in there that the instructors as a minimum will be certified to Senior Reactor Operator level prior to teaching the licensed operators, or prior to initial criticality.

We've also approved their degraded core training back in 2.b, item 2.b.4, and we have a commitment in item 1.g.1 for their low power test program, their training program.

I think that program is under development, and the commitment has put that into a confirmatory item.

Other than that, I guess we have no other comments under training program.

CHAIRMAN OKRENT: With regard to the degraded core training, I wonder whether the personnel from Mississippi Power and Light have critically evaluated what is currently included in that spect of the training, and decided yes, indeed, it's exactly what we need, or perhaps it could be modified or augmented in some way, and if you did try to critically deal with, could you tell me about it?

MR. McCOY: Yes, we have critiqued that course; I participated in that course personally and made some comments and suggestions. The course that we presented was contracted and developed by General Physics Corporation and has been taught in a number of facilities.

There is room for improvements, and they took our comments and are working to improve this course. In addition, they have been contracted independently by, I believe, Samuel Labs to develop some additional material that would be useful in mitigating core damages.

So that course is expected to improve. There are actions being taken to improve it.

CHAIRMAN OKRENT: Any other questions on this topic? Well, I am going to propose that we in a moment recess for lunch.

When we return, according to the Agenda we would be at 10:30 a.m., but we are about an hour and forty-five minutes behind schedule.

I hope that in the topics Internal Flooding and Toxic Gases, the Applicant can prepare summaries of what's most important, leaving out introductory information, background information, and so forth, so that we can pick up some time there.

So you might be thinking about that during lunch, and for the item that were supposedly in the morning, again try to leave out the history, and getting to the point, for example, on the Status of Mark II Containment Review. There the question is, do you have any difficult problems or any places where it was close in your design, and so forth. What were they, and what changes were made from your original design because of this, and leave the history aside. Okay?

I am not sure how easy it is to eat fast in Jackson, so let's keep to an hour for lunch.

(Whereupon, the hearing was recessed at 12:16 p.m., to reconvene in one hour).

A F T E R N O O N S E S S I O N

1:15 p.m.

CHAIRMAN OKRENT: This meeting will reconvene. Before we get into the next technical topic, I might go ough some administrative kind of matters.

First I would like to note that because of things like airline schedules and so forth, diff rent members of the Subcommittee have different departure times, and so while we anticipate that the Subcommittee meeting will continue on well into the afternoon, and maybe even into the evening, around 3:00 p.m. I will have to depart and around 4:00 p.m. Mr. Bender is going to have to depart.

Mr. Ebersole is going to hold court and make sure the full topics on the Agenda are discussed, and he may even have one or two to act that are unknown.

We always have an item called "Other", at least mentally.

(Laughter)

With regard to some of the topics where the Staff has indicated they don't have the right people here, the Subcommittee would like to urge them on each of these to provide to the ACRS office not later than the Wednesday morning before the next Full Committee meeting, a rather full discussion of these matters in writing, so that the members can read this and see if they have questions, so you can provide them a copy for the Full Committee.

I do not want to treat the Full Committee Meeting as a Subcommittee meeting. In fact, I will try to interrupt any action, you know, that looks that way, because the information is supposed to be available beforehand, and so I urge the Staff to do what they can along these lines.

It is our current anticipation that the Grand Gulf Application will be on the Full Committee Agenda in October. We don't know whether the Full Committee would be in a position to act or not. We would have to see how things develop along those lines.

Nevertheless I think it's -- rather than to have it on the Agenda. We will not be giving you information at the end of today about the proposed Agenda items. That will come later, after the 3 of us have had a chance to get to our respective homes and the office and have spoken to their Subcommittee Members, and we try prepare some kind of recommended set of topics on which to prepare information.

Of course, that's a little hard to do since we're lacking some areas about it. Don't look for comments at the end of today in regard to the proposed Agenda of the Full Committee Meeting.

Did I forget any topics of that nature?

(inaudible discussion).

All right, one other thing --

MEMBER BENDER: I might make a suggestion just so the Staff doesn't overlook anything. I suggest that they get in touch with Mr. Alderman and McKinley (ph) and make a list of things that they are going to provide us with the statements on. So, rather than send the stuff that we don't want, or not send the stuff that we do want.

MR. TEDESCO: Yes, sir. We plan to order a transcript of the meeting.

CHAIRMAN OKRENT: With regard to this afternoon, I propose that we take Emergency Operating Procedures next; then the Status of the Mark III Containment Review; then we'll see where we are timewise, and there may be some shifting in order, after those shifts; so we will remain flexible in that regard.

And whoever is acting as the Chairman of the Subcommittee Meeting will feel free to adjust to what seems most appropriate.

So let's get on, then, with the 10:30 a.m. Agenda item.

MR. JOHNSON: My name is Bill Johnson. I'm the Operations Superintendent for Grand Gulf. My topic is Emergency Procedures.

I took your suggestion to heart at lunch time, and while I was at lunch reduced my presentation of that to about 3 handwritten pages.

The emergency procedures we have generated for the Grand Gulf Station are in agreement with and were generated in concurrence with the General Electric BWR owners group Subcommittee for Emergency Procedure Guide Lines Generation.

The procedures have been generated and written in accordance with those guide lines. The Plant Staff, including myself, have participated in virtually every meeting of the Subgroup from the Fall of 1979 until today.

We have had input into the guide lines. I myself participated in the review of those guide lines in June of 1981, which a 1 week seminar; and I have personally reviewed every one of these emergency procedures.

In February of this year we took our emergency procedures to the NRC, in Bethesda and reviewed that; that was our brevity draft, the procedures were commented on. Most of the comments were of a Human Factor of Engineering and not of a technical nature.

The technical nature is covered by the fact that the guide lines that were generated by the owner's group have been technically reviewed by the NRC. As long as we write our emergency procedures in accordance with those guidelines, the technical nature of the procedures is therefore taken care of.

We took our emergency procedures to the simulator located in Tulsa, Oklahoma in around March of 1981, and we ran through every one of these emergency procedures with the NRC president, including our site representative.

We demonstrated every one of these procedures to be effective. In fact I believe, Al, you participated as supervisor in directing the operators. Is that correct?

MR. SCHWENCER: That is correct.

MR. JOHNSON: So that we were able to show that the procedures, taking someone who would not normally function as a shift supervisor, could effectively use the procedures to direct the action of the operators in mitigating the consequences of the accidents identified.

Comments from that review were incorporated in June of this year. The NRC came to Grand Gulf, and we demonstrated the procedures in a dry run.

The results of that, and some additional human practise comments were incorporated into what is now REG zero. REG 0 for the guidelines for the procedures

1 through 9 were issued effective day before yesterday.

The Reactivity Control Guideline has not been completely formulated by the owner's group; however taking the information that we have to date, and the technical information that we know about the Plant, we have generated a Reactivity Control Procedure, and that was the procedure, if you will.

The nature of the emergency procedures is such that the operator is not locked in on a single parameter or a single event. The operator responds to all parameters that are varying at the time of the accident, and the guidelines of the procedures direct them to bring those parameters back into some spec that is either a normal spec or at least an acceptable spec at that time.

The operators could proceed to do any gradient in that the operator can be involved in any procedure, and you would be directed into other procedures concurrently for a second event to occur.

The weakness in the previous procedures and what we talk about now are symptom based procedures. The weakness in the previous procedures that were used up until 1979 - 1980, were that they identified an event. The event was analyzed; the critique symptoms were defined; and the operators given corrective action before that event.

Unfortunately, if the event doesn't occur as it was specified in for instance Chapter 15 of the FSAR, the operator may be left with a procedure in his hand that is not really telling him how to correct the situation that he has.

We have taken care of that in these emergency procedures.

That's the extent of my presentation.

MEMBER BENDER: A couple of questions.

MR. JOHNSON: Sure.

MEMBER BENDER: First, the guidelines were largely format guidelines, as I recall, the NRC's Requirements for Emergency Procedures.

What are the improvements that are supposed to be seen in these over the previous times that have been prepared?

MR. JOHNSON: The biggest improvement -- well, first of all, the guidelines were generated by a committee consisting of between 10 and 15 persons and it varied from meeting to meeting.

The average experience was probably in excess of 10 years of operating BWR's.

MEMBER BENDER: I just want to know what the improvements were.

MR. JOHNSON: The improvement was that the operator was given direction to react to a parameter rather than an event. It also recognized the fact that things may be happening to the Plant that are beyond those analyzed in Chapter 15.

We may have extended degraded conditions, and these procedures will guide the operator through extended degraded conditions to do everything possible and give him the information he needs to take corrective action, regardless of how degraded the plant gets.

MEMBER BENDER: Well, I just looked at one up at the top of the page on alternate shutdown cooling, and it says, this procedure is entered from BT2 cool down on the following conditions.

And then it lists 3 conditions which certainly are the conditions for going to this procedure, but if I were an operator standing there, I am not so sure that they would tell me, that they would direct me to the logic of the event.

Some people have argued that the procedure should enable you to go through some kind of survey of assistance of the symptoms, and judge that a certain kind of event has occurred.

Where is that judgment exercised?

MR. JOHNSON: The judgment is exercised

first of all in the generation of the guidelines to make sure that all events are covered. And the second thing is with training.

We take the operators through and teach them the procedures; teach them the philosophy of the procedures, and then we make sure that they react to parameters and not -- they don't get locked in, I'm trying to say, hey, have I got a lost coolant accident? We dc.'t really care if they've got a lost coolant accident --

MEMBER BENDER: Fine. That part of it's good. How do they know that the RHR shutdown ruling mode is not available? That's what I read here, and the first thing I said was, well how can I tell about it?

MR. JOHNSON: He's already gone over there and tried to use it, and it doesn't work.

MEMBER BENDER: Well, all right. I didn't want to go through the procedures here. Obviously it's a matter of reading and procedural understanding.

Is this representative of what we'll see in other BWR plants now, or is this unique to this particular plant?

MR. JOHNSON: All the BWR's, with the possible exception of 1, will be carrying the procedures that agree with the format and the content of the guide lines. And these procedures are written from those guide lines.

So I would say yes, with the possible exception of one or two stations.

MEMBER BENDER: Okay, thank you.

MR. McCOY: May I make a comment, Bill? Ken McCoy, Plant Manager.

One thing that might be pointed out is that there is a logic diagram to be provided with each procedure. In some cases those are still under development, but they are to quickly guide the operator through that decision process that you have in mind.

MEMBER BENDER: You need some kind of key to get these things tied together.

MR. JOHNSON: Well, this is how, incidentally, the guideline is generated. We sat down --

MEMBER BENDER: I have got enough, and we don't have much time.

MR. JOHNSON: Okay.

MEMBER BENDER: Ken gave me what I wanted to know.

MR. JOHNSON: Thank you.

MEMBER EBERSOLE: May I ask a question? There are 10 of these that seem to have been generated by a gentleman named Keith (ph), reviewed by Edmunds (ph) reviewed by yourself; and this new __________ quality superintendent, and sometimes your Plant Manager doesn't review these, I gather. What's PRSC?

MR. JOHNSON: That's the Plant Safety Review Committee.

MEMBER EBERSOLE: I see. Are these to be considered as -- they're all fully signed and they're dated last month. Are these in the preliminary event stage, or --

MR. JOHNSON: There are some -- if you notice, there are some later in the procedure. One of the things we need to do, we have, General Electric has been contracted to review these procedures and to provide an additional technical input. This is where we have taken some generic drafts that are used, and generic numbers that were used in the guidelines, and these have to be converted to plant specifics. That work has yet to be done, and will be done before we load fuel.

MEMBER EBERSOLE: Well, quickly I looked at the one on activity control and I noticed that it was oriented toward Atlas. And a big problem in Atlas is, can it be pump-tripped and, mainly, is its keyboard system working, that is the tipsy or the motor driven keyboard pump in your .

And then, in ascertaining this,

then there are other less immediate things you have to do. You must get the feed water absolutely, or you're going to be in big trouble.

Yet that wasn't mentioned in here; it's totally reactivity control. The auxiliary pump, and then you have to go back to the other procedures like level control. This is a very fast transition you have to make from one to the other, rather than looking after the inimical problem.

MR. JOHNSON: As I mentioned before, the procedures group has not completed a REG 0 for reactivity control guidelines. When they do, one of the functions of the group is to integrate that procedure with the other emergency guidelines.

When that gets done, we will revise our reactivity control procedure.

MEMBER EBERSOLE: Well, this is preliminary then in that context?

MR. JOHNSON: That particular procedure is, yes.

MEMBER EBERSOLE: Where would I find the procedure like local all AC power?

MR. JOHNSON: We have 50 some-odd, the number sticks in my mind, 56 procedures which we call off normal event procedures. This is where we've taken an event.

MEMBER EBERSOLE: Well, this is 10 out of how many?

MR. JOHNSON: Well, that's -- those are emergency procedure that you have.

MEMBER EBERSOLE: Well, isn't that an emergency procedure, loss of all AC power?

MR. JOHNSON: No, they're not.

MEMBER EBERSOLE: What are they?

MR. JOHNSON: They're called off normal event procedures. And again, they are event oriented, which you can define that event. And you can tell the operator the corrective action.

And they're more in line with the old procedures, where you have the symptoms, the immediate operator action, and the subsequent operator action.

MEMBER EBERSOLE: You have a set of what you now call off normal event procedures, which are just identified in that way, rather than emergency procedures.

MR. JOHNSON: They are separate and distinct.

MEMBER EBERSOLE: And how many are they?

MR. JOHNSON: Currently we have 56. We may be reducing that, because a lot of the information in some of those ONATS -- we call them ONATS -- we don't call them event procedures - - are contained in the emergency procedures, so we may reduce that down to somewhere around 50.

MEMBER EBERSOLE: Well then, is that set plus this set the totality of what I would call the emergency procedures?

MR. JOHNSON: That's correct.

MEMBER EBERSOLE: Well, will we be getting copies of your abnormal procedures later?

MR. JOHNSON: I thought we made -- Dick, we made some copies of those last night?

A VOICE; Yeah. Only procedures that have been issued **are the EP's** right now.

MR. JOHNSON: Okay.

A VOICE: We only have the initial stages.

MEMBER EBERSOLE: We'll get the others later, then?

MR. JOHNSON. Yes, you will.

MEMBER EBERSOLE: Thank you.

CHAIRMAN OKRENT: Don't run away yet.

MR. JOHNSON: Okay.

CHAIRMAN OKRENT: Has anyone at Grand Gulf tried to look at these symptom oriented procedures to see whether they are incomplete, or there are situations where the operators could, by following these, **in fact**, set down the wrong path. Has there been a conscious effort to try to fault tree the procedures?

MR. JOHNSON: There have been two conscious efforts made. The first effort was during the generation of the guidelines themselves, and that took -- it was about a year's worth of work went into the generation of those guidelines to make sure that the guildelines do identify any event or any situation that could come up that the operator may have to contend with.

What we did, when we generated our procedures, we actually tried them out at the simulator to make sure that it did, in fact, correct anything that we control at the operator, and we simply walked through the Procedure in the Control Room to verify that the operator can use the procedure and does cover all the events that the operator may be required to contend with.

So the answer to that is yes, twice.

CHAIRMAN OKRENT: Is this documented in some way, or is it in people's heads only?

MR. JOHNSON: There are three things we have documented. We have documented that the BWR group collectively provided the NRC with the guidelines and there are minutes of every meeting that are abailable to the NRC. We have documented the fact that the procedures --

CHAIRMAN OKRENT: Oh no, I am sure you went through this. However, the process of looking to the procedures case by case to see that they in fact do work, is that sort of thing written?

MR. JOHNSON: Again, the minutes of each of those meetings reflect the types of discussions that went on at the meetings to generate the guidelines.

And I can tell you of my own personal experience there were many agonizing hours spent.

CHAIRMAN OKRENT: I have no doubt of that, but are you telling me that if I were to get a copy of the minutes I would find all the the --

MR. JOHNSON: Conversations?

CHAIRMAN OKRENT: No, all of the specific examinations of these procedures that occurred, to see that there no Achilles' heels to them?

MR. JOHNSON: I believe that's correct. I haven't seen the total minutes of every meeting that was conducted since the fall of '79, but I know that minutes were taken in every meeting.

CHAIRMAN OKRENT: Are the minutes available to the NRC Staff? Do they have that?

MR. SCHWENCER: Are these the meetings between the GE owners group and NRC?

MR. JOHNSON: Right. Well, plus the meetings that were conducted by the Subgroup on the development of procedures.

MR. SCHWENCER: I would have to check with that and see.

CHAIRMAN OKRENT: Is there any reason why they can't be made available?

MR. JOHNSON: Not that I know of.

CHAIRMAN OKRENT: Okay. Well, it might be interesting to -

MR. McCOY: Let me make a comment along that line. Two comments. I understand what you're asking, I believe, and that is is there a formal document that shows a logic evaluation on each of the procedures, and all of the kinds of failures that could lead you into those procedures documented in a clearly written report.

It may or may not be to the level that you're desiring, but there was a submittal prepared, an appendix aid to the owners' group, a package of guidelines that did establish the bases; but I don't think it went to the depth you are talking about.

CHAIRMAN OKRENT: I remember that; I don't think the depth -- I assume you don't think it gives the depth?

MR. McCOY: No. To my knowledge there has not been a formal prepared paper; there probably should be, once all these things are ironed out. The importance of those are such that I would think that would be a good project for that industry group to undertake.

CHAIRMAN OKRENT: So I shouldn't look for the minutes to find about this?

MR. McCOY: I don't think so.

MR. SCHWENCER: Dr. Okrent, I would just mention that on page 22-9, where there's a discussion of the Staff's having observed these proceedings, we made the comment, based on the Staff review, the demonstration of the procedures in the simulator and in the Control Room, and the changes made to the procedures as a result of this process; and it went on to say that the Applicants will, as part of the review, procedure review process, incorporate provisions similar to those procedures that were reviewed by the staff.

So I would infer from this that the Applicants indeed have made notes of the kinds of weaknesses and will be examining each of the procedures to be sure that they are appropriately taken care of.

CHAIRMAN OKRENT: I think you are responding to a somewhat different question. But since you've mentioned these pages, who is it that conducted the tests of these procedures at the Perry simulator? Was that the NRC who ran this show, or was it the GE, or Grand Gulf. On page 22-8 you refer to this work at Perry.

MR. JOHNSON: Grand Gulf sent, we sent

one Shift Superintendent, Roy Keaton, and 3 operators to the simulator and we demonstrated the procedures to a series of events.

NRC was there. The NRC was in a position to define any other events that they wanted us to go through. We had a pre plan evolution that would definitely be unique and that had been written up and submitted to the NRC.

In addition to that, they were open to throw anything they wanted at us.

CHAIRMAN OKRENT: Now, the list given on page 22-8 of the SER, is that the group of scenarios that you brought in to test the procedures with, or --

MR. JOHNSON: I don't have that page with me. Al --

CHAIRMAN OKRENT: I will read it to you if you want. Reactor feed pump trip at 100 percent power, number one. Two, reactor feed pump turbine trip at 100 percent power occurring simultaneously with all bypass valves being stuck shut and followed by loss of shutdown cooling suction when the residual heat removal system is initiated. Three, reactor feed pump turbine trip at 100 percent power followed by a complete loss of water level indications; four, loss of all AC power followed by a main steam line rupture in the tunnel; a steam leak in the drywell, and momentary failure of the safety relief valves.

Sound familiar?

MR. JOHNSON: Yes, that sounds familiar.

CHAIRMAN OKRENT: 5, all safety relief valves failed open; 6, a spurious scram with the failure of 14 control rods to scram.

MR. JOHNSON: Right.

CHAIRMAN OKRENT: 7, a recirculation loop rupture followed by the loss of much of the emergency core cooling systems; 8, reactor feed pump trip followed by the failure of six safety relief valves and much of the emergency core cooling system;

MR. JOHNSON: Right.

CHAIRMAN OKRENT: And 9, a main turbine trip without bypass valve capability.

MR. JOHNSON: Yes, those --

CHAIRMAN OKRENT: Those are your --

MR. JOHNSON: At that time a list that we had generated previously gone out to the simulator . I wasn't there at the actual participation act . I don't know; Al, was anything else added to them while you were there?

MR. SCHWENCER: Al Schwencer, NRC Staff.

This list includes pretty conclusively the drills and exercises that were run through, using the

Grand Gulf Emergency procedures at the simulator.

CHAIRMAN OKRENT: Okay. Were records made of the results of these runs from the simulator so we could go back and look at them and think about them? Do you know what I mean?

MR. JOHNSON: The individuals observing, participating from the NRC in there, consultants took individual notes, observing the operators at each one of the stations.

CHAIRMAN OKRENT: No, you misunderstood me.

The simulated plant behaves a certain way, given the transients that were proposed, and their charts would read the, the pressure would read so and so from the time; the power did something else; and the turbine did something else --

MR. JOHNSON: No, there were no such records kept.

CHAIRMAN OKRENT: You did not keep those records?

MR. JOHNSON: No, sir.

CHAIRMAN OKRENT: Enough of that; I just wanted to make the observation. Okay, well I guess I'm back to my original question of whether these things were faulty, but I guess that is not the answer.

MEMBER EBERSOLE: You seem to have divided emergency and abnormal procedures into two sets, of which we have one, these 10 things that you call emergency procedures?

MR. JOHNSON: Correct.

MEMBER EBERSOLE: You call the others abnormal conditions?

MR. JOHNSON: Offnormal positions.

MEMBER EBERSOLE: Right. I think the general context of this I.C.8 is that these are all in the same pot, you know; they are emergency and abnormal procedures. But you've got them in two separate groups.

MR. JOHNSON: That's correct.

MEMBER EBERSOLE: And we'll be getting the second set, offnormal.

Did the Staff look at the offnormal set, or you looked at only this set?

This is all oriented to the direct effects of not cooling the core, or whatever. Is that correct? These are in point positions. It can be started with the line by other things, if you are going to try to intercept before you get this low.

MR. JOHNSON: That's correct.

MEMBER EBERSOLE: And I'm much interested in how you're going to stop these things from occurring before you get down this far.

MR. JOHNSON: Okay, there are essentially three levels of action that the operator takes.

The first level of action is in response to an alarm. There are somewhere around a thousand or so alarm windows in and around the plant. Probably 4 or 500 of those just in the main Control Room.

Each of these windows, there has been a one or two page procedure written, how to react to that alarm and the corrective action that the operators take in response to that alarm coming in.

If the operator is doing his job, and if the Plant is only having a single event accident, or single event offnormal condition, then the corrective action taken to that enunciated window would stop the event at that point.

If there were more than one cause of the condition that was going on, then these would be lumped together in an offnormal event procedure.

And the operator would work his way -- he would find himself with three of four enunciators, he would find himself with a lump sum running when they were supposed to run.

If he would use the offnormal event procedure to stop the transient or stop the event at that point; if at any time it grew into a plantwide event or plantwide transient, then the emergency procedures which you have copies of would take into the account and be used at that point.

Normally the transient should be stopped at the alarm point, when the operator responds to the alarm, corrects the condition that the alarm window indicates, that should stop the transient.

MEMBER EBERSOLE: What do you call the -- what's commonly called the critical service water system at this time? What's the name for it?

MR. JOHNSON: This is the raw water.

MEMBER EBERSOLE: The raw cooling water from the base of the tower; this is the alternate heat sink water.

MR. JOHNSON: Okay. That's our standby service water, we call that.

MEMBER EBERSOLE: Standby service water?

MR. JOHNSON: Yes.

MEMBER EBERSOLE: How many pumps in that? Well, forget it. Let me arbitrarily say that no matter how many pumps, one that's being maintained and the other is broke down for one reason or another.

MR. JOHNSON: Right.

MEMBER EBERSOLE: So you have service water that's gone to a static low condition. A number of things are going to start happening, in order. Things are going to get hct; a man has so much time to do certain things.

Is that developed in the abnormal procedures?

MR. JOHNSON: Off Normal. I think what we're talking about are two different things. There's a Plant service water system that's used during normal power operation.

MEMBER EBERSOLE: No, I'm in the tripped mode.

MR. JOHNSON: -y, if you're in the tripped mode, you're in an accident condition, and the scam water service water system has started.

MEMBER EBERSOLE: Well, I got that way because it was tripped.

MR. JOHNSON: Okay. The operator again would be responding to parameters. He would be watching temperatures in the reactor recirculation system, the shutdown cooling system; the RHR system; it's suppression pool, and he would be responding to those temperature increases.

MEMBER EBERSOLE: Well, does he not know in advance how fast that condition is going to become at this point? And isn't he supposed to lift off the current and restore that water flow? That's his first consideration?

MR. JOHNSON: Oh, right. First, you know, he would get alarm if a pump, a standby service water pump, tripped. He would get an alarm telling him that the pump had tripped, and he would respond to that alarm by starting a standby pump, starting a second pump.

MEMBER EBERSOLE: If that were to happen, does he know how fast he's got to move?

MR. JOHNSON: Okay. Right now he may not know, although the simulator -- we do make an attempt to do those kinds of things; trip cool water pumps and allow the operator to perceive how fast these things are going to occur.

MEMBER EBERSOLE: Are the diesels cooled by this water?

MR. JOHNSON: What?

MEMBER EBERSOLE: Are your diesels cooled by this water?

MR. JOHNSON: Yes, they are.

MEMBER EBERSOLE: Well, probably that's the fastest rising problem you've got.

MR. JOHNSON: That's true.

MEMBER EBERSOLE: And so he ought to know; I presume you will tell him that's he's got X minutes, or he's going to be in big trouble.

MR. JOHNSON: That's true. That's part of the training that he'll get.

Where possible, if there is a critical time, for instance in the recirculation pumps, if you lose the seal water from the **minipurge** system, you've got a specified amount of time.

We do put that in the procedures, so if the alarm comes in that he's lost that pressure, as he's going through he knows that he's got one minute or two minutes.

We do make an attempt to put those kind of numbers in there when they're known.

MEMBER EBERSOLE: Well, the offnormal conditions would be an interesting set of documents.

MR. JOHNSON: Okay.

MR. McCOY: May I comment please? Mr. Ebersole, let me try and clarify a little bit the relationship of the ONAPS or the offnormal procedures to the emergency procedures.

One of the lessons learned from Three Mile Island was that the existing procedures which used all the equipment, what we are calling ONAPS here, left an operator in a severe condition, with multiple procedures he was trying to follow simultaneously, and did not get his mind focused on the big picture and protecting the reactor.

The emergency procedures are oriented that at any time he recognizes of these entry conditions, all the entry conditions to the emergency procedures, and those are very few but we emphasize them over and over -- he immediately reverts to emergency procedure and gets the big picture back and reacts to that.

If it is not that bad, if he's at some stage in between, we have these offnormal procedures that specify step by step what actions can be taken.

For instance, we do have a procedure on loss of standby service water and how to restore that, and he would be following that. However, if his suppression pool temperature should reach the entry condition, he would immediately revert to the emergency procedures.

MEMBER EBERSOLE: These are the in points.

MR. McCOY: That's correct, yes.

MEMBFR EBERSOLE: All right, thank you.

MR. SCHWENCER: We'll just answer briefly that the Staff is holding procedures open. There are a number of procedures we have not seen, starting out with about page 22-5 on through the write-up on I.C.8 . There are a number of areas at this time that we're waiting to review. One reason fo- this is that the Applicant has not confirmed to us that he has **revised the** emergency operation precedures, and we must have that prior to operation.

LARRY DALE

MR. DALE: My name is Larry Dale. I'm the Manager of Nuclear Services for the Mississippi Power and Light Company, and I've been asked to talk to you this afternoon about the Status of the Mark III Containment.

I realize that you said you didn't want any background, but I felt like this little bit of evolution was necessary in order to discuss the changes that we have had in the containments since that was one of the issues you were interested in.

Back when we first began designing the Grand Gulf containment, it was a fairly new concept, and we were designing based on conservative parameters, based on and involving design at that time.

We had numerous meetings with the regulatory staff and discussed specifics of the design, and we had to discuss at great length, back during the ACRS meetings, back during the construction permit stage.

In July of 1975, General Electric issued NEEDO 11.1+, which was a low definition for the Mark III containment, and it did embrace both pool swells and SRB loads.

It called for the use of static loads, the dynamic amplification factors to be applyed by prospective architect engineers.

Then in July of '76, NEEDO 1131408 was issued, which addressed the containment loads in terms of dynamic loads.

Then GSAR: 2, Appendix 3b was issued in November of 1980. It called for the use of plant's specific parameters where necessary.

Grand Gulf is designed to the methodoly called for in GSR? 2, Appendix 3b across the board, and we have incorporated plant specific parameters where necessary.

One example would be the SRB load, because the differences in the number of devices and things of that type.

Very quickly to talk about some of the changes that came about as a result of changes in the definition of pool swell load, we deleted a solids concrete floor at an elevation of 120 above the pool, and added steel grating catwalk at the same elevation due to pool swell.

We relocated some of the equipment to above elevation 135. The major piece of equipment that comes to mind that we relocated was the reactor water cleanup pumps. They were moved out into the auxiliary building.

We relocated and strengthened the main steam tunnel floor above pool swell zone. We elevated that steam tunnel floor approximately five feet, and strengthened the bottom of it.

We added a suppression pool makeup system. The reason for this was we needed to be able to lower the level of the suppression pool, in order to reduce the pool swell levels; and in order to have adequate heat sink post LOCA, we added the upper suppression pool makeup in order to drain appr mately, I think it's 37,000 cubic feet of water down into the suppression pool.

On the tip station, which sat just above the pool swell level, we projected the floor of the tip station down into the suppression pool, in order for the tip station not to experience an impact load, but rather a drag load. And the action projects down below the level of the pool.

MEMBER EBERSOLE: When you moved the reactor water cleanup system outside, I guess you knew you were buying a piece of trouble; and because of the potential for a failure of that system in a machinery environment outside, and a necessity now to be sure without fail that you close it.

MR. DALE: Yes, sir.

MEMBER EBERSOLE: You encourage that as a disadvantageous aspect of that?

MR. DALE: Yes, sir.

MEMBER EBERSOLE: That system will isolate?

MR. DALE: Right.

MEMBER EBERSOLE: That gets back to the faith in valves.

(Laughter)

MEMBER EBERSOLE: Is that, when you moved it, into what machinery area did you put it? I'm interested in whether you put it in an area where you could have **cross-couple effects** due to steam and water, environmental changes due to potential pipe **ruptures in the reactor water** cleanup system.

Is it associated -- is it an independent room it's in; is it intermixed with RCIC, or --

MR. DALE: No, it's in an independent room.

MEMBER EBERSOLE: Is that room led? into the outside by any chance? Did you take special precautions to clear the steam that might come out of that system?

MR. DALE: I'm going to ask Mr. McCoy to address that.

MR. McCOY: Yes, that is an independent room; it's in the upper level of the auxiliary building, and it is vented into the auxiliary building.

MEMBER EBERSOLE: Vented into the auxiliary building?

MR. McCOY: Right.

MEMBER EBERSOLE: But in the auxiliary building there's lots of things you want to keep running, aren't there?

MR. McCOY: Yes, there are.

MEMBER EBERSOLE: And so it gets back to the valve closure?

MR. McCOY: That is correct.

MEMBFR EBERSOLE: Right.

MR. McCOY: We understand your concern.

CHAIRMAN OKRENT: Before you remove that, when might you need the suppression pool makeup system and what has to work for it to work, do you know what I mean?

MR. DALE: The suppression pool makeup system will initiate and dumpt the part of the upper pool into the suppression pool, in order to provide additional heat sink capacity after the LOCA has occurred, and it will -- well, a LOCA sequel plus, I believe, is 30 minutes, it will automatically initiate and dump into the suppression pool.

MEMBER EBERSOLE: Percentage wise, what increment does that add?

MR. DALE: The suppression pool itself is 137,000 cubic feet, and the portions of the pool neveloped is approximately 36 to 37,000 cubic feet. So it increases the suppression pool capacity to 175,000 approximately.

CHAIRMAN OKRENT: Automatically, what has to happen?

MR. DALE: The system dumps by way of two 30 inch lines that come out of the separator storage pit. They travel down along the steam tunnel, and terminate just below -- I'm sorry, just above the steam tunnel open pipe into the wetwell area.

There are two sei .es of valves in each line, both of which have to be open in order to allow one or both lines to initiate and dump that volume.

MEMBER EBERSOLE: That will increase the submergence of the vent pipes by a considerable amount.

MR. DALE: Yes, sir. By that time your first __________ transient is over, and you're trying then to make sure that you've still got enough water in the suppression pool in order to account for any traffic volumes like vessels in the ECCS lines, or anything of that type.

MEMBER EBERSOLE: And so the area in the drywell holds, right? What sort of head does that now require that you've developed to get the water in the pools?

MR. DALE: Those lines will dump in 3.75 minutes with both lines, and it take 7½ minutes for one line.

MEMBER EBERSOLE: Yeah, I know. But after you've dumped this water in, you might have had 6 feet of water cover on the top section of pipes, and now you're going to have more than that.

How much cover do you have over the suppression pipes now, after you dump --

MR. DALE: It will -- it's less than 5 feet 9 inches; I know that because that is the difference in the level between the suppression pool wall and the top of the rear wall.

MEMBER EBERSOLE: Originally it was submerged how much? A couple -- your top row of pipes is not so far down, is it?

MR. DALE: The difference between the top of the top vent -- let's see, the center line of the top vent is 11.4 plus 14 inches, so it's 12.6; and -- let me think -- the water level is 18.7. So it's 6 feet 1 inch in all.

MEMBER EBERSOLE: So there would be a substantial increase in submergence when you dump this water in?

MR. DALE: Yes, sir.

MEMBER EBERSOLE: Thank you.

MR. DALE: Except that you have taken, by this time you have taken some of the big water out.

MEMBER EBERSOLE: Oh, yes, the big burden is off.

CHAIRMAN OKRENT: And what again actuates this phenomonae?

MR. DALE: You have to have a LOCA signal.--

CHAIRMAN OKRENT: Pardon me, the term LOCA signal --

MR. DALE: Well, it's --

CHAIRMAN OKRENT: It's not clear in my mind.

MR. DALE: Excuse me, sir. It's plus 175 pounds in the drywell or below water level in the vessel. That is what constitutes a LOCA signal.

CHAIRMAN OKRENT: Either one of those, plus 30 minutes, would actuate that?

MR. DALE: It would automatically initiate under those conditions.

CHAIRMAN OKRENT: And the operator can --

MR. DALE: The operator can initiate it, he can initiate it earlier, but only if he's got LOCA permissive.

CHAIRMAN OKRENT: And can he prevent it from going after it's been signaled?

MR. DALE: Let me see just one second. John, can you answer that?

MR. McGAUGHY: Excuse me just one second.

(inaudible discussion)

MR. DALE: I'm told you can't intercept it; can't stop it.

CHAIRMAN OKRENT: Are there any maintenance valves in these lines, aside from the motor?

MR. DALE: I don't believe so. The only one I know is the relief valve between the two valves which would allow relief of any pressure that builds up due to heat between those two valves. This will lead back to the top valve.

MEMBER EBERSOLE: You said this was iniated by what pressure in the drywell?

MR. DALE: It's 1.75 pounds in the drywell.

MEMBER EBERSOLE: Is the air cooling system in the drywell safety grade or not?

MR. DALE: No, sir.

MEMBER EBERSOLE: Well, with the air cooling system, which is not safety grade, don't I get an incoming pressure high enough to trip this system after a brief interval, just by stopping the non-safety air ventilation? I heat up, of course.

MR. DALE: Yes, sir.

MEMBER EBERSOLE: I think you tripped it because of air heat up.

MR. DALE: I can't say that it wouldn't be safe at 1.75 or not.

MEMBER EBERSOLE: I would suggest you look at that aspect of that pressure increase, because of that sort of thing. Because that's not a safety system, and it's probably been a nasty thought.

MR. DALE: Yes, sir; we certainly will.

CHAIRMAN OKRENT: Has this change in design increased or decreased the liability or ability to store heat and remove heat from the containment from what it was before?

MR. DALE: Intuitively, I would have to say it has, because we now have a larger heat sink in the suppression pool.

CHAIRMAN OKRENT: Larger than in your original design, or larger than you have without any?

MR. DALE: Well, the suppression pool -- sir? Okay --

CHAIRMAN OKRENT: You used to have a higher water level --

MR. DALE: I was fixing to say we would have higher water level, and I can't -- I do not know what that original level was, you know, what the difference was in original level versus what the level is now, and how that would compare to the volume that comes from the upper pool.

MR. McGAUGHY: Over all, you've got a more inclusion now than before.

CHAIRMAN OKRENT: Over all you have --

MR. McGAUGHY: After the dump you have more than you did before without the dump.

MEMBER EBERSOLE: Does that present an additional vent clearing problem?

MR. DALE: You've already cleared your vents by the time this system initiates.

MEMBER EBERSOLE: Well, I just had been -- just while ago where you hadn't figured anything on that. You know the heat up by air - - - Have you eliminated, or do you argue that you will never have to do vent clearing after you have dumped this water?

MR. DALE: Yes, sir.

MEMBER EBERSOLE: You will never have -- even the SRV system pump? You remember, your turbine is down. Won't you have to do vent clearing for a long time after this water has been dumped? And doesn't that prevent some new vent clearing load because of the additional submergence?

MR. CLONINGER: This is Ted Cloninger, I'm Manager of Project Engineering.

I think you have to make the assumption that with exception of these areas you calculated we've got to look into, you have to assume that you've got a genuine LOCA signal; that you had in fact blown down so so that your pressure is such that the suppression pool has accepted the blowdown and energyabsorption has fulfilled its function.

I can't foresee, after that situation, a scenario that would lead to a further energy transport across the vent system.

MEMBER EBERSOLE: I didn't say across the LOCA dump system; I was in the vent pipes, the SRV's.

MR. McGAUGHY: Let me -- we have done an analysis of what happened if you have an inadvertent dump and then have a LOCA. It will cause an increase in the drywell pressure. And of course the designed calculated 22,000 , and the design valve was 30.

MEMBER EBERSOLE: Well, that's a fairly low probability, but the odds are you are going to have to, without a shadow of a doubt, continue to operate the SRV's; and then you have some very serious problems.

MR. DALE: I think the situation that you postulate; I think that from that standpoint that you would be in a better situation from the standpoint of relieving through the quenchers, via the SRV discharge lines with a water to water intort .

MEMBER EBERSOLE: You think you'd be better off?

MR. DALE: That would be my judgment. I think if there were some way that you could postulate, unless there was some way that you would have to clear the wier wall vents with a higher water intort , you may have in fact a larger -- if you had another pool swell by some scenario I can't even contemplate, then you would in fact have a situation for higher loads.

MEMBER EBERSOLE: Right. I didn't postulate that. But let's go on.

MR. McCOY: Could I make a comment on the question that we addressed earlier on the reactor water cleanup, just a clarification.

We do have a door on that room and a blow out pl g that relieves into a blow out shaft, the atmosphere, and when that door is closed, it will direct it out, rather than into the auxiliary building.

So that has been addressed.

MEMBER EBERSOLE: At this extent, it looks like a turbin hall, doesn't it? It goes to outdoors?

MR. McCOY: Yes, it does.

MEMBER EBERSOLE: And not to other machinery. That was a thoughtful design feature. Thank you.

MR. DALE: Okay. Moving on to the changes that we've had to make due to the hydrogen and the load specifications, of course we've had to requalify all simulated equipment instructors for **the seismic and hydrogen end flows.** Major equipment modifications, we've had to add rail clips to the **polar** frame bridge; we've had to stiffen the **polar** frame well support brackets; we've had to modify valve **components**, beef them up some; we've had to modify first compressor after cooler nozzels; we've upgraded and added dynamic supports for piping and its covers; we have added and/or modified approximately 1800 pipe supports and hangers, and we've made some minor modifications to the floor steel.

MEMBER EBERSOLE: Did you have to add anything to the battery supports?

MR. DALE: Battery supports?

MEMBER EBERSOLE: Yes. From a seismic viewpoint.

MR. CLONINGER: The batteries are not in the containment building.

MEMBER BENDER: This is just in the **containment building?** Excuse me. **Forget it.**

MR. DALE: That basically concludes the discussion of what we have -- the design evolution that we've seen on the Mark III containment since we started the project.

I would now like to address the question of suppression pool bypass, which the Committee had wanted to hear something about.

CHAIRMAN OKRENT: Before you go on to that topic, if I understand correctly there is an open issue in the area of loads on the grading, or something of this sort.

MR. DALE: Yes, sir, that's --

CHAIRMAN OKRENT: Can you tell us what you think about that?

MR. DALE: Well, it's my understanding that the regulatory staff has a presentation to make on the open issues on the Grand Gulf Mark III. I was going to say just a very few words about it at the conclusion of this presentation, and then defer to the staff.

MR. HOUSTON: No, we don't have a staff presentation in that particular area.

MR. McGAUGHY: We can address that.

MR. DALE: We can address those issues if you so desire.

CHAIRMAN OKRENT: Well, I --

MR. DALE: We thought the staff was going to, but we came, we're prepared to.

CHAIRMAN OKRENT: I would appreciate about two minutes of which identify the problem as you see it, identify what the alternatives are, or its resolution, indicating where you thought it was going to go.

MR. CLONINGER: This is Ted Cloninger, Manager of Project Engineering at MP&L.

When Reg 1 of the USAR containment load report was issued, there was a design drag load pressure of 11 PSID across the elevation 133 HCU -4 in the open grading areas.

In that report, based on the interpretation, or misinterpretation or misstatement -- that's kind of a moot point at this time -- it was assumed that the drag load that was applied 35% of the open area of the grading.

Rev 2 to USAR was issued in the spring of this year that led to the conclusion that 11 PSID should be applied to the total area of the grading.

We had designed the grading and the attendant supports on the elevation 133 HCU for the lower drag load. As a result of that, and reviewing the new loading criteria, we found ourselves in an untenable situation from the standpoint of meeting design criteria formulating across that floor.

We had in the recent two or three months, been meeting with the N triple S of GE, as well as the NRC staff, to look at the source of data and the modeling that resulted in 11 psid load across the HCU floor.

We are now on project, making assessment to see what corrective action we can take that will result in an acceptable loading criteria to both the staff -- excuse me, to the staff.

We are looking at the standpoint of taking out grading in the plant; doing some alternate failure criteria for the structural steel on the HCU floor.

At this point in time that studying is going forth essentially around the clock. We do not know right now what the ultimate capability of that floor will be, and what the results of some innovating thinking of reducing the drag load as much as possible.

I would like to point out that the 11 psid loading is a very debatable low criteria, at least from the standpoint of me and my staff.

The data presented by GE in their series of test runs leads to considerable debate and considerable interpretation. We feel like the 11 psid loading criteria is extremely conservative.

We developed arguments and met with the NRC staff supporting a much lower loading. At this point in time, we have not come to an acceptable agreement, and will be pursuing this matter over the next week or two almost full time.

CHAIRMAN OKRENT: If the loading in the Rev 2, I think you called it, remains the requirement, do you have a design approach to cope with it; at least one?

MR. CLONINGER: I would say at this point that 11 psid would be very difficult. We would exceed the capacity of many of the concrete inbedments under the containment liner, which would lead to major structural modifications.

It would be very difficult for me to speculate on if there is in fact a reasonable designed resolution for the 11 psid loading criteria. It would be very difficult.

MEMBER EBERSOLE: If I understand it, what you have is there an angular floor, partly concrete and partly graded. Why did you put the concrete in, anyway?

MR. CLONINGER: There are certain areas in the -- on the HCU floor, in fact the hydraulic control units rest on concrete floor. Unfortunately, I was not with MP&L back in those criteria days. Perhaps maybe Jim or someone could maybe elaborate on that a little more, but it is my understanding that there are some components requiring composite type floors.

MEMBER EBERSOLE: Are you telling me that you have equipment up in there that needs kind of a blast shield?

MR. CLONINGER: We have equipment up there in fact has spray shields already designed for impact loads. Let me be careful. We do not have an impact load problem. We are adequately designed from impact.

The **implosion** thing is that we have grading over open areas, and we have a drag load phenomenon because of that grading in the open areas.

If you can postulate in all the open areas, we can remove all the grading, and that really is our approach right now is to take out as much grading as possible to reduce the loading that is imparted to the supporting structural steel by the drag line phenomenon.

So the concrete really gives us no problem with the exception that it cuts down the open area and makes your, the **orifice** effect that really is the **culprit** of the differential pressure across the floor more difficult.

MEMBER EBERSOLE: The grading is just to walk on, isn't it?

MR. CLONINGER: That's correct, sir.

MEMBER EBERSOLE: People can walk on less than graded portion.

MR. CLONINGER: That's very true, and that is our approach is to look at resolutions that would be to remove large panels of grading and replace the smaller catwalks, to cut down on the area that the drag load must be calculated on, in addition to looking at some resolution of hinge **frame** .

We have a couple of equipment access hatches that we will be evaluating for removal. It is a **multiphasic** type approach to try to solve this very severe problem.

MEMBER EBERSOLE: Thank you.

CHAIRMAN OKRENT: Just one other question. You reminded me; you mention the snubbers and you have snubbers for other reasons also.

How do you assure yourself that the mechanical snubbers that you're using have been properly designed, built, tested, so that they'll an acceptably low f‹.lure rate, and what is an unacceptably high failure rate, from your point of view?

MR. DALE: Here again since that i engineering question, I am going to defer that to Mr. Cloninger.

MR. CLONINGER: The snubber testing program that resulted in the IE bulletin is really being managed by Ken McCoy's part of the inservice inspection, so I would like for him to tell us what our program is.

MR. McCOY: If I understand your question properly, the way the assure ourselves the operability of those is by periodic testing of the mechanical snubbers, and we do have a dynamic test capability at the site for all the snubbers.

CHAIRMAN OKRENT: But that will only tell you when you test them whether or not they are free or binding, and my question relates to what is an unacceptedly high rate of binding in such snubbers, and how do you assure yourself you won't have that unacceptably high rate, whatever it is?

MR. McCOY: There have been studies, reliability studies done.

- - -

The testing intervals are based upon those studies, and the frequency of testing increases with any failures detected, and there are criteria on the performance of the snubbers during the test.

CHAIRMAN OKRENT: Let's see, this is a Staff document, or Grand Gulf document, or INPO document, or is there a document?

MR. DALE: Yes, there is a bulletin. The IE bulletin was issued that since the test ran, since probablistic and statistical sampling that determines **your** **failure** rate, and the attendant larger sample size, if you remove X number of snubbers, stroke them with accepted criteria and they fail, then you have to enlarge your sample size.

So basically it is a staff mandated sample plan.

MEMBER EBERSOLE: Do you stroke them at prescribed rates, or just see that they're proved?

MR. McCOY: They do have rates associated with them.

MEMBER EBERSOLE: You do ?

MR. McCOY: Yes.

MEMBER EBERSOLE: All right, thank you.

CHAIRMAN OKRENT: Let's see; I guess if the Staff would remind me at some time just what document it is I can find the rationale for the inspection numbers. Not only the inspection rate, but the rationale for them. I would appreciate it.

And while we're talking about the inspection, without trying to get an answer today, since we may not have the right people anyway, unless it's on the Agenda, by the time we next meet or before, could the Staff tell me what kind of inservice inspection is performed for penetrations of the lower head, and on what basis it's judged to be adequate. You know that's **where** the control rod **drives** come in. Okay?

Thank you.

MR. SCHWENCER: Okay.

MR. DALE: Moving on to the subject of suppression pool bypass, the force of the pressure suppression technology, the reactor containment, the concept of any steam released in the drywell would pass through the suppression pool and be condensed.

In order to mitigate the effects of any steam that might possibly bypass the Grand Gulf suppression pool, we do have an automatic initiation of containment spray system on high drywell pressure after a LOCA plus 10 minutes.

Now, we have calculated the maximum allowable leakage capacity of our drywell, which is controlled by the small break accident, assuming that one spray comes on at LOCA plus 13 minutes, and based on this calculation we've determined the maximum allowable leakage capacity for Grand Gulf is an A over root K equals 0.9 square feet, and the Staff has concurred in this calculation.

In order to prove Crand Gulf drywell retains its leak tight integrity, we have committed to perform periodic low pressure leakage tests at each refueling outage on the drywell at a pressure of 3 pounds per square inch differential, which is the pressure associated with the compression of water in the vent angles down to the top of the first drywell, and our acceptance criteria for this test is equal to 10% of the allowable leakage capacities, 0.9 square feet; and here again the Staff has concurred in this criteria.

MEMBER EBERSOLE: That's for the one spray system on?

MR. DALE: Yes, sir.

MEMBER EBERSOLE: With one spray system on, what fraction of the K unit can you take out? Do you know that, offhand?

MR. DALE: I really don't know, offhand. Of course we do have the two spray systems.

MEMBER EBERSOLE: And you're leaking nine-tenths?

MR. DALE: Yes, sir.

MEMBER EBERSOLE: And what condition is that out in the wetwell area? That's going to the wetwell void space . Right?

MR. DALE: Yes, sir. And the spray covers the entire containment on down into the wetwell.

MEMBER EBERSOLE: You mean in the wetwell instance ?

MR. DALE: Yes, sir.

MEMBER EBERSOLE: I see.

MR. DALE: The containment in wetwell or one volume?

MEMBER EBERSOLE: Yes. Either -- is there a spray in the drywell here?

A VOICE: No.

MR. DALE: No.

MEMBER EBERSOLE: There's no spray in this drywell?

MR. DALE: No, sir.

MEMBER EBERSOLE: So you're condensing this as it leaks out?

MR. DALE: Yes, sir. Now, I have information on the tests that we've conducted on the drywell. We have done high pressure testing on the drywell in the pre-operational phase.

We did a pre-operational structural integrity test on the drywell; pumped it up to 30 psig, and based on the results of deflection and strain measurements, we determined that the structure responded in the elastic range, and there was no sign of permanent damage that we could find to the structure.

MEMBER EBERSOLE: What's the hottest operating pressure it receives?

MR. DALE: The pressure it receives during a main steam line break is 22.

MEMBER EBERSOLE: So you were well above that?

MR. DALE: Yes, sir.

MEMBER EBERSOLE: What did you do, blank off the pipes?

MR. DALE: Yes, sir; put caps on the vents.

MEMBER EBERSOLE: Great.

MR. DALE: Now, at the conclusion of that test, we then did a pre-operational leakage test on the drywell. We let it leak down to 22½ psid, and measured the leakage out of it; confirmed the leakage based on the leak down rate, temperature changes, etcetera, and the acceptance criteria was 84,000 SCFM: our measured leakage was 3200 SCFM.

MEMBER EBERSOLE: At what psid was that?

MR. DALE: That was the time integrated leakage over the leak down.

MEMBER EBERSOLE: Yes, but what was the pressure in the drywell?

MR. DALE: It started at 30. See, we did this test immediately after the original construction integrity test, as we brought it down.

We believe that both of these tests show that our drywell has been designed and constructed to perform its intended function, and it is a fairly leak tight structure.

CHAIRMAN OKRENT: Would you put the previous transparency on, please?

Could you remind me again why it was it was a small break that was used, instead of capacity among some other break?

MR. DALE: Okay. Due to the large break, what happens is that you get a higher pressure in the drywell, but you blow in the primary system a lot quicker, and the bypass, potential bypass, associated with a small break, is more severe, because you would only depressurize -- I am sorry, depress the water where it angles down to the top of the first vent, and we assume that the operator would then institute an orderly shutdown of the reactor system at 100 degrees fahrenheit per hour, and that differential would exist over 6 hours until it gets depressurized.

And based on that, we do have a more severe leakage problem because it's a lot longer. You know, it's low pressure, it s a lot longer event than with a large break; and that's why it controls.

MEMBER EBERSOLE: The old-fashioned drywell was cooled by spray, which yours is not. That puts the burden on the air cooling system to keep it cool, and you're at pressure temperature, and you recall the earlier question we asked about what happens when you lose that non-safety system?

MR. DALE: Yes, sir.

MEMBER EBERSOLE: And what do you do? Do you depressurize and get the primary temperature as quick as you can?

D[illegible] that system?

MR. DALE: Are you talking about drywell cooling?

MEMBER EBERSOLE: Yes.

A VOICE: That's in the containment control --

MEMBER EBERSOLE: Your heat source is the reactor vessel in the pipes, and it's pretty hot; like 600 or so. It's well above the temperature that you can tolerate -- high heat.

MR. McGAUGHY: I will ask Gill Johnson to address that as an address in the Operating Procedures.

MEMBER EBERSOLE: Is that another one of these abnormal offnormal --

MR. JOHNSON: No, you look in Emergency Procedure 3, which is containment control, there are a number of parameters that the operator would take corrective action on.

One of those is drywell temperature, and the corrective action in that situation is to bring the primary pressure and temperature down as rapidly as possible.

MEMBER EBERSOLE: Thank you.

MR. DALE: The only other thing I would like to address is the fact that we -- you know, the question came up this morning about an owner group, and we said which owner group.

We do have a Mark III containment owner group, which was organized in October 1976. MP&L has been a very active member since the inception of that owners group.

It primarily gathers together to allow the architect engineers, interacting through their respective owners, to compare notes, if you will, on the design of Mark III containment, to insure that we have consistent application of the methodology in the design of containment.

For brevity's sake, that's all I'll say about that.

CHAIRMAN OKRENT: I'm trying to understand something. I'm looking at this procedure 3, and it says, spray the drywell; and I thought we heard a moment ago there is no spray in the drywell.

I'm not sure if I heard it wrong or read it wrong.

MR. McGAUGHY: Maybe it's printed wrong.

A VOICE: Gill Johnson can address that.

MR. JOHNSON: In the current designs, there is a fire protection system that can be used to affect the water spray in the drywell.

However, that system, from what I understand, is being deleted, and that step in the procedure is going to be deleted when that system is completely added to design.

It's a fire protection spray, and not intended to be a pressure suppression or temperature suppression spray.

But we saw it in the original design, and we took credit for it.

MEMBER BENDER: What do you mean by taking credit for it. Is it still there?

MR. McGAUGHY: He took credit for it in his procedure, as a way of alleviating a symptom; but they didn't know safety analysis. They took credit for that.

MEMBER BENDER: Is it there? Is it useful?

MR. CLONINGER: This is Ted Cloninger. No, sir, it is not there. When we evaluated that particular system, we tried to, from a design standpoint, tried to look at a water fire-proof suppression type of sprinkler system, and tried to predict what this effect would be.

Would it be beneficial or adverse? It's very difficult when you've got essentially very crude sprinkler heads, so that was our decision; to remove that system.

CHAIRMAN OKRENT: How warm can the drywell get if you were to go into the situation Mr. Ebersole mentioned, and you couldn't restore the current cooling capabilities in drywell?

MR. CLONINGER: I would like to point out here, I was advised -- I don't know if it's in the procedure -- but from design standpoint, design concept, we would expect that if drywell pressure was being tracked, and you lost drywell cooling, and the operator would take action to crack the drywell vent valves, drywell purge valves, to relieve pressure, that would be from design standpoint, design capability to maintain pressure in the drywell.

MEMBER BENDER: Does he have to remember to do that, or does procedure say so, or what's the concept you're making?

MR. McCOY: Ken McCoy, Plant Manager. It is in the procedure to relieve the pressure as it builds up, your temperature.

CHAIRMAN OKRENT: Is there some activity level in the drywell that could complicate his life ?

MR. McCOY: Well, that activity would be vented into the containment, so that would not be a particular problem in this case.

The answer is no, if you had an activity problem you could still vent the drywell into the containment.

MEMBER EBERSOLE: I guess it's time to mention something. One of the problems I kind of have with these BWR's is the fundamental logic here and there; you know, like dumping into a closed volume before you seed the rods, is one.

Here's another one. You know, the safest state for implementation... control to be in is in the deenergized state, to go to a safe state. You know, the scram systems work that way, if you can back it up by a hot state. . The rationale in the boiler here is somehow contradictory, and I think I would like to have you and your various committees and people, examine this.

The safestage in the boiler, in my view, during an emergenc y, is the state that enable you to maintain an ability to depressurize, so you can take advantage of all these nice low pressure systems you've got.

They're not worth a nickel if you can't depressurize. The state that you have to be in to depressurize is to energize some 25 of impulse ________ DC solenoids in an extremely hostile environment.

In short, you are in the hot energized state to obtain a safe state in the boiler. These are the solenoids which introduce air to the piston cylinders.

I want you to kind of think about inverting that logic, and having an alternate which says the safe state in an emergency is a deenergized state, and I'm going to get it by additional hydraulic or pneumatic lines privileged to be activated from outside the containment.

MR. DALE: We'll certainly look at that.

MEMBER BENDER: When you go back to look at the history of the Brown's Ferry fire, it will be a good example.

MEMBER EBERSOLE: Yes.

MR. DALE: Thank you, sir.

CHAIRMAN OKRENT: The next item, unless the Staff wants to add anything at this time?

(inaudible discussion).

CHAIRMAN OKRENT: I've been encouraged to have a 10 minute break, so before we take the matt~ f, let's see, I think it was Flooding next, we'll have a 10 minute break.

(There was a short recess).

ACTING CHAIRMAN BENDER: The meeting will come to order.

Just to repeat for the record, Dr. Okrent will be leaving at this stage of the meeting, and I'll be taking over the Chairmanship for the period of time I'll be here. Mr. Ebersole will take ove. 'ter I leave.

In order to cover some matters I would like to be present at, we are going to change the oorder of presentation, and we will pick up Emergency Planning next on the Agenda.

Go ahead with Emergency Planning.

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PRESENTATION

BY

DR. LARRY R. McKAY

DR. McKAY: Thank you, sir.

My name is Larry McKay, I'm the Corporate Health Physicist for Mississippi Power and Light Company.

This afternoon I would like to share with you some of the progress we have made in the area of Emergency Planning.

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Specifically, I'll be covering these items shown on the screen. Emergency Plans and Procedures for Grand Gulf; I'll talk to you about the organizations that are primarily involved. We'll discuss our Communications, our Public Education and Information Program, and our Emergency News Media Information Progra..

And then in the area of Facilities, we'll discuss the Technical Support Center, Operational Support Center, Near-site EOF, both our Interim Faci.ity and our proposed Permanent Facility; Emergency Response Facility Information, or ERFIS; the Alerting and Notification System; the Corporate Emergency Center; the Emergency News Media Center; and finally a Facility Status summary slide and indication of our drills and exercises.

With regard to our emergency plan itself, it was submitted on November the 20th, 1980 to the Commission, and completely rewritten in the Revision 1 form on May the 14th, 1981.

We received some formal questions from the Commission, and revised the plan accordingly with Revision 2 on July the 29th of '81.

Our current emergency plan addresses all the elements contained in NUREG-0654, which of course is the Regulatory guiding document for Emergency Planning Preparedness.

Specifically, it considers 10 as well as 50 mile Emergency Planning Zones. It involves contiguous government jurisdiction. It assigns responsibility for emergency response to the different individuals and agencies. It provides for 24 hour notification of the public.

It specifies people assigned to both an onsite and offsite emergency response organization. It requires augmentation of the Plant Staff by the General Office of personnel for any severe or enduring problem.

It provides for Federal assistance, if necessary. It utilizes standard emergency classification and initiating conditions, as specified in NUREG-0610.

It enables positive notification of response agencies; and it includes both primary and back communications to local, state and Federal response agencies.

It supports dissemination of public information about our facility, and about emergency planning in general.

It requires Technical Support, Operation Support Center, and Emergency Operation Facility. It addresses requirements for emergency assessment instrumentation, and outlines evacuation routes and directions.

It considers radiation exposure control of emergency workers. It coordinates medical and public health support; tests the functionality of the Plan by drills and exercises, which is a very important element; details the required training of emergency response personnel; and assigns the responsibility by title for upgrading and maintenance of the plan and the procedures.

Obviously any plan in these implementing procedures, we've developed two sets of them. First, Emergency Plan Procedures for Plant Staff; and then the Corporate Emergency Plant Procedures for the General Office personnel who would augment the Plant Staff.

The primary Emergency Response Organizations involved in the case of Grand Gulf, are the Claiborne County Civil Defense in Mississippi on a local level. Now, they are not manned 24 hours a day, so to provide for 24 hour notification, we have the Claiborne County Sheriff's office.

Also the Port Gibson Police Department is an integral part of our local response.

In Louisiana, the Tensas Parish Emergency Preparedness is the analog for that state. Again, they're not manned 24 hours a day, so we have the Tensas Parish Sheriff's Office to back them up.

On a state level, the Mississippi Emergency

Management Agency, or MEMA, has the lead responsibility for State Emergency Response, with the support of the Highway Safety Patrol with 24 hour dispatches; and the Mississippi State Board of Health, which means some very logical help.

The counterpart in Louisiana is the Louisiana Nuclear Energy Division, which has 24 hour capability.

One of the more important aspects of Emergency Planning is Communications. This slide depicts methods by which we communicate with the State, Local, and Federal authorities.

First and foremost, we have an operational Hot Line, which is a dedicated telephone line that connects us with the Local and State Agencies. We back that up with the Locals with a Backup UHF Radio System, and of course commercial telephone if the other two means fail.

With the States, of course Operational Hot Line, Commercial Telephone, and by Special Routing of Radio Traffic we may also pass information to them.

For Federal Agency, we have of course the Emergency Notification System, or the NRC Hot Line, if you will. The Health Physics Network, again is solved by the NRC; and the Federal Agency Hot Lines, for example the Commercial Telephone Hot Line Listings for the NRC and Department of Energy.

To get help from Support Groups, we have a Mutual Assistance Plan which is nearing signature, with our Sister Utilities, Arkansas Power and Light, and Louisiana Power and Light. Now, no, we haven't taken over Gulf State; we consider them almost as a Sister. They are not taken as a Sister Utility, but they are a Nuclear Utility in this area.

INPC, of course, institute for Nuclear Power Operations; General Electric; Bechtel, and by Notepad, which we discussed earlier this morning. We may request information, help, material, personnel.

ACTING CHAIRMAN BENDER: Excuse me, what commitments do those people make when you say they're Support Groups? How acceptable are they? When would they be available? How do you deal wi them?

DR. McKAY: As far as mutual assistance plan, the plan that is nearing signature, signature stage, has actual commitments on their part to supply people, as available.

Now, that means, Iguess, just what it says; they'll be provided, as many people as they can spare at that particular time.

In case of INPO, of course we are signatories to the fixed facility response plan, along with, I believe it's 29 other utilities at this stage. So we are contractually bound to assist each other in that regard.

General Electric and Bechtel, we have letters of agreement either on file or shortly to be on file. As a matter of fact we have, I believe, the one from Bechtel, and we're missing the o. . from General Electric.

I was checking on that during the noon hour, and that's forthcoming. Notepad, of course, is just information exchanged.

ACTING CHAIRMAN BENDER: If, well let's take an example.

DR.. McKAY: Yes, sir.

ACTING CHAIRMAN BENDER: If you had an accident out here and needed to know something about the core characteristics, how soon could you get to GE?

DR. McKAY: Immediately by telephone.

ACTING CHAIRMAN BENDER: Are they committed to have somebody on the other end of the phone?

DR. McKAY: Well, sir, most of these agencies that we deal with like this; for example, NRC recently provided us with Hot Line numbers to contact people.

Part of our planning is to have dedicated individuals. Bechtel, for example, has given us dedicated names, titles and telephone numbers on a 24 hour basis to reach the people. We will expect nothing less from General Electric.

ACTING CHAIRMAN BENDER: You'll have that list current at all times?

DR. McKAY: Yes, sir. Part of the maintenance of the plan of procedures, which is the last element I listed up here about our Plant will require that. 654 requires that.

ACTING CHAIRMAN BENDER: If I go up the ladder, Federal, State and Local, do I find a similar situation in every point? There are Hot Lines contacts of some sort? Emergency lines, if you can get the individuals?

DR. McKAY: Yes, sir. Now, I can't guarantee I would get I'd get a specific pre-designated individual, but I can get a Duty Officer.

ACTING CHAIRMAN BENDER: Well, I understand that there are always contingencies when somebody won't be there.

DR. McKAY: I believe, sir, in this case you will find that we have provided for 24 hour manning for all of our operational Hot Lines.

ACTING CHAIRMAN BENDER: Are they mandatory?

DR. McCAY: Yes, sir. We have two programs I would like to discuss with you briefly.

Public Education is obviously an important element of Emergency Planning, in the light of Three Mile Island. We participate in quite a few public meetings; I would say on the average of one a month at least, in either Tensas Parish or Claiborne County, and in some cases both.

I'm a member of the Speakers Bureau, as are several other professionals on the MP&L Staff. We go out and make educational presentations to schools; we tell the Nuclear Story and the MP&L story, the Grand Gulf Story to Civic Groups.

We encourage Plant Tours. I don't know if you met Trish Rivers or not; she's our Public Relations Assistant, Grand Gulf. Trish is standing here. She is very heavily involved in Plant Tours for the public, and we think this really helps.

We are preparing an Emergency Information Brochure, which will hopefully be given to every resident in the 10 to 12 mile Emergency Planning Zone by November, which lists protective actions for the public; gives them evacuation directions, I mean specific directions, a map, I believe there's 3 or 4 colors which will indicate where they live, which route to take; a list of reception centers so they'll know where to go if they have to be evacuated.

It described Grand Gulf in specific, and in general, how a Nuclear Station operates, and includes a glossary of Nuclear terms.

Our intent is to try to educate the public so that they understand what the buzz words we use every day actually mean.

Then of course we list a point of contact, with telephone numbers for further information, so they may call us up and ask us for information.

Using the brochure and material, we will prepare posters, mailouts, and yellow pages inserts to reach the segment of the population that may not be permanent in nature, such as guests in hotels and motels.

Obviously, relationships with the media are important, so we've developed our Emergency News Media Information Plan. This company has embraced the philosophy of openness with the media. I believe Mr. Lutken mentioned that this morning.

We have designated points of contact within MP&L, so that the media know who to call to get information. We have mailing lists of media representatives with their telephone numbers, and of course included both print media and electronic media.

We have periodic meetings with the media. Earlier this morning we mentioned a media day which was in June of this year, at which time we had 50 odd media representatives. We provide logistical support of the media representatives. Obviously when you bring the people in you have to provide copy facilities and other types of support for them. And the plan itself includes some sample press releases to facilitate prompt information flow. There are several press releases which can be tailor made to the specific situation, getting a report out in a hurry.

ACTING CHAIRMAN BENDER: Who is the MP&L Spokesman?

DR. McKAY: Mr. Allison McCain, our vice-president for informational services.

ACTING CHAIRMAN BENDER: What has been his indoctrination into the Nuclear Emergency?

DR. McKAY: You mean as to his involvement with our plan here?

ACTING CHAIRMAN BENDER: How much does he know about emergency procedures?

DR. McKAY: I think he knows quite a bit, sir, for a person of his diverse responsibilities. He has personally accompanied me to several of these meetings; he's got involved eminently with the preparation of this plan and with the brochures --

MR. McGAUGHY: Excuse me, Larry, why don't you let Allison?

DR. McKAY: All right, I'm sorry. Mr. McCain?

MR. McCAIN: Exactly what was your question, sir?

ACTING CHAIRMAN BENDER: How well acquainted are you with the kinds of emergencies that a nuclear plant might be faced by, and how able are you to tell the media, since that's the term that's being used for that, what the circumstances are and what information needs to be presented to the public?

They're going to interpret it for themselves, so I know you are not going to tell them what to say, but you can talk, educate them as to how to express the problems.

MR. McCAIN: We've been very intimately connected with Grand Gulf Project from its inception, and in working with the Plant Staff, in various, in the production of various types of materials for use in educating the public, including slide presentations on nuclear power in general, and Grand Gulf Nuclear Station in particular.

We've produced radio, television and motion picture materials; various types of printed materials. We've been intimately involved in the production of the news media information program.

Also, a very important part of our programing and staffing for emergency situations is to have a technical representative from the Staff always present in the emergency news media summit for working with the press and news media briefings, and also in the initial stages of an emergency situation, in the corporate emergency center in Jackson there would be the technica representative present.

So, in addition to the materials which we will have on hand, perhaps maps, diagrams, layouts, and so forth, concerning the plans, which we will have at both the corporate emergency center, the news briefings, and the initial stages of an alert, an unusual alert situation plan; and also, if we go to sight emergency, and general emergency conditions where we would open the emergency news media center.

And so in addition to these materials which we would have available for use in briefing the media, in addition to printed materials, we would also have trained, technical, nuclear people here from the General Office Staff or from the Plant Staff, who would be thoroughly qualified, who would be in complete touch with the situation, in order to technically brief people.

And we also have plans, if necessary, as they might be available, to bring people from the emergency operation facility if their services were not required for an hour or so, to come to the emergency news media center to supplement direct briefing along this line.

ACTING CHAIRMAN BENDER: Aside from the contact which you have with the public in the way it is described up there, do you have some selective list of people that are being -- on the technical staff, that are being educated in how to much such information --

MR. McCAIN: Yes, sir. That is part of our plan.

ACTING CHAIRMAN BENDER: How are they trained?

MR. McCAIN: Well, we are just really getting into that right now. We are bringing, developed two other men to our last emergency drill in order to participate specifically in this type of activity.

We plan to have at least two more special communications exercises between now and early November, in order to give these people additional training, specifically in the news media briefing.

ACTING CHAIRMAN BENDER: Have you read the Kimberly (ph) report on Three Mile Island?

MR. McCAIN: I have not read all of it yet. I am familiar, though, with the fact that the news media and the communication problems were very severe, and that this is one of the very important aspects of any event at a nuclear facility, and I will have read it by November.

ACTING CHAIRMAN BENDER: How many people on the MP&L Staff have read the Kimberly Report?

MR. McCAIN: I could not tell you that, sir. I am sure that many of our people have.

ACTING CHAIRMAN BENDER: Why don't you **survey** , because one of the points that has been made is that in many cases the organization responsible don't understand the issues well enough, and while that report has a lot of criticism, it's about as representative as you're likely to get --

MR. McCAIN: I know that.

ACTING CHAIRMAN BENDER: -- of view points of what a utility ought to do in an emergency, and it's a little troubling to me that not as many people are familiar with what's in it as ought to be the case.

I would think that every utility executive that has a nuclear power plant ought to find that amongst the must-reading list.

MR. McCAIN: We will see that that is done among a broad number of our people, sir.

ACTING CHAIRMAN BENDER: The questions having to do with dealing with media might be broken into two kinds. Every day I think you could get to the local press, and probably the local TV audience or local TV operators, and develop a communications chain.

If you have a really serious event, it's not unlikely that a delegation shows up, reporters come from some other parts of the country.

Is there a plan to deal with those people?

MR. McCAIN: Yes, sir. Absolutely.

DR. McKAY: I'll describe that in considerable detail in a few minutes.

ACTING CHAIRMAN BENDER: That's enough for right now.

MR. McCAIN: Thank you.

DR. McKAY: Any more questions on this slide, sir?

ACTING CHAIRMAN BENDER: No.

DR. McKAY: I would like to now discuss the Emergency Support Facilities. I hope you are able to read this slide, because of the smaller type.

I want to point out the major locations here for our primary facilities. First of all, here's the Control Building. The Operation Support Center is located, as I'll describe more fully in a moment, adjacent to the Administration Building in the Maintenance Shop

Area.

The Technical Support Center is in a Mezzanine Viewing Gallery in intimate contact with the Control Room; and the Emergency Operation Facility on an interim basis, is located in the Training Building.

As I indicated earlier, we have plans for a permanent facility, and I'll show you more about it shortly.

The Technical Support Center, located in the Viewing Gallery above the Control Room is habitable to the same degree as the Control Room. It's shielded against radiation; it has an isolatable ventilation, and it is built to General Design Criteria 19 Specifications.

Specifically, a person assigned to work there for 30 days continuously, would receive less than 5 REM to the whole body, and less than 30 REM to the Thyroid.

The TSC has dedicated communications with the Control Room, the EOF, and offsite Agencies. It provides for direct display of plant safety systems information, and callup display of radiological information.

It of course is manned by the Plant Staff Management. Mr. McCoy is our Emergency Director, or his designee, and their Onsite Emergency Organization.

MEMBER EBERSOLE: Pardon me, you're quoting dose levels. I presume that's for the case of the Design Basis Accident?

DR. McKAY: Yes, sir; that's correct.

MEMBER EBERSOLE: Do you have any information of what you would have in lieu of that, if you have degraded core?

DR. McKAY: Well, sir, I had asked Bechtel, our Architect Engineer, to calculate a worst case accident, using the Chapter 15 type scenarios, and beyond that, sir, I couldn't care to speculate. I could guess, but it would not be accurate.

The Operational Support Center is located in the Maintenance Shop, adjacent to the Administration Building. It serves as a staging area for additional onsite emergency personnel.

And in addition we have a second staging area at the Health Physics Station, 93 elevation in the Control Building. We have dedicated communications between the Operations Support Center and the Control Room, and Technical Support Center.

Now, this is a Center that's not required by 654, but it's something that we've added. I think we need it in this case. We have a Site Access Point. This is located adjacent to the interim EOF , which is the Training Building Location. It serves as a staging area for one specific group of individuals, and that's the Offsite Dose Assessment Field Teams. We find that by putting them in one area at the perimeter of the Security Plant -- this is actually outside the fence -- they can be deployed much more rapidly.

It provides for an orderly turnover to the General Office Radiological Assessment Personnel, when the EOF is activated. It provides Dosimetry to EOF personnel, and enables the site access, therefore titled Site Access Point.

The Emergency Operations Facility in the Training Building, our Interim facility, has the following functions. It provides Operational Communications with the Offsite Agencies; of course, the initial notifications are usually made through the Technical Support Center.

It provides for Offsite Radiation Dose Projections. We prepare and transmit news releases through the Emergency News Media Center, where Mr. McKAY is located, for release. We corrdinate Technical and Administrative Support for EOF; and we maintain EOF security.

Our communications are provided as follows: With the Technical Support Center we communicate via the Operational Hot Line; Plant Telephone; Plant UHF Radio, and Hard copy or Telecopy. Now this, we're in the process of doing right now. It will be installed.

We communicate with the Operational Support Center via Plant Telephone; Plant UHF Radio. We communicate with the Offsite Agencies by several different means. Operational Hot Line, our primary notification and communication means; UHF Radios to the Locals, both Tensas Parish and Claiborne Counties; Commercial Telephone; Microwave Telephone System through the General Office, and the UHF Radio to the General Office by some special routing.

I would like to point out that during the last exercise, our telephone system was out. This was not operable. It gave us an excellent opportunity to try out the UHF Radio to the Locals, and that's in fact what we used for initial notification.

So this was not planned; it was just an improbable event which occurred. I thought that was a good opportunity.

MEMBER EBERSOLE: I want to make a little correction. There's one thing; John just pointed out to me that you -- I presume the old practi[illegible]as followed here, that your containment activity level is specified on a very badly situated core in the first place.

DR. McCAY: Yes, (inaudible) 44.

A VOICE: Right. Yes.

(Several people talking at once)

MEMBER EBERSOLE: You already have looked at that really critical thing, used to supress that effect.

DR. McCAY: Right, Thank you. Okay, to continue with our communications, the EOF communicate with our Corporate Emergency Center, which I am not here to describe, but which I will shortly, via UHF Radio, the Operational Hot Line which we are in the process of installing to the CEC's and extension; Commercial Telephone and Microwave Telephone System.

The Corporate Emergency Center is located in the basement of the Electric Building, about two blocks from here. This is the point where people initially arrive, usually at the alert stage, to begin emergency response.

The Emergency News Media Center is where our Mr. McCain is staged and have the media to arrive. We have CommercialTelephone Cables there, 40 lines, 40 incoming pairs, to accommodate large numbers of media. We have a microwave telephone system to which we have access at that point, and again we're installing teleprinters and telecopiers to allow for copy transmission between the TSC and EOF Corporate Emergency Center and the Media Center.

A few words should be said about our permanent EOF. We're very proud of our Energy Services Centers, described briefly earlier. It has a simulator, a permanent EOF hardened to a protective factor of 50; offices for training and engineering staff; and we are considering seriously a visitor's center.

It is located in the upper laydown area, about 0.6 of a mile northwest of the Unit 1 reactor, outside the security fence. It provides for approximately 12,000 square feet of space for emergency response personnel. Now this is adequate space for over 100 workers, and I would have to say that having visited other EOF's, it's large. We have more than adequate space.

It's designed to allow protracting manning during the worst case accident. It is to be completed prior to October 1982. We have already poured the footage for some of the concrete walls, and done some preliminary excavation.

It has the same functions, obviously, as the interim EOF, except we're better prepared to accommodate those actions in the permanent EOF.

ACTING CHAIRMAN BENDER: I think we can skip the layouts, unless you have some specific point .

DR. McCAY: Yes, sir. The next facility we'll take up briefly is the Emergency Response Facility Information System, or ERFIS.

This provides display of significant plant parameters to the OEF, to the Control Room, and to the Technical Support Center. The parameters of the system are based on Regulatory Guide 1.97. It utilizes color graphics, and state-of-the-art technology. It has reliable power supply, and is connected with our Class A meterological model to enable offsite dose projection in one of two modes.

Either you can estimate the dose at a particular time, or you can make predictions about what the dose will be and track the plume travel.

Our Alerting and Notification System is what we use to provide timely notification and warning of the resident and transient population of a radiological emergency at Grand Gulf. It meets the requirements of NUREG-654, Appendix 3.

Basically, the system is comprised of 33 electromechanical units; these are the large rotating sirens, that provide 100% coverage, siren coverage to the resident population out to 10 miles.

We have tone-activated receivers, approximately

50, which are used to enhance the system, augment it, and not as a replacement for it. In other words, we have 100% coverage by sirens. The tone-activated receivers are a plus to help out. They are provided to each school, hospital, nursing home, any place where people congregate, and we go out to a 12 mile radius with these.

ACTING CHAIRMAN BENDER: One of the advantages of being a low population area is that you can afford to do that.

DR. McCAY: Yes, sir; that's correct.

In general, the system is used to notify the populace to take one action, and that's to listen to the radio station.

Many times I've been to public meetings early on, and I think the word's about to be delivered to the people. They say, when the siren goes off I must evacuate. I'm trying to tell them that's not what you do; what you do is listen to the radio.

Now specifically we have arrangements with two different stations; WKYV-FM in Vicksburg and KNOE-AM in Monroe, to broadcast information. They have a telephone link from the local Civil Defense Office, and they put out information to the public, based on those recommendations.

The system is activated by tone encoders that are ;pcated at tje ;pca; sjeroff's offices, and the decoders can set off the tone-activated receivers or the sirens. The decision to activate rests with the local chief officials, such as the President of the Police Jury in Louisiana, or President of the Board of Supervisors in Mississippi.

We have a partial Emergency Planning Zone notification feature, where certain segments may be alerted, but not the whole 10 mile EPZ. It's being resolved right now; it should be completed in October, and we hope to have it tested and complete prior to fuel load. In fact, we will have that done.

FEMA, under contract to the Commission, evaluates this system.

The Corporate Emergency Center that I touched on earlier, located in the basement of the Electric Building, is the assembly point for augmentation staff at an alert emergency classification.

The CEC is directed by the Assistant Vice-President of Nuclear Production as the Offsite Emergency Coordinator. Mr. Stampley, whom you met earlier, is also in attendance. He is our other management representative.

It has the following functional elements: it provides communication with Grand Gulf and Offsite Agencies; we can perform radiological assessment in that facility; we have technical administrative support; and we do have informational services representatives for public relations purposes.

The CEC remains operational even after EOF is activated. We still provide for upper management representation, press releases, and communications.

The Emergency News Media Center is located in Chamberlain-Hunt Academany, which is in Port Gibson, a private school, and has ample space for 200 news media representatives; 40 telephone lines for visiting media; located about 6 miles upwind of Grand Gulf, away from the predominant direction.

It is a point of coordinated press releases. We feel this is most important, in view of the environment after Three Mile Island.

The vice-president of informational services, along with the Press Secretary from Louisiana and the Press Secretary, or their representatives, are to prepare unified coordinated releases, and speak with one voice.

I feel very strongly about this, and think this is very necessary.

ACTING CHAIRMAN BENDER: Has this been talked over with the people you've got listed up there?

DR. McKAY: Yes, sir, it has. We -- in all candor I have to tell you that some of the states are

are resisting this slightly, because they are more used to staying in their capitol to release news. But we are working on these people, and I think that we are making some progress.

But the situation today contends that the Press Secretary himself or herself, needs to be by the Governor's side. However, we have got some encouraging words about their representatives being sent, and talking by telephone to the Press Secretary.

ACTING CHAIRMAN BENDER: This is a good scheme, but realistically, you have an event like this, and you have an avalanche of reporters and what-not coming in who are not going to hang around that news center waiting for you to tell them something, and they would come in if you have a scheduled time, but they are going to be all over the place.

DR. McKAY: Yes, sir one --

ACTING CHAIRMAN BENDER: They are going to be out interviewing people out on the site and that sort of thing. What thought have you given to this?

DR. McKAY: Yes. We've given -- of course Mr. McCain can address the press better than I, but two things that I know of that we do have, provision for periodic press releases; we already have the big clock you know the hands point to the next press release. Also we have provisions for actually transporting some of these media to the site, if they ask for it. We have a bus type arrangement for that.

ACTING CHAIRMAN BENDER: All right.

DR. McKAY: And then it provides, of course, administrative support for visiting media, copy facilities and the like.

This summary slide shows you our Facility Status. You see the Facility on the left hand side here. Our Current Status, you will notice that they are for the most part operational. The only exceptions are the Alerting Notification System, which will be operational by fuel load; as I say, we should be finished installing that in the next few weeks. The EOF, the permanent EOF is being constructed; it's due to be finished by October of '82 in accordance with the NUREG-696 requirements.

ERFIS, the hardware installation, software development is in progress; it too will be due in October of '82.

ACTING CHAIRMAN BENDER: We needn't cover that part of it.

DR. McKAY: Sir?

ACTING CHAIRMAN BENDER: We needn't cover the scheduled part of it. We'll know about that from the Staff Report.

DR. McKAY: Okay, sir. Thank you.

Finally, I would like to cover the Emergency Plan Exercises, both historically and the future ones that are scheduled. I think you can tell at a glance that we've been involved in exercises.

And I have to tell you that it's been very gratifying to me personally, to see the amount of support that I've received from my upper management. They've been behind Emergency Planning from the day I hired on, and they have been fully involved in supporting an agressive exercise, both the Plant Staff and the Project Management.

We started out with Tabletop Exercises in Mississippi and Louisiana Tensas Parish; we did some communications drills; we did some walk-through exercises where we correct deficiencies right on the spot, somewhat the way we do in the military; and then we went into our All-Agency Exercises.

You will note that we only recently completed our second All-Agency Exercise. By this we mean all the States and Locals, as well as the Utility participators.

We have another exercise scheduled on the 6th of October, in which we may have limited participation on the part of the State and Locals. The reason for this, of course, is we spend quite a bit of State money every time we hold an exercise, and I was encouraged to hear one State indicate to me they thought they had most of their deficiencies ironed out. They didn't need full participation. I view that as an encouraging sign.

We have various specialized drills scheduled for October, and then of course our Federally-observed FEMA NRC All-Agency Exercise to be held on the 4th and 5th of November, with a public meeting being held shortly thereafter.

That concludes my remarks, unless you have some questions, sir.

ACTING CHAIRMAN BENDER: One or two points. This is a sparsely populated area, and also has a not very large law enforcement organization. Am I correct?

DR. McKAY: Yes, sir.

ACTING CHAIRMAN BENDER: Where does the supplemental help come from if you needed it?

DR. McKAY: Okay, the supplemental law enforcement is specific.

ACTING CHAIRMAN BENDER: Yes.

DR. McKAY: The law enforcement is used by merit of traffic control. We have arrangements with Mississippi Highway Safety Patrol. We don't have a State Police in Mississippi, but they would be the closest thing we have to that.

Mississippi Highway Safety Patrol, through contractual agreement with MP&L, dispatches people to help man the traffic control points.

In addition, we have the Port Gibson City Police and Auxiliary; they have a staff of about 20 volunteers that help out, and the Claiborne County Sheriff's Department has also an auxiliary force of Deputies to come out and help control traffic.

ACTING CHAIRMAN BENDER: Thank you, that will be enough for right now.

I would like, if possible, to try to get the discussion AC Power done by 4:00. Do you think you can try it?

MR. McGAUGHY: We can try it.

ACTING CHAIRMAN BENDER: We don't want a highly detailed discussion. We're interested in just a few things; generally, what you think the reliability of the system is, and secondly, what kind of contingency plans you have to deal with certain events of Power and Light when tornadoes came through.

Any time you go through in detail all the semantics, it won't mean very much. Mr. Ebersole would probably eat it up, but I would just like to hear it. He can get more of it after I leave.

MEMBER EBERSOLE: I give you a comment.

Going back to WASH-1400, although the AC power outage was not declared it was on a basis axis, these are the numbers they used there. There was a 100 chance that a two unit plant would experience a prolonged power outage,

sometime, during its 30 to 40 year life, That's the kind of odds that you don't like to see. The significance of a prolonged outage beyond an hour is severe.

So it leads to the question of how long, really, can you survive with a total AC power outage; what do you have to do; what's the critical parts of the Plant that needs attention if that occurs?

ACTING CHAIRMAN BENDER: I think Mr. Ebersole has pretty much expressed my interest. I want some points in how it works.

MR. McGAUGHY: Okay.

R. A. AMBROSINO

MR. AMBROSINO: Gentlemen, my name is Dick Ambrosino. I'm the Nuclear Support Manager at the Grand Gulf Nuclear Station.

I will be presenting Loss of AC Power and a Total Station Blackout. Per your request, I have set out a number of Sections, and this procedure will go over just some of the basic highlights of our equipment, with your permission.

During this presentation, we will be and we were to be talking about Onsite Transmission Facilities; Offsite AC Power Operation and Design; Operational and Reliability of DC Systems; Loss of all AC Power Transient. And in talking with that we are going to discuss the RCIC, Reactor Core Insulation Cooling System briefly, how that plays a part in this loss of Offsite Power; The ADS System in conjunction with its DC Systems; and then Station Blackout Effects on the Plant, and per request, a very brief statement on the Recirculation Pump Seals and the effect on Station Blackout, where loss of AC Power to support Cooling Water from CRV going to that.

This, again very quickly, is our present Transmission System. We come from a very gradual substation to the 500 KV Line; two __________ away from the Grand Gulf Nuclear Station. We take another 500 KV feeder from Franklin Sub, again to the Grand Gulf Station.

This crossed out line here is the section of the present 500 KV's high lines that will be taken out of service; and here is our third 500 KV line prior to Unit 2 operation.

We will have one from Baxter Wilson, one from Franklin, and one from Ray Braswell.

The dotted line you see here is 115 KV System, which also used to supply our VSF Switch Gear. You will note there that this is the only point between the Grand Gulf Nuclear Station and Port Gibson sub-station, where the 115 and 500 KV lines cross between those two points, and this point that is buried under ground.

The reason I'm going through some of this is it does commit to the reliability aspects of the System.

ACTING CHAIRMAN BENDER: Well, my time is expired and you just go ahead and use it.

MR. AMBROSINO: With the 500 KV Transmission System, each of the 500 KV lines are on its own right of way; they diverge as rapidly as possible out of the switchyard. That is part of what we talked about before to eliminate the effect a tornado would have on it, with its quick divergence.

The 500 KV System is part of the Middle South Grid System, which was enacted in 1969 -- in 1965, excuse me. At no time since that period have we been unable to serve loads. The Grid System serves about 10,000 megawatts at peak. The six year outage average is .73 per 100 miles of line; and the Middle South

Utilities Grid connects with Gulf States Utilities, TVA, Oklahoma Gas and Electric at 5 separate points, adding to the reliability.

The Transmission Design is for the National Safety Codes; the environment design of the 500 KV lines is, for example they are capable of supporting one-half inch of ice, 105 mile per hour winds, and the normal rating is 2,000 megawatts per line, and the short-time emergency rating is 2500 megawatts, and that is the outage governing the Grand Gulf Nuclear Station.

ACTING CHAIRMAN BENDER: As I understood it, when you had this last weather disturbance around here, the switchyard saw pretty severe wind damage.

MR. AMBROSINO: Yes, it did, sir.

ACTING CHAIRMAN BENDER: What were the wind velocities in that?

MR. AMBROSINO: I do not know that.

ACTING CHAIRMAN BENDER: Can you find out?

MR. McGAUGHY: The wind velocities were about 120 miles an hour.

ACTING CHAIRMAN BENDER: Thank you. Go ahead.

MR. AMBROSINO: This slide here denotes the load flow studies, which are conducted annually. We have the University Computer Corporation Facilities making an evaluation as to flow studies. We have taken integration of the results of this test computed to Middle South Utilities, and they determine and they determine the adequacy of VAR and actual loads, and they initiate whatever systems are needed to handle the changes of load flow and the capabilities of the system.

Some contingency listings that we have made, and I'll go over this very, very briefly, were for the 1982 period, which would be the commercial operation of Grand Gulf Unit 1. And then initially was the 1986 period, which was the contingencies for Unit 2, or the Unit 2 Unit Station at that time.

For all these various contingencies, such as the Baxter Wilson to Ray Braswell 500 KV line emergency outage, as postulated, no problems will deter them.

Only one area where we saw some diversion from that was the Baxter Wilson to Ray Braswell and Franklin to Ray Braswell 500 KV line emergency outage. At that point the results were no overloads; the Jackson area would have approximately 5% drop in voltage, but that presented no large problem.

The next area is in regard to our ability with a number of stability studies, which were completed. In the Stability Studies -- they were conducted by the General Electric Company in 1974, with regard to the results of the safety of our equipment. The results show that no equipment would be subject to transient overvoltage; no operating restrictions of over-voltage were denoted.

Some of those Stability Studies were as follows: In all conditions the results were stable. This last line right here would be a fault which would be the effect of a 500 KV line falling on top of a 115 KV line. In that case, again the results are stable.

You will notice that all the clearance data that was used was based on 6 cycles. In reality that would be 2 to 3 cycles; however, we took the worst case. That is at a minimum of 10 to 1 conservatism or better for those results.

The next item we'll talk about the GENS Switchyard itself.

MEMBER EBERSOLE: Pardon me just a minute. You took those lines on an individual basis. Are any of them can configureate and would be subject to say, a common violent storm, and you would get 2 of them?

I mean, that looks like a single phase criteria right there. Are they physically disposed so that maybe one tornado would tear down a couple of lines?

MR. AMBROSINO: The way they are disposed is on the description here. We had 4. The distances, for example, between these lines at the Natchez Electric Station; that is about 23 miles south of Grand Gulf; the Baxter Wilson Station is about 6 miles south of Vicksburg. So you have about a 60 mile distance between here. Because of that distance of probabilities, we do not see that complication.

MEMBER EBERSOLE: You will cover that in your probability estimate anyway, won't you? About 20 traversion or common point. Like that 500 KV switchyard.

MR. AMBROSINO: Okay. The switchyard incorporates a breaker and a half design. This allows for a clearance of normal **faults** under a system that allows for a maintenance of one section of the grid to be taken out of work while maintaining reliable power to the station; allowing a bus short circuits to be isolated easily with interruption of service.

The supply of these 500 KV breakers and 34.5 KV breakers, gets a supply to the batteries, which is the full power, from ESF lines, which we will be discussing later. And if you have two independent battery systems there to supply all control power to the breakers and other equipment.

This schematic diagram, that's where you are denoting that configuration. As we said before, we had people from Baxter Wilson, Franklin, Future from Ray

Braswell; the breaker and a half design which incorporates two breakers; there's a combination of sealing valves from ITE.

The peak for the station comes down from this bus, again we're coming down to reliability, a breakdown of 500 KV to 34.5 KV; load transference to ESF Transformer No. 11, which go to our ESF buses, down to Plant bus, a common bus - - - which is 13 hour bus and supply to our

This one was to balance the Plant loads. We won't talk about that at this time. Basically, though, you come up this bus to 7940 horse power, and this where you also come up this bus _____ KV to 9,000 horse power.

Low frequency on condensate pumps, condensate boosters, and so forth, and we come down to 14 AD and 13 AD bus.

ACTING CHAIRMAN BENDER: I have a question. Is this distribution peculiar to this Plant, or is it generally what's being done?

MR. AMBROSINO: I believe this is somewhat unique to this Plant, from my experience with other ones. However, looking at it, it does have many advantages as to cross-ventage that 13 R bus that we showed before the one that would cross and go this way toward it here. That one would supply alternate 6.9 KV or 4160 voltage and supply these valves and __________ buses also.

ACTING CHAIRMAN BENDER: Does Mississippi Power and Light prefer -- I believe it was my recollection they preferred --

MR. AMBROSINO: I believe it was Mississippi Power and Light prefers steam . It was discussed. Jim, is that correct?

MR. McGAUGHY: We'll let Mr. Stampley discuss that. He was acting as Design Manager.

MR. STAMPLEY: About the earlier design, as you stated, it is a composite effort. We had definite input into it. They had some of the basic items; we agreed with it.

ACTING CHAIRMAN BENDER: Thank you.

MR. AMBROSINO: This is a schematic diagram of the ESF Distribution System. The criticality of ECCS loads and safeguard system loads .

You will note the 11R bus again, and 34.5 KV comes through a dual secondary transformer, and will feed these 3 emergency buses; 15AA, 16 AB and 17 AC.

We are also getting supplied from the 115 KV line from Port Gibson that we discussed, also from Unit 2 bus through ESF transformer No. 21.

Each of these buses does have its diesel generator system associated with it; 11, 12 and 13, permits this.

Basic loads are, as we've been talking about most of the day, a RCIC RHR CRD system; that is a little unique for this plant versus others. To see about service water; the CRD systems will not automatically **commit load change** sequence, and will take care of the RCIC RHR and standby service water systems. You see in here, CRD is manual. HPCS is unique to its own bus.

ESF divisions are electrically separated; they provide power to mitigate the effects of an accident, or eliminate, or limit the release of radiation

These emergency buses also provide water to the ESF ECCS room coolers and standby use of generators, which receive jacket? cooling from ESF?

Division I, as you walked through our Plant yesterday you probably see many blue, yellow, and green lighters. Division I is yellow; Division II is blue; and Division III is green, denoting them for separation.

During a LOCA condition under this, under this **divisional** concept, **to satisfy the** major break, **resurge suction pumps shear** , what you need is Division I, which is LPCS and LPCA, and HPCS and APS.

Division II is both RHR's B's and C's, and HPCS and ABS?; and Division III, or the third method for going in would be Division I, Division II.

ACTING CHAIRMAN BENDER: I hope the Reporter knows all these terms.

(Laughter, with several people talking at once).

REPORTER: I'm totally ignorant.

MR. AMBROSINO: You know, I apologize for the speed, but I'm trying to get through with this.

REPORTER: As long as you've got it written down somewhere.

(Laughter)

MR. AMBROSINO: The next item to discuss, as we saw in the ESF buses, would be Diesel Generators.

Diesel Generators, as we discussed, are divisional; their rating is 7700 KW for the Division I; and the Division II Generators are 3300 with Division III's.

They're connected with with Load Checking Sequences System, only on Division I and II only. This system is set for Load checking on various events, and sequencing on equipment. Basically, what you have 3 methodologies of doing it.

You have a 70% plus 100 voltage condition, plus 5 seconds will cause a block of all testing; will keep you from closing any other breakers; will start the diesel; load check the ESF loads; load check the other breakers; and will search for power at 90%. If it's available, that power will close the diesel generator.

The other two are 80% plus undervoltage? plus 5 seconds plus the current LOCA. We will go through a similar sequence except for -- they will check valve loads also, and tie into the diesel generators if we do not find a 90% power source.

And the last case is 90% plus undervoltage plus 9 seconds;at a that point it will just shed ESF loads, and we will again put the diesel generators on.

MEMBER EBERSOLE: Where it says Highly Reliable up there - Solid State System; I can't help but mention that you've bought an environmental problem if you run into solid state, it did on two programs. It was was a shutdown due to engineering. . It's true they're reliabile, but they require new and very much improved environmental control, once you go solid state. I presume you noticed that in your design --

MR. AMBROSINO: We have looked at that, and these low shedding sequence systems are in our Control Building. on a one on one elevation; a couple of elevations below the Control Room, and it is environmentally controlled, although your point is very well taken.

ACTING CHAIRMAN BENDER: Excuse me. As long as we're on the point of reliability, have you tried to do any reliability assessment of such low shedding How many times out of how many times will it work?

MR. AMBROSINO: We have not, in fact -- let me correct that. We have not at this time done any reliability, actual testing reliability system, because for our pre-op startup phase at the Plant we are getting to the point now where we've gotten our diesel generators operative, and we're going through many tests throughout the pre-op program.

ACTING CHAIRMAN BENDER: Well, you'll get it operational; I'm not concerned about that.

My question is, having gotten it operational, how many times per demand will it malfunction?

MR. AMBROSINO: From actual -- actual data?

ACTING CHAIRMAN BENDER: From any kind of data. I don't know that you've got any actual data.

MR. AMBROSINO: We haven't done any actual data to date, and I don't, I do not know --

ACTING CHAIRMAN BENDER: Well, you might want to think about that question, because I think historically that's been one of the vulnerabilities in the system. We've talked about loss of AC power; that's part of the reason why we've talked about it.

MR. AMBROSINO: Yes, sir.

ACTING CHAIRMAN BENDER: Go ahead, sir.

MR. AMBROSINO: Again, your point's well taken and we will look into it.

One comment I do have to make, at the present time we are looking to design of this low checking sequence equipment point, 90% power source that would be available to our client, and that design change might possibly occur, would eliminate that and just close in on the diesel generators.

The best time under those conditions the diesel generator would close in to the bus would be approximately 2.5 seconds.

The diesel generators, as they have been in the majority of the BWR's, will start and come up to where bhey synchronize, and pick up the first load within 10 seconds.

We have looked into the design of the bus itself and critical loads; we've compared them to REG Guide 1.9 as far as the capability of large voltage drops affecting the acceleration, and all tests there have been satisfactory.

The load change sequence again are very typical of other BWR's, and by the time the diesel generator comes on and synchronizes with Division I, it will pick up the low pressure core spray system, immediately; 5 seconds later LPCA; then 15 seconds -- I'm sorry, 10 seconds later, standby search water pumps --

ACTING CHAIRMAN BENDER: I don't think we have to go on through that part of it; I'm familiar with that.

MR. AMBROSINO: The other diesel generator was the HPCS diesel generator. This is much smaller. The same tests were done for this; independence; low change sequencing is not applicable; and the only major difference on this diesel from the others, except for -- well, there's many, many diesel differences. This diesel has two diesels on one generator, but it does not, has no provision for automatic paralleling. It only has manual paralleling ability.

ACTING CHAIRMAN BENDER: I do not like your -- how vulnerable is the AC power system --

MR. AMBROSINO: Pardon me?

ACTING CHAIRMAN BENDER: How vulnerable is the AC power system if the DC power is blown?

MR. AMBROSINO: If we lose all DC power? DC power is patroled circuitry toward the breakers, so just looking at this aspect you are affecting reliability.

ACTING CHAIRMAN BENDER: Have you given thought to the vulnerability of the DC system as it affects AC power?

MR. AMBROSINO: We have looked at the DC

system. That's what we're coming to next.

The reliability of the DC system, it would be ver., very difficult to lose that, the way it is designed, and hopefully we can show you that in the next set of slides.

ACTING CHAIRMAN BENDER: All right, I must have missed that. I didn't anticipate that you were coming to that.

MR. AMBROSINO: Now, we went through the whole thing, starting with the **outside** , we went through the **inside** , and all the way to shutdown.

On the GGNS Battery Systems, the BOP System Batteries were talked about. They have AC battery chargers; they separate batteries; multi-purpose.

The major one for concern in reliability, as we discussed with the DC power, would be the ESF battery systems. Those are in the 11 A, B and C, as we will see in a minute.

They are Class 1 E, Triple E 308, seismic category 1. maintain physical separation criteria, maintain single failure criteria. The ESF battery capabilities we'll be looking at. However, basically, their capabilities, they're designed for 4 hours continuous operation, with 3 intermittent load starts.

Basically, that's our battery system, A through J, and which ones are divisional batteries for ESF, we talked about here; all 125 volt DC. Balance of Plant batteries, turbine auxiliaries, radial well, and so on and so forth.

One comment is our converter system to kilometer DV batteries, and they do supply **instrumentation to site control.**

One of the major things that we found in the design of the Plant was enhanced and corrected, or will be shortly, is our RC and IS system for out of control information. It is not connected to an interval level convertor source, and a loss of offsite power. We have no indication on the video screens of CRT's. That has now been corrected, and we should have sufficient instrumentation for pressure level temperature, 3 critical planners. It does come out of supply work; advisory operations people, **and is required** to safely shutdown **the unit** ; to safely shutdown.

Okay. This is --

ACTING CHAIRMAN BENDER: Could I suggest we just skip this, and I would like to just get to the bottom line, because I'm going to have to leave.

MR. AMBROSINO: Okay. The bottom line is we have two scenarios; rather, we went through this data, and the first scenario was __________ Section Fifteen , and that is the loss of all three connections; and from that point we jumped to the scenario on station blackout. And now, hopefully we have shown you some of the reliability of the system.

Is there anything you can go over the RCIC system, how that would interface with these --

ACTING CHAIRMAN BENDER: No, I don't need to have that. I just want to get a feeling of how long you would be done, and what the action might be to get back in service if you were to interrupt all the AC power and have a station blackout.

MR. AMBROSINO: Okay. There is a number of pieces of data that we haven't looked at, into, to satisfy that.

The scenario here on Loss of Grid you get which leads into that. Very briefly, you lose your Grid, the turbine control valves fast close; recirc pumps trip; fast control valves closure gives you the reactor scram; bypass valves open; safety relief valves open; you finally get to a point your MSIV's close due to a loss of power to keep the vents open; feedwater pumps trip as we talked about before in our emergency procedures, so we no longer have that; and in this case we have picked up diesel generators and the time sequence is about 30 seconds; HP system and time RCIC comes on.

The scenario for total station black out is very similar.

REPORTER: Just a minute.

(Tape was changed).

- - -

ACTING CHAIRMAN BENDER: Just go ahead. We were ~~ting for the Reporter.

MR. AMBROSINO: All right, a total loss of offsite and onsite AC power, or station blackout. We took initiating event. We had simultaneous loss of both 500 KV lines and 115 KVfeeder, Division 1 and Division 2 and Division 3, diesel generators were inoperative.

We have the same scenario down to this point; we began reactor scram; MSIv close, safety relief valves pop under high pressure; feed pump turbines trip again; RCIC auto initiation at level 2; and all the containment isolation valves which are air operated will fail to close

The relief valve that we are relying on in this scenario is RCIC, and the use of ADS valves. What the operator would do in that case, and I am coming to that number very shortly, is that the control level with RCIC; he would actuate ADS; manually actuate the ADS valves evenly around the pool to prevent localized heating of the pool and also to maintain integrity of the valve systems; isolate unnecessary DC loads; maintain reactive pressure and level through use of the Control Room and local indications; make preparations to restore AC when it comes back on. We estimate about 2 hours time.

Now, if you look at some of these systems, for example, the accumulators. The SRV's are good for 100 per accumulator, per Division. So we had that.

If you look at battery capabilities, the studies that we've made, we got through our own engineers and through Bechtel, show that we can maintain battery power for 17 hours.

Temperatures in the suppression pool, in order to mitigate that we use a number of systems; like suppression pool makeup for additional heat removal; we could dump approximately 50,000 gallons of water out of fuel pool without affecting that, and get water from our play water system inside.

But 2 hours is what you're looking at

ACTING CHAIRMAN BENDER: Have you got a tabulated list of those actions somewhere that you can provide to us? I don't need it right now. But I think sometime we would want to have --

MR. AMBROSINO: You mean a tabulated list, such as the air in the accumulators, the batteries --

ACTING CHAIRMAN BENDER: Things that need to be done through the time that the station blackout occurs until you recover power, and some indication of how long it takes to do these things.

MR. AMBROSINO: We could do that for you. We have, as you can see, a great amount of data already accumulated and tabulated for ourselves.

We also have looked into the ability of getting standby power supply. We know where we would connect it; we would connect it to the output supply of the breakers at the bus there; it would be easiest.

We've called people on the availability of two or three megawatts generators, have located that, and we've gotten approximate times.

ACTING CHAIRMAN BENDER: Well, Mr. Ebersole may have a number of other questions to ask, and I apologize for having to leave. I would like to express my personal appreciation for the information we've got.

I think that the Regulatory Staff will ask for a little additional information concerning the Staff. We did not actually get a statement concerning how many people were on board now, as opposed to how many were needed, and whether there were any critical skills that were missing, and we really do need to have them.

I thank you very much.

(Member Bender withdrew from the room)

ACTING CHAIRMAN EBERSOLE: Could I ask you a question about the RCIC System? How do you manage the temperature problem and the process of temperature control in the absence of AC power?

MR. AMBROSINO: We, first of all, this is the best event that we've made at Plant Staff. There's not a part of the design for Plant, it's just something we do. As you mentioned before, as we've mentioned before, you look at these kinds of things, and not what your problem comes from before.

In the RCIC room, which is located on 93 elevation, the reactor sater cleanup pumps we were talking about before are above them by 2 elevations.

The common blowout shaft that Ken mentioned before cleanup is used in those RCIC rooms. Now, if you look there's a 90 foot stack there, and one of the possible items -- and one other item before I get to that is your blowoff panels, are designed for 1 psi differential.

One method you might use and, again, it has not been proven; has not been modeled by computer as a design in the Plant, is to go into a natural circulation condition. Even though many people are concerned about natural circulation with air, the density concerns, normally the turbulence effects and thermal effects on stack that long, are not detrimental in natural circulations.

ACTING CHAIRMAN EBERSOLE: Well, they could be easily verified, couldn't it; or could it?

MR. AMBROSINO: Well, that's one of the things we are coming to at the end of this presentation.

Something we are planning to do. Well, we weren't planning to do that, but we can possibly demonstrate; I need to talk to my manager.

But anyway what we proposed there was natural circulation on both sides of that room, because of the blowout shafts, and maintaining the cooling capability below 212 degrees, which was -- GE has limitation of 6 hours under controlled circuitry, and then the 150 degrees for 6 after after that also.

The other part that you need, along with the electronics cooling, is some things like possibly moving control signature outside the room might be there; I don't know the actual feasibility.

The other thing that you need to be concerned with, and that's suppression pool temperature. And as you mentioned earlier, the dumping of the pools, the upper containment, partly set fuel pool, play waters, and so on and so forth --

ACTING CHAIRMAN EBERSOLE: Those DC valves are good?

MR. AMBROSINO: The suppression pool valves?

ACTING CHAIRMAN EBERSOLE: The dumping of water.

MR. AMBROSINO: Those valves are AC valves.

ACTING CHAIRMAN EBERSOLE: How are you going to do it, drain them?

ACTING CHAIRMAN EBERSOLE: Well, there's two ways of doing it; we thought about that. Those are the two valves that Larry Dale talked to you about, the F001 and F002 valves. They're butterflies; the dumpting time of both pools, suppression pool and both lines, about 3½ seconds -- I mean 3½ minutes.

One way is to send an operator in to open them; the second way is to connect the small portable gneerator to the bus itself, where those valves can open that way.

Based on the number of airborne products that'll be in the containment from the blowdown, you've got your ______, elons, scriptons, depending on the fuel you've got.

With that condition, you probably look at the cooling. You would be connecting a temporary small power source, the air cooling, opening it and keep the personnel out.

However, the possibility of using self-contained breathing apparatus is obviously available.

As you can tell, it's something that we have thought about, and it is basically in the thinking stages right now and planning for any contingencies that could

- - -

occur.

The last item I would like to talk about before we go into the test that we had mentioned, was the effect on recirculation pump seals, the loss of the seals, which used to be a part of the BWR's and modification on the older Plants, coming out of the CRG system that had full control belts.

We've looked at normal supply of cooling, and we've got in difficulty with the data at that time, which I am sure you are all aware.

The number of 70 gallons per minute was discussed, leakage, and I believe that was based on total seal failure where your breakdown pushers below the lower seal, were to maintain that 70 ga ons per minute at a minimum.

There has been some additional data, it's preliminary. And that data was based on St. Lucy, where during some hot shutdown testing, they seemed to feel that the leakage was much less than the 70 gallons per minute, as discussed. However, there was nothing definitive at this time.

I do know from some of that temporary data that GE is now looking at it, and it was in a letter of September 19th going to GE.

The last item that I want to mention was we did, as you can see, look into the possibilities of the total station blackout, its effects; what critical systems it affected, after looking at all of our AC and DC capabilities in the Plant.

And what we agreed to do is a test in the Plant at the first refueling outage, and that test will simulate loss of offsite power. That letter was sent to the NRC on August 18, 1981, and at that time it did say that Mississippi Power and Light Company would perform a simulated loss of power test at Grand Gulf Nuclear Station at the end of the first refueling cycle.

The purpose of that test is to collect data; to see what the actual events were; to see what is unforeseen. We have also shown you many of the things that we have looked into.

However, during that test and to maintain, I believe, an adequate conservatism for manned use in running the plant, the nuclear power plant.

The manual initiation portion of RCIC, I mean of HPCS will not be altered, so your then theoretical problem is that that system is available.

Any modification performance test which is in violation of technical specifications will have to be evaluated, discussed, and agreed upon with the NRC.

There are certain critical parameters which

which will assail, that we will leave in operation during that period of time for gaining this knowledge that is needed in the area of reactor safety.

Also one of the benefits that we plan to derive by doing this test at the end of the fuel outage, the first refuel outage; you know, prior to refueling that outage, is we will already have our simulator, as Ken described earlier, on site, and that will, along with the experience, which is a very important part of doing anything, really, in connection with the operator, will be getting off from actually running the plant from the shift location and training time in the simulator, will become much more receptive to the intricacies of this BWR.

Many BWR's that I have been to in the last 11 years. They are all basically the same, but each one is a little unique, based on its core size, different systems, so we will not only get very trained by this, but will also gain by that experience.

ACTING CHAIRMAN EBERSOLE: In estimating the heat up of the total loss of AC power, did you accommodate the earlier matters we spoke about the hot dry temperature containment, since the containment system will be now disabled. You ought to get it to blow down, which will increase the ____________ water - - (Laughter) - - the suppression pool temperature.

MR. AMBROSINO: We looked at the temperatures, and here again this is rough calculations by Plant Staff Engineering Group, which I will openly admit does not have the high powered requirements of the design group nor the access. I think it is more of -- to look into this would be more of good intent. This __________ condition would occur.

We limited the temperature of the suppression pool to roughly 185 degrees. We did not go above that point with that water added. If you look at the design criteria for the drywell, the temperature is 330 degrees.

And the basis, one of the basis for the cooling systems in there is the influx, where there would be wiring and sub-piling underneath the vessel.

And I do not remember the actual temperature we got to in the drywell. Again, we do not have the drywell coolers because their primary sources of supply is plant service water, that or standby service water.

However, I do believe that we were at the guidelines. I do not remember anything adverse temperature-wise above the 130 degrees. In fact I think it was much lower than that.

ACTING CHAIRMAN EBERSOLE: Have you estimated the probability of getting into this state, complete loss of AC power?

MR. AMBROSINO: I don't know if we've actually done any probability studies. However, one comment I would like to make is I believe we made the -- I didn't see it necessary, and we still w ill be, you know, looking into it.

However, the probability of losing all the DC power, all the AC power --

ACTING CHAIRMAN EBERSOLE: Well, not all the AC --

MR. AMBROSINO: The generators --

ACTING CHAIRMAN EBERSOLE: The DC power, I will eliminate that --

(Several people talking at once)

MR. AMBROSINO: Well, we'll eliminate that; just look at the possibility of losing those two 500 KV lines right now, because of their location at the scene, plus the 31 from Unit 2.

The probability of losing the diesel generators, which have a normal surveilance program; they're maintained in the most reliable condition we can possibly do. T .s is not only for surveilance, but PM's . In this plant we take, just viably take a rule that our plant maintenance -- I'm sorry, preventive maintenance program, comes to something like 4000 procedures altogether.

So based on all the things we've done for conservatism, maintenance of our plant, diversity of supply, in my opinion the chances are very, very low.

However --

ACTING CHAIRMAN EBERSOLE: It might be interesting for you to put it interesting to put it in **a numerical** form, however; you might be surprised.

As I mentioned, the WASH-1400 Report was not too good in this area. As I said, it **impeded** in the Plant which of course multiplies by a factor of 2, with _____ of 100, one chance in 100, **over a 40 year life.** So you stretch that out a matter of 40 years. Stretch out your **installation of** units; that's really a high probability and you want to be prepared for it, which evidently you are.

MR. AMBROSINO: So you are asking that we make **a study to determine probabilities**?

ACTING CHAIRMAN EBERSOLE: In essence there's a justification for whatever you do, what you have done. You might be interested yourselves.

I'd like to go back for a moment to the DC systems. Were you on saturation charge. Are your DC loads capable of taking the high voltage and remain connected while you're on saturation charge?

MR. AMBROSINO: Normally what we do it -- well, let me hit a couple of points to get to that.

First of all, we mentioned a 4 hour capability intermittent, two times. The battery eight hour charge are based on batteries A and B are much larger ones, 20 to 30 amps per 8 hours; something like 20-60 for one minute.

ACTING CHAIRMAN EBERSOLE: You understand what I'm saying?

MR. AMBROSINO: I guess -- I don't --

ACTING CHAIRMAN EBERSOLE: Well, let me -- some of the older plants have to disconnect the connected loads in order to get the saturation voltage when they go to a new policy of charging?

MR. AMBROSINO: Yes.

ACTING CHAIRMAN EBERSOLE: And that is not a nice thing to do. We would rather have the design loads capable of taking that high voltage for the interval that you are charging. It is not very good practice to disconnect the load from the battery for the purpose of equalizing charge.

Do you follow me?

MR. AMBROSINO: I follow you now. One thing that we've done -- I don't know about how to answer that question exactly. One thing is we are getting permission for the low testing -- Okay; what we're talking about --

ACTING CHAIRMAN EBERSOLE: Why don't you at some future time, you can straighten that matter out. We would like to hear you say that you do not have to disconnect your critical loads from the battery in order to equalize the charge.

MR. McCOY: Ken McCoy here. We do have the capability of doing an equalizing charge without having to disconnect.

ACTING CHAIRMAN EBERSOLE: You know that already? Thank you.

MR. AMBROSINO: Are there any other questions?

ACTING CHAIRMAN EBERSOLE: I think that ought to close the AC DC questions. We can go to the next topic.

MR. McGAUGHY: Okay. What would you like to do next.

REPORTER: Let's take one more break, as long as we've come to a stopping point.

(There was a short recess).

ACTING CHAIRMAN EBERSOLE: The meeting will come to order.

J. G. CESARE

MR. CESARE: My name is John Cesare, and

I'm Supervisor of Licensing with MP&L, Safety and Licensing Section.

We've been asked to addressed the subject of the most limiting non-seismic pipe failure in the Grand Gulf design, and in this case it is the circulation water system. The circulating water system removes excess heat from the main condenser, via the cooling tower, one per Unit.

Very briefly, we postulate before a pipe break, an explansion joint failure; or a butterfly valve failure, the pumps are not assumed to shutoff, nor are we taking credit for the pump discharge valves to shut.

The design provisions, to mitigate the consequences of this failure, include primarily the waterproofing of the Unit 1 auxiliary building, up to an elevation of 114. This was one of the steps we took when we discovered that in our Engineering Review Team, a walk down that we had some essential equipment in a flooded area.

One additional item is the for spaces exposed to flood water, the lowest elevation at which equipment essential to achieving and maintaining a cold shutdown is elevation 110, and that is in the control building.

Alarms indications, the expansion joints have a leak detection alarm now seated in the Control

Room, the Sump level alarm in the condensor room has an alarm enunciated in the Control Room; the cooling tower basin water level has instrumentation, and a low level there, alarm indicating to the operator that he has an inventory problem.

Over the life of the plant, we have two bounding situations that have evaluated with respect to failures in the circulating water system.

I would like to emphasize this one; this is characteristic of the Unit 1 operation, with Unit 2 under construction, without the circulating water system filled. In this case, as we are presently we have a security wall that separates the Unit 1 and Unit 2 portions portions of the turbine building.

In this case, the worst case, we assume that the security wall does not fail, and thus the water inventory is concentrated on the Unit 1 side, thus gives the worst flood level.

Total water inventory is 10.9 million gallons, that is the contributions from the available water in the Unit 1 circulating water system. The flood level in the affected spaces rises to an elevation of 108 feet.

Affected spaces are the Control Building, Unit 1 turbine building, Unit 1 and 2 Radwaste pipe tunnels, and the radwaste building.

Our evaluation is that the flood level does not reach essential equipment. It is within 2 feet of the essential equipment in the Control Building; it is within 6 feet of overflowing watertight integrity that we have established in the Unit 1 auxiliary building.

That's the interface between the turbine building and the auxiliary building.

ACTING CHAIRMAN EBERSOLE: The 2 feet and the 6 feet represent some percentage of the total flooding height. Is it a pretty sharp pencil calculation? Are you sure the water inventory at that level of accuracy?

Your 2 feet is getting close.

MR. CESARE: Yeah. Well, we feel that the -- first of all, we feel that the assumptions that we made are extremely conservative, and we have, we feel that we're confident in the flooding volume that we used.

ACTING CHAIRMAN EBERSOLE: You are confident of the fact that the building is watertight filled with equipment?

MR. CESARE: Yes, we have used and I believe have affected a 4 stage that takes in account displacements like floors and other equipment.

ACTING CHAIRMAN EBERSOLE: Is this water from the sump at the bottom of the cooling towers?

MR. CESARE: Yes. In the cooling tower basin and in the pump house, anywhere that the water can come from up to a certain point. I think there's 11.4 total in the system, but that's not all that will get into the turbine building.

ACTING CHAIRMAN EBERSOLE: I guess that's the largest model for water **flooding.**

Do you have any critical water systems which demand constant flow at all times, which are also subject to breaks; yet you must keep pumping.

Do you have any **expression as** to how you might be subject to pumping from critical water systems.

MR. CESARE: Are you talking about an ECCS System?

ACTING CHAIRMAN EBERSOLE: No, I'm talking about the large cooling water systems that have large volumes available to them.

MR. CESARE: Well, the Plant surface water system provides makeup from the radial wells to the circulating water system. This is the largest flow rate system, circulating water system; 10 foot diameter pipes coming into the turbine building.

We have included the the Plant Service Water System in our flooding evaluations. Wherever Plant service water goes, including inside containment, and it does not provide in those cases of challenge or safe shutdown.

ACTING CHAIRMAN EBERSOLE: Did you have to deliberately provide drains for hypothesized breaks in service water piping? Are you sure that you didn't throw a gallery or a small space.

After all, the danger of flooding is not entirely disproportional to the amount of water, it's also proportional to the confinement that you're going to dump it into.

MR. CESARE: Agreed. One of the the criteria that's included in our systems is interaction walk down, which consists of 10-inch pipe width, spraying. So we would lookspace by space to see where the safety related equipment is, looking to what possible affects the water-- where can the water come from and what is its path? It would include a communication through sumps and also through spraying.

ACTING CHAIRMAN EBERSOLE: Would it include communication through hatchways, which might be critical equipment?

MR. CESARE: Yes. As a matter of fact, the circulating water system is one of its pathways.

Is that what you want?

I think very quickly that we can say that

Unit 2 is -- Unit 1, Unit 2 operation, is a different scenario, and we have something to look at in that case.

Do you have any other questions?

ACTING CHAIRMAN EBERSOLE: I have no more questions on flooding.

MR. McGAUGHY: Thank you very much. I would like to now to GC 19.

T. H. CLONINGER

MR. CLONINGER: My name is Ted Cloninger. I'm manager of Project Engineering for MP&L. I'll run through this quickly; it's a relatively short presentation.

As I am sure you are well aware, GC 19 requires that you have the capability for equipment at appropriate locations outside the Control Room for prompt shutdown, as well as for cold shutdown through suitable procedures.

Grand Gulf provides equipment instrumentation to be in full conpliance with GC 19 to achieve hot shutdown, maintain safe condition during hot shutdown, and eventually bring the plant to a safe cold shutdown situation.

I think the upcoming slides are probably the most important point of the Grand Gulf design. We do employ two remote shutdown panels. We have one panel for ESF Division, and a totally separate panel for ESF

Division 2. These panels are located in adjacent rooms in the Control Building. Panels and associated cables are separated in accordance with the NRC separation criteria.

This is a very rough schematic layout of the Division 1 and Division 2 shutdown panels. As you can see, they are separated for fire protection reasons; a 3 hour fire barrier between them, with a 3 hour sliding fire door that is activated either by fusible or a signal from the smoke detector.

The Control displayed on the remote shutdown panels are farther. On the Division 1 panel we have the RCIC, cooling isolation control system, cooling system, RHR train A, semi service water train A, 6 safety relief valves, and CRD Pump A.

In Division 2 we have RHR pump B; we have our service water pump B, 6 SRV's, and I will point out that these are the same 6 SRV's, but the controls are to the redundant divisional solenoids on the plate relief valve, CRD pump B.

In addition to those controls, we have display instrumentation to allow interpretation of reactor pressure vessel level, reactive pressure vessel pressure, suppression pool level, and suppression pool temperature.

I would like to point out just briefly the egress on the Control Room. There are 2 stairwells that gain access, vertical access within the Control Building, one on either side of the Control Room. The operators could exit from either one of these stairwell points.

This is a rough isometric that shows the Control Room elevation. I want to point out the potential system of breaker cabinets above and below in the upper and lower cable spray room. I'll discuss the reasons for pointing those out in just a few minutes.

And then down one level, elevation down in the ESF switchgear room are where the remote shutdown panels are located. The operator would following the reason to have to evacuate the Control Room would egress down these stairwells or the other stairwells to get to the remote shutdown panel.

Hot shutdown from outside the Control Room is achieved by on realization that the Control Room must be evacuated due to toxic gas, smoke or other reasons. The operator would scram the reactor and insure that he has indications that all rods are in. If he could not scram the reactor prior to egressing from the Control Room, he could up and pull breakers. He would have to pull at least one breaker in each RPS cabinet in the upper and lower cable spraying room.

Once that is done, he takes control at the remote shutdown panels. The plant, I want to emphasize the plant at that point is still on automatic mode, and should be in a safe operating condition.

However, he could postulate the loss of AC power, and the operator would insure that the standby diesels have auto start, or if necessary to start them locally in the diesel generator building.

At that point in time -- it's not on the slide, but it could be, the main steam isolation valves could still be open, and you could still be on bypass closure condensor. However, in the design scenario, we are assuming that the **main steam isolation valves are closed.** SRV's are either operating automatically, or the operator can take manual control of the SRV's to maintain pressure.

The RCIC systems can either be manually started or started automatically to maintain reactive pressure vessel level.

RHR is used in suppression pool cooling as a mode in the heat sink, to remove decay heat.

The operator can obtain cold shutdown outside the Control Room by manual operation of the SRV's to reduce the reactor pressure vessel to approximately 50 to 100 psi, at which point the steam flows to the RCIC turbine; it is stopped. RHR is then operated in the classical shutdown cooling mode to remove decay heat.

ACTING CHAIRMAN EBERSOLE: Does he have valve controls to do that?

MR. CLONINGER: Escuse me?

ACTING CHAIRMAN EBERSOLE: Does he have valve controls?

MR. CLONINGER: Yes, sir.

ACTING CHAIRMAN EBERSOLE: Thank you.

MR. CLONINGER: We could assume a loss of AC power, too, for any reason. A loss of one of the remote, redundant remote shutdown panel.

With this scenario, we will assume that it is Division 1 that has the RCIC Controls on it.

Again, we assume that the operator either scrams the reactor from the Control Room, or by pulling the RPS breakers. The power to the other Division is restored.

Again, he uses manual operation of SRV's to reduce reactive vessel pressure; long term cooling is maintained by RHR in alternate shutdown cooling mode.

That basically -- I've got a couple of other slides about fire protection, but basically that's a description of our remote shutdown capability.

I think the important points are that we are, like more of the current vintage plants, in that we have redundant remote shutdown panels. One other point that I think is important is that those panels are configured from a human factor standpoint, exactly like a control panel, so that when the operator takes control, that he doesn't have to scratch his head and look at different things.

ACTING CHAIRMAN EBERSOLE: One of the reasons for raising this question was a point in the interpretation of GDC 19 amounted in the long run that the control room was not occupyable because of some steam in it. But there was virtually no damage except for a single channel **tear up in the control room.**

That was displaced by the theory, which I think **may be grounds for intense review, because there might** be a chance that the control room would burn out completely, and it led to the issue of whether it was valid and reasonable to provide extension wiring to the terminal that's in the control room, to the distant remote shutdown panel.

Will you comment on how you get your information on these shutdown panels, whether you do or do not derive it from terminal **voids** in the control room, or whether you go to a primary information source.

MR. CLONINGER: Currently as far as the design, we do make the design based assumption that the disabled vent in the control room does not render the controls displays in the control room inoperable.

We do not assume a design basis of exposure fire in the control room result in odd shorts. We have, if you will notice in the SER, although we do take exception and feel like that an exposure fire in the control room is **logic** from a design basis of critical event.

We have permitted by the **milestone of returning power to the _______ lines,** to install a transfer switch which will insure electrical isolation from the terminal boards in the control room.

ACTING CHAIRMAN EBERSOLE: Well, how do you derive your source of level information. Your transfer switches don't provide you with new valid signal sources, which for such information's temperature .

MR. CLONINGER: Well, with those signals, we would go either into termination cabinets or cabinets outside the control room boundary, to pull off signals and isolate those signals into the remote shutdown panel.

ACTING CHAIRMAN EBERSOLE: Well, for the record right now, it's fair to say that you're not prepared for a control room burnout. Is that fair to say?

MR. CLONINGER: For the record today, we are not prepared for a complete exposure fire.

ACTING CHAIRMAN EBERSOLE: In the control room.

MR. CLONINGER: In the control room.

ACTING CHAIRMAN EBERSOLE: You do have, though, in the remote spraying rooms?

MR. CLONINGER: Yes, sir.

ACTING CHAIRMAN EBERSOLE: To --- rate the loss of heat of those. Is it not true that your control board is largely wired with polyethylene (ph) wiring, which represents a distinctive fire source?

MR. CLONINGER: I should be able to answer that. Let me -- I can get an answer that satisfies; the answer -- I'm sure the answer is no.

ACTING CHAIRMAN EBERSOLE: Perhaps when we get together sometime again, perhaps you can give us your estimate of whether or not there can be an exposure fire that would fully extend to encroach damage beyond single channel damage in the control room.

MR. CLONINGER: We would like to point out that we do have a fire suppression system in the floor section race lanes in the control room. We feel like, and the argument that we maintain is probably the biggest source, particular source for an exposure fire. Now, an exposure fire would be transient combustibles, and that's been our basis of event. But we will look into that at the next opportunity, and be prepared to discuss that at the next meeting.

ACTING CHAIRMAN EBERSOLE: I make a comment that you needn't be discouraged by that people who say that such a design is impossible, because it isn't. You can transfer switches where you need them and derive new sources where you need information. There's not that much money in it, considering the enormous investment.

MR. CLONINGER: I concur with you, but we do have transfer switches on several of those valves that you asked me about. We have maintained contact position in the control room, so that the valves that maintain contact, we won't transfer control of the switch. He may not have had time to return it to a neutral position.

But we are looking into the transfer system.

ACTING CHAIRMAN EBERSOLE: Well, then I guess here at a later time, what you intend to do to further refine this system.

MR. CLONINGER: Yes, sir.

MR. McGAUGHY: For the record, the wiring in the control room handles all fire retardants wiring.

ACTING CHAIRMAN EBERSOLE: All right, the next topic then is your choise. We have Environmental Qualification.

T. M. JOHNSON

MR. JOHNSON: My name is McKinley Johnson, Project Engineer, Grand Gulf Nuclear Station.

The topic I would like to discuss today, and I'll try to keep it brief, maybe 10 minutes; 15 minutes; is Equipment Qualification. In particular, the qualification on Class 1 Electrical equipment to the requirements of NUREG 0588.

REPORTER: Just a minute, sir. Would you talk into the microphone, please? I don't believe I'm picking you up very well.

MR. JOHNSON: The items I would like to discuss very briefly in the beginning are Background and Milestones.

Then I'd like to describe in some detail what our program has consisted of. There is one slide on the Status today, and then I would like to discuss with you what I think our conclusions are.

NUREG 0588 was issued in early 1980. This NUREG contains specific criteria with regard to accident environment calculations; with regard to demonstrations of operability under DBA conditions; with regard to ageing, margins, and documentation requirements.

Our evaluations began in October of 1980 with issuance of contractor procedures for doing the initial reviews. In October of 1980 environment development began by General Electric Company and by Bechtel Corporation. In February 1981 environments had been developed, environments in equipment evaluation began.

NRC submittal was made on July 1, 1981, and the content of that submittal was rather extensive. We provided all the equipment lists that had been used in determining what equipment should be a part of 0588 in requirement review.

We provided environmental profiles that had been calculated specifically to the requirements of NUREG 0588, both radiating in and out of containment; pressure and temperature profiles inside and outside the containment.

Those were developed by a bounding, by calculating small break and large break accidents, some compartment room analysis, and bounding those two profiles to make sure we had the temperature profiles that were bounded from the small break accident.

We also explained what our criteria for exemption of equipment was, and we provided all procedures, a copy of our procedures to describe the program that we had in place.

In addition to the introduction document of course, the equipment evaluation is what the NRC is really looking for, along with the summary of results and the follow up program.

We then made the NRC submittal supplement on September 1, based on discussion with the NRC. and on the screen now we show an NRC audit which is presently scheduled for October 1981.

With regard to program definition, basically it's a 5 phase program. In the first phase we described what a contractor's program requirements were. What we wanted them to look at; how we should document those views; and on what schedule it should be done.

Phase 2 related to MP&L Technical Reviews of Work in Progress. Basically, we set up technical reviews in their house. We were working on a tight schedule; we were trying to support a licensing letter in a year. We didn't want to receive our evaluations in the June time frame, find something that we really didn't like and have to start all over again. We set up technical reviews as the work was in progress, trying to make any corrections and adjustments while the work was under way.

Phase 3 came from discussions with the Equipment Qualifications Branch. In effect, they were very strong that they wanted an independent MP&L review prior to acceptance, with emphases on test anomolies; and they were indicating, based on their 7901B submittal from the operating plants, that they were seeing in the test performance test anomolies that were not being conducted to evaluate. Basically, we described the environment, and he wanted the equipment to be qualified to work 100 days; that was the optimum requirement, 100 temperature pressure rated conditions.

You had a very extensive test report that indicated that that was the case, but if you really get into this detailed test performance, you will find test anomolies that need to be discussed, so we implemented phase 3 program for that reason.

Phase 4 and 5 I'll discuss very briefly. Phase 4 has to do with reperformance of any evaluation after our original submittal but prior to fuel load for any equipment anomolies to be qualified. We had to come back; we wanted to make sure our documentation continues as our reviews continue.

We also indicated at that time that we will take a look at at our reviews, and if there is any maintenance activity that we see is required in those reviews, then that would be included in our maintenance activities.

Phase 5 is the same thing, except it's done after the fuel load. If we feel, you know, an operation is justified now, based on testing that's been done, maybe there was in adequate agent addressed to demonstrate the performance of a function for 10 years, 20 years, 30 years. We know it will now. But maybe the agent wasn't addressed just right.

So we indicate that we will come back and complete those evaluations at that time.

I have 3 examples of program documentation requirements. I will walk through them very briefly just to give you a flavor of how the program proceeded and what we are really looking for.

I have a copy of equipment evaluation check list, first page only, of a 5 page document. Also a copy of evaluation worksheet and then the MP&I qualification status.

This document may be a little bit small print, may be a difficult to read, so I'll just walk through one or two areas with you.

Under Item 1, which is the establishment of qualification parameters for DBA, they ask the question, "does the time dependent test profile envelop plant specific temperature and pressure profiled?"

And what we're asking the engineer to do there in his evaluation is to actually take his test profile, lay it on top of his require profile, and if there is any place that the profiles don't bound, we want him to make note of it here. We don't ask him to resolve it here; that's done in a different spot in the procedure, but this gives us a spot when MP&L reviews the evaluations. We can catch problems and make sure that we've reviewed all discussions and analysis of those problems.

Another example, "Is radiation qualification based on equipment qualified life plus most severe DBA for which equipment must remain functional?" Quite simply, they're asking you, "does your total integrated dose, including your normal integrated dose over 40 years, plus that that would be accumulated in 100 day accident DBA conditions?" Is that the value you're comparing to the test value?

That's just a couple of examples of this design phase.

ACTING CHAIRMAN EBERSOLE: The ageing question; those are some of the most difficult questions to really get answers on, the ageing effects.

MR. JOHNSON: The ageing is the reason you'll see that the majority of equipment is not qualified to perform the function you are qualifying.

ACTING CHAIRMAN EBERSOLE: Isn't there a reasonable approach that you might use there, in that ageing is the thing that requires time to do things, after all. You can age your equipment in the field, and on a **sampling** basis, pull it out and see what's going on.

MR. JOHNSON: I agree with that, but unless I'm mistaken, the Staff's position is very clear that they would accept ageing with uranius methodology.

ACTING CHAIRMAN EBERSOLE: Does Staff have any comment on this?

MR. HOUSTON: No, I would just comment that that would be one of the justification for an interim thing, so that you could proceed. And certainly until you've had a symptom of actual ageing, you're in no difficulty. So there wouldn't be a permanent solution there.

ACTING CHAIRMAN EBERSOLE: Some of the ageing tests, as I recall, is done by applying heat treatments to the various components; but that would produce some failures which would really not be produced during life.

I certainly would invite you to propose a **real aging by sampling** operations over a time, to see what degredations occur after exposure to normal environment tests.

MR. JOHNSON: That's a good suggestion. You would quite often have equipment that was mechanically aged; if it's a breaker, maybe it's been cycled between valves and cycles or something; a prototype.

ACTING CHAIRMAN EBERSOLE: Do you have any comments about, apart from age, and let's talk about the new condition of your equipment. Do you have electrical apparatus inside your, the wetwell aspects and drywell?

MR. JOHNSON: Yes, sir.

ACTING CHAIRMAN EBERSOLE: Apart from the ageing problem, which is important, are you confirming for your own corporate benefit, the reliability of such things as the solenoid valves that I mentioned earlier, which are the in circuit and which are the out circuit, their reliability under exposure conditions in the containment, to guarantee your ability to blowdown, for instance?

MR. JOHNSON: Are you referring to the SRV solenoids valves?

ACTING CHAIRMAN EBERSOLE: Right.

MR. JOHNSON: Yes, sir, they are in our program; that's correct.

ACTING CHAIRMAN EBERSOLE: Are current results on those available for your particular

MR JOHNSON: I believe that that component presently is not qualified. I don't recall the details on it.

ACTING CHAIRMAN EBERSOLE: I am sure you all realize that it's the inability of those solenoid valves that presents a very serious problem.

MR. JOHNSON: That is correct. In justifying our own operation, we are very scrupulous, if that's the proper word, in review of the test data that we have.

ACTING CHAIRMAN EBERSOLE: What about the valve operators inside; these are AC motor valves?

MR. JOHNSON: Well, we are fortunate in being one of the later plants. We have on essentially all motor operated valves, AC and DC, inside and outside of the containment, we do have test data on those valves.

They have been subjected to pressure and temperature and radiation analysis. The problem there again is aging. We do not have sufficient aging to deal with those things.

So we know that they'll take the LOCA and perform their function properly for 100 days if the LOCA occurs early in the life of the plant.

We've got to go back and address what it will do in 10 years, 40 years, down the road.

ACTING CHAIRMAN EBERSOLE: Can you comment on the viabibility of the kind of equipment that might be inside hostile environments; in the drywell and in the wetwell?

MR. JOHNSON: Yes, sir, one of the components, as you will see when we get to status on transmitters, is one that we still -- it's an incomplete status right now. We're continuing to look at it. We have one model 11 F fifty-one transmitter that have been qualified to two ____RADS, I believe. We probably have 75 to 80 of those transmitters, only on one side.

ACTING CHAIRMAN EBERSOLE: How do you regard these apparent hanging questions on these devices in respect to your aspirations in covering these --- - Could you explain that?

MR. JOHNSON: Most of our problems are ageing. We have, like I say, we generally have quite extensive LOCA tests on all these parts. In those cases where we haven't, we're actively out finding a solution right now.

ACTING CHAIRMAN EBERSOLE: Does the Staff see any problems for, in the aspect of startup, with some of these tests that are hanging up like this?

MR. HOUSTON: The Staff hasn't completed its review of what was submitted. Of what we have, I have reasonable assurance it is in there. There's a rationale for each of these items, there should be a rationale that the licensee finds acceptable, the Applicant finds acceptable, to make sure we allow it to run We are looking at those but right now, I'm not aware of any --

ACTING CHAIRMAN EBERSOLE: For instance, you would be willing to compromise on that of the ageing problem, if there was an active program to solve it.

MR. HOUSTON: Yeah, providing the ageing was not a concern.

ACTING CHAIRMAN EBERSOLE: Yeah; right.

MR. JOHNSON: That's consistent with the feeling we get from the Equipment modification **people**.

This particular slide is an example of the evaluation worksheet that the NRC specifically asked for. It's an attachment to NUREG 0588.

It basically asks the utility to demonstrate in this area with regard to temperature, what is -- the specification they're asking is, what is it required to do under LOCA conditions. What is the **peak** temperature; you can't reference the test profile or a required **profile due to** _________ . We generally put in **peak** value as well.

What is it qualified to; wherehave you documented what this value is, and where have you documented what this value is, for reference purposes, so they can go in and very quickly find what our test environments are; what our required environments are; whether or not we think there are any outstanding items; or if we think we're qualified in that particular area.

This sheet, as an example -- I mentioned in our discussion the Special Qualification Branch of the NRC they asked for a utility position, a strong position; is it qualified or is it not. They indicated very strongly that we should look at the original qualification test report for anomolies, and we addressed that in our procedure, and so we put on the front of all our evaluation packages, this type of a cover sheet, where we identify the component, and what its qualification report is, whether that would be a Wylie's Laboratory Report, or whatever.

We indicate that we have reviewed the qualification test report, the environment checklist, the equipment evaluation checklist, the evaluation work sheet; based on this review whether it is or is not qualified.

This slide is really the proof in the pudding. It establishes where we are today, based on the reviews we have done. We find that 20 equipment types meet the requirements of NUREG 0588, and that represents 34% of the types of equipment that we have reviewed.

There are 26 equipment types which do not meet the full requirements of NUREG 0588, but MP&L has determined that interim operation is justified.

And we give some examples here of equipment that has survived LOCA testing in sufficient duration in a magnitude, but of which we have insufficient ageing data.

In some cases we have a certificate of conformance; that is C of C, a certificate of conformance without test report. Sometimes it's accompanied by a Engineering Summary Report, which gives you reasonable assurance that it has been tested to the proper levels, but we don't have all the test data.

Also in some cases we have vendor notification that at the time of our evaluation, that some components that radiate in harsh environment only. I suppose in some components, we had no test report.

Since that time we've gone back and talked to the vendors; we're in the process in some cases of purchasing from him test reports for that vendor's component, and he's indicated to us that the radiation levels are greater than the radiation levels that we have.

So those are examples of equipment types that we feel interim operation is justified, but we do not include our evaluation as of this day.

There are 10 equipment types which we know right now will be modified, replaced, or retested prior to fuel load, at which time interim operation will be justified. In this avenue, one that comes to mind is INPO industry or maintenance isolation valves. Those are going to be changed prior to fuel load.

Some hand switches, and we found one which suggested the radiation level is higher than had tested, and we're going to shield that one; and things of this nature. There's 10 falling in that category.

Then we have 3 equipment types which are incomplete at this time, and they are under review, and we feel that they will be resolved prior to fuel load.

MR. HOUSTON: I will just say that if the Staff will find that degree of completion in their audit in the order that we were waiting for earlier, they do not have **enough** of the total **pipe chart decision** process completed. So on the basis of that, if the audit goes well, this looks like the problem area will go away.

MR. TEDESCO: And if we get a real careful checkoff of the critical equipment in the drywell.

MR. JOHNSON: Yes, well the environment should have got there as far as they're concerned. For example, the radiation levels in the containment, assuming that you have a LOCA in the drywell, you go to degraded core condition to the requirements of NUREG 0588, like a resurge break and that is all we get to do to the drywell area when it verged over into the containment, making the high radiation levels in the drywell.

ACTING CHAIRMAN EBERSOLE: One thing that's been typically not fully recognized in the past is the impact of water discharges, the jet streams and so forth in the environment where you have had lost connection; I take it that you -- although I didn't see up there mechanical residuals from such effects, that surely you must be incorporating some of your specifications for that sort of performance.

MR. JOHNSON: I know there is an high-energy-type break analysis program, but it is not a part of NUREG 0588. Here, we're looking at pressure and temperature profiles that were run as a result of -- -

ACTING CHAIRMAN EBERSOLE: Does the environmental qualification program look at the environmental conditions that might be associated with energetic functions in the environment?

MR. HOUSTON: I believe, if I'm not mistaken, that that's another group. You've got all of these ____________ that ________ with one another. What they are saying, I believe, is correct; that the environmental review of 0588 is a stepoff on the Brown's Ferry Fire considerations, and the hydrogen line break is is another item , but , given a comparable, they may have to meet both of those requirements, if it happens to be in the jet stream or in the area where you get - - -

ACTING CHAIRMAN EBERSOLE: Thank you.

MR. JOHNSON: Our conclusions at this time are that MP&L assessment of equipment qualification has progressed, and problem areas have been identified.

We are taking all the necessary steps to resolve problem areas and to insure that equipment qualification is not an area which will impact our startup and licensing schedule.

We expect to have an audit by the NRC equipment qualification branch, which is scheduled for October '81.

They are pretty familiar with our submittal; we talked on the phone numerous times; they've audited General Electric and seen the input programs that we have, so I don't expect any problems during our audit. I hope we'll be able to work together with equipment qualification. That is our goal.

ACTING CHAIRMAN EBERSOLE: Thank you.

MR. McGAUGHY: It's time to go to Human Factors.

A. S. McCURDY

MR. McCURDY: Allen McCurdy, Technical Support Superintendent, Grand Gulf.

I'll try to hold this very short. I'll give you a brief background on Control Room Design.

The development of the Control Room began in 1971. The criteria that we used was we wanted a completely integrated design of both N Triple S and BOP panels. We wanted to make use of a compact Control Room. We wanted to minimize the length of Control Boards; and we wanted to make use of computer operated guides.

What this led to was at the time GE was offering the nuclear net control room, and we opted for a control room with 2 CRP's in the main control panel. and we left enough hardware instrumentation in the control boards to operate the plant by.

ACTING CHAIRMAN EBERSOLE: What do you mean by operate the plant, do you mean online operation or just shutdown?

MR. McCURDY: On line operation. Some of the more detailed guidelines were that the benchboards and consoles in the main control area were to be visible to the operator; that other equipment requiring accessibility would be located on the backpanels where, for example, the various ARM's -- they're radiation monitors that we have in the plant, maybe 10[illegible] or so --

would feed into a backpanel with an alarm to the main control room.

Support equipment to be located in other areas of the control building, turbine supervisor equipment, etcetera. We tried to /-- [illegible] for improved operator interface; reduction and sim[illegible]fication of controls and displays; and only devices essential to the startup normal operational, control of abnormal conditions, and shutdown to be in the plain view of the main control area.

We wanted standardization of design and hardware, as I said earlier; we wanted to utilize, but not rely entirely on the computer operator displays.

By the way, I do have some slides up, some of those operator displays to give after the presentation, if you would like to see them.

This led to the main operator's control console, which determined the P680 panel. Basically, it was designed a miniaturized console. It was designed for wrap-around concept, and was designed for both sitdown and standup operation.

The panel layout; the hardwired instruments and controls were necessary for startup, load following, and shutdown to be located on that P680 panel.

As I said before, we make miniaturized

components, and we also provided on the P680 panel computer driven CRT's, recorders, digital indicators, and keyboards for control of that computer system.

This is just a brief layout of it. What you see here is the annunciator located in Section A; Section B is for displays; Section C is for controls, And if you go from left to right, basically this is the layout for the various control functions. Condensate; feedwater; recirculation; computer CRT or computer console; reactor control, 5, 6 and 7; Section 8 again is another computer console; and then 9 and 10 are the turbine and turbine auxiliaries, and reactor water cleanup system.

With respect to the, operate the computer console, only 680 main control console that the operators provided 2 19-inch color CRT's; 4 three pen trend recorders; and 2 digital indicators; and 2 key boards for the control.

Some typical CRT displays that are available to the operators -- as I said, I have some examples that we developed. Of course he has a Menu selection which he can call up and tells him what he has available at computer. He can get bar graphs; display trending graphs displayed; operator guides which are basically a simplified PMIG, various system in the plant which are displayed through the operator drill time mode; he has access to group and special logs; alarm point displays, and he can just call up any point in the plant that he wants to; computer modules are approximately 6500 analog digital points in the plant.

ACTING CHAIRMAN EBERSOLE: Can you call up a set of sequential digits after a --

MR. McCURDY: That is correct.

Basically, the operator guide program, which is the computer operator guide program; it's purpose is to provide information for a number of systems, sub-systems in the plant by providing the general configuration; the status of equipment and important variables of the system in real time mode, as I said; and also each one of the guides provides a simplified listing of precautions and limitations of the system and limiting conditions for operation that he has available on each system.

The control room layout, as you saw yesterday on your plant tour, is basically arranged so that the supervisor, when seated at the supervisor's console, can see both units and monitor both units; and devices on the benchboards, panels, and consoles were arranged in the same order, the same manner; and it was designed such that one operator for each unit is sufficient for normal operation.

As you saw yesterday on your tour, of course the 866 panel is the supervisor's console. On that panel he has the capability to monitor both units 1 and 2. He also has the security console in it; and you have your main control console here; your auxiliary benchboard; ECCS benchboard; and your shared panels here; electrical benchboard here and shared panels up there.

You don't need that over here. I'll talk about that human factors engineering.

As a result of TMI of course, the NRC issued the NUREG which required that everyone perform a human factor. As a result of that, we contracted with the Essex Corporation to perform our independent third party review, and the review was conducted from June 17th to October 17th, 1980..

Basically, the objectives of the Essex Review were to improve the ability of the operators by information that was provided to the operators; identify control room designs that were discrepant, and that was in accordance with NRC guidelines and also through compensations with the operators; identify ways to improve labeling, mimics, and demarcation lines; prioritize the discrepancies that they found; identify the corrective actions that they thought were appropriate; and then of course implement corrective action schedules.

Something that we took upon ourselves to assist the Essex Corporation, since the control room was still under constru-tion, and there was quite a bit of construction going on at that time, we proceeded to build a full scale mockup form, and put it up in our training building. So they were able to make full use of the full scale mockup in the control room; the design drawings; system descriptions; and they conducted extensive personal interviews, as I said, with the operators and various people in the plant. And then of course they spent quite a bit of time in the control room itself.

The evaluation that they performed consisted of hardware; workspace; labeling and demarcation lines; mimics; annunciators; the control display relationships.

The results of that review were that they commented that we had made extensive use of mimics; we had good functional grouping of systems; we had good ECCS separation; and that we did make good use of computer operated guides.

Some of the major areas they identified as discrepant were annunciator ringback; demarcation lines; reflash; tolerance zones; flow arrows; alarm localization; labeling; annunciator prioritization; some problems on the 807 panel, like the benchboard; guards on critical switches; and readability on vital indocators on the 680 panel, the main control console.

These items, these discrepancies are identified in the Essex Report Review; we prioritized them 1, 2, 3, 4, 5. We submitted this to the NRC in December, December 29th, 1980.

The NRC review, the control room was conducted June 8th through June 12th of this year. Their evaluation was based upon the report that we had submitted them, submitted to them. Control room layout; the adequacy of the information that they thought was provided to the operators; the arrangement and identification of controls and instrumentation; the usefulness of audio and visual alarms information; and recall capabilities of the lighting.

We spent one week evaluating, looking at control panels, talking to the operators; observing of video tape in the walkthrough emergency procedures that the operation superintendent addressed earlier.

On July 2nd of this year, we received the preliminary findings of the NRC; we held a meeting with them on July 16th to discuss the discrepancies, corrective actions, and implementation schedules; and the final report was submitted August the 7th, 1981.

As a result of the meetings and discussions that we had with NRC, their review, the open items that still remain in the SER. First off, 6 items could not be evaluated by the NRC because of the status of construction.

That's control room and remote shutdown room environments; the NSSS monitoring equipment, which is the N triple S computer system was not functional at the time; communications equipment was not all in; storage, adequacy, and availability of emergency equipment had not been located at that time; the availability of procedures and reference material; and we had not quite completed the installation of all of our label and location aids.

So we will submit a report to the NRC prior to November the 1st on the status of those open items. We will go back and do the evaluation on the environment, lighting, etcetera.

Two unresolved items at this time, and that's the installation schedule for annunciator ringback. Are are actually pursuing installing that. And the other one is a problem with the recessed manual auto pushbutton on the Bailey controllers.

Now, we will submit a report to NRC prior to November 1st on it.

ACTING CHAIRMAN EBERSOLE: Does the Staff have any comments on this?

MR. HOUSTON: It sounds like a pretty good summary. We are of course awaiting the final resolution of some of the data.

MR. McCURDY: At the exit interview of the NRC, they told us that this was the best control room that they'd reviewed to date.

I almost forgot to say that.

(Laughter)

MR. McCURDY: Control room designed to permit effective and efficient operator actions; the four-level annunciator prioritization scheme; they like the steep sloping of the control panels; the visual displays are mounted in the primary viewing area; the new labeling and demarcation system works very well; they like our labeling -- tested labeling; and the computer system is designed to provide effective operator interaction.

I can show you some examples of the video guides that we do have, if you desire to see them.

ACTING CHAIRMAN EBERSOLE: Look, I just want to ask a general question. You know the MI2 brought up some important aspects of reactor design. Prior to that time, and I'm not really sure of what it exists to this day. I could say 279, that identified only automatic control apparatus, being part of the station, etcetera. And the poor operator was forced to deal with non-safety grade visual input, and was expected to perform safety functions with less than qualified input themselves.

TMI2 brought forth the realization that the operator was limited to part of the safety process, and they needed to feed him appropriate information concerning the questions of reliability, redundancy, diversity, confirmatory information that tells him what he should do, and gives him an option to back out if he had done the wrong thing.

To this extent, can you just comment briefly on how you have implemented the safety grade concept, visual information, in the case of the operator?

MR. McCURDY: Well, the visual display is required to allow the operators to safely shut the plant down and maintain it in a safety analysis, or by the form of P601 panel, which is the easiest he has. So we do have safety related, safety grade displays, such as for example wide range.

ACTING CHAIRMAN EBERSOLE: That wouldn't include annunciation equipment, would it?

MR. McCURDY: No, it would not.

ACTING CHAIRMAN EBERSOLE: So you do have process equipment, though, which is safety graded?

MR. McCURDY: That's correct

ACTING CHAIRMAN EBERSOLE: Do you have diverse ways of confirming the signals, to get the signals? Or do you have several other signals to confirm the distance, right?

MR. McCURDY: You're looking for validation?

ACTING CHAIRMAN EBERSOLE: Validation, right.

MR. McCURDY: There are several ways, depending on the signal. For example, if you're looking for validation in a safety relief valve as listed, the operator in the control room has several ways of validating that. He can look at the suppression pool temperature; he has already installed in the tail pipe.

ACTING CHAIRMAN EBERSOLE: And pressure?

MR. McCURDY: And pressure.

ACTING CHAIRMAN EBERSOLE: So you have an endeavor, then, to upgrade the operator now?

MR. McCURDY: That is correct.

ACTING CHAIRMAN EBERSOLE: I think that is an excellent presentation. I have no further questions. Have you?

A VOICE: No. I think his priorities 1 through 5 were helpful to address the singular aspects of this.

ACTING CHAIRMAN EBERSOLE: Thank you. Are there topics that we haven't covered yet?

MR. McGAUGHY: One topic, the Toxic Gas.

ACTING CHAIRMAN EBERSOLE: Toxic Gas, right.

Go on ahead with that.

S. H. HOBBS

MR. HOBBS: My name is Sam Hobbs. I'm Supervisor of Safety for Mississippi Power and Light.

Before starting on Toxic Gas, there were two questions that were asked last night on RSSMAP.

The first of those was improving the probability by going to the Atlas 3A alternates.

The analysis which I thought was available has not been done, so I do not know the improvement in core melt probability.

The other question concerned the improvements in making a change from a steam driven high pressure core injection system to a motor driven high pressure core spray system; and the best calculations which have been done to date on motor driven high-pressure core spray systems will indicate an availability of between 97 and 98%.

The best experimental valve which has been done in studies on the steam driven high pressure core injection systems would indicate an availability of around 93%. When you make the transfer to unavailability, that represents a factor of three improvements.

We were informed by the Staff of a probability study of the possibility of amonia spills you have on the river near the plant or to install detectors to control their influx and **automatically isolate the control room.** .

Our first step in doing evaluation probability was to do a survey for amonia spills recently, in the recent completed data that was available for a 5 year period on the Mississippi River and **its tributaries, and** there were three amonia releases.

Two of those released were uncontrolled releases that occurred from unloading and loading facilities.

One was a controlled release which occurred after a barge ran aground and had to lighten itself to get free. That release was **made over** about a 2 day period of no release to the atmosphere to the valley seen **by water quality examiners.**

On that basis, we basically did not have any doubt to proceed directly with non-spill probabilities. And the manner in which we proceeded was to go out and investigate the serious barge accidents which have occurred on the Mississippi River **rather than well construction.** And we investigated the region of the River from Baton Rouge to Cairo, Illinois. The region below there and the region in the immediate vicinity of Cairo had a large number of accidents because of the confluence of rivers upstream, and because of the very high traffic density downstream to the mouth of the river.

In 726 miles stretch of river between those two points, however, there were 10 accidents in a 5 year period. These were serious accidents; serious enough to be able to possibly cause amonia release.

The second thing that we did was to evaluate the amount of amonia traffic near the plant, compared to the amount of total traffic near the plant.

Around 200 barges per day come past the plant, and about one and a half of those, or below one and a half are amonia barges. And multiplying those two terms together, we consider, we considered them a portion of the river for which there might be a possibility of having an amonia spill as an end result at 3 points, and the result was a block along the river, the only region that we believe that is relevant is about one-half mile upstream and about one-half mile downstream of the region where the plant access road penetrates, - - - - - - and the probability of the wind blowing in the right directions causes to happen, once you have an accident in that region, it's about 8%.

The results of this calculation would

indicate that the probability of a serious barge accident, which could conceivable affect the plant's amonia spill is around 1.8 times 10 minus 6.

Now, this is a very conservative calculation. The fact is that this stretch of the river is quite safe.

The kinds of navigational hazards which might normally contribute to accidents on the river; blind bends; rock outscroppings; a hard bottom for barges to run aground; unusual currents; sandbars; narrow river; either loading or unloading facilities and bridges; do not exist anywhere near this part of the river.

In addition, the construction of amonia tanks which are transported on the barges, meet the Department of Transportation Regulations, which are quite stringent.

So that the amonia barge being in a serious accident, would then become a candidate spill. But in fact our evidence has not indicated that there were not any uncontrolled releases. This is a relatively small sample.

We have concluded on the basis of this calculation that we do not need amonia detectors.

That concludes my presentation. Do you have any questions?

ACTING CHAIRMAN EBERSOLE: I have no

questions.

I believe the Staff has the response that you have to make here, referring to the local document room, the IE documents on public events? Do you have that?

MR. HOUSTON: Yes, that's right.

ACTING CHAIRMAN EBERSOLE: We'll have that at this time.

MR. HOUSTON: We want to make just a couple of brief statements on those items, and Al Wagner, the Resident Inspector here, will do that.

MR. WAGNER: My name is Al Wagner, with NRC Staff. I would like to respond to the two items that were left outstanding yesterday for the Staff.

Based on information in our records in Atlanta, and information from our Public Affairs. First of all, the Public Document Room.

We were aware of the problem with the condition of the Public Document Room and its previous locations, and approximately 3 weeks ago they completed a move, relocating the Public Document Room to the Hinds Junior College Library in Raymond, Mississippi.

The documents and records that had accumulated in the Courthouse in Port Gibson were shipped to the Headquarters of Staff, audited the records, and the records were relocated to the Hinds Junior College Libary, and a member of the Staff has come down and looked at the installation of the records; there's one outstanding problem, and that's with the Final Safety Analysis Report at present does not contain all the up to date amendments.

It's our understanding that these amendments will be supplied and put in place by January of 1982.

The Staff is presently looking into contracts to have a private organization keep the public document room up to date.

They have provided, or will soon provide in the Federal Register a toll free number for anybody who has any suggestions or comments or complaints concerning any documents or availability of any documents

(inaudible comment)

At present the number of 1-800-638-8081.

The other issue that I want to discuss is inspections that were done there to the tornado. The Staff from Atlanta came over here with some consultants for meteorlogical investigation of the tornado and the damage that was caused; and it was there conclusion that there was no damage caused directly from the tornado; that there was some damage due to some falling of some cranes that were used for construction at the site.

There were several subsequent inspections in which the Staff looked at the Applicant's corrective action for replacing damaged liner plate, and minor damage to other equipment.

It's our conclusion that the corrective actions taken were adequate. We consider the matter resolved, and it is not carried as an outstanding item for the Staff Open Letters File.

ACTING CHAIRMAN EBERSOLE: That is all you have?

MR. WAGNER: Yes, sir.

ACTING CHAIRMAN EBERSOLE: A couple of other matters here. I received a comment from a member of the public that in the emergency procedures process, that only FM stations are put on the network to advise of the presence of an accident. Is that a fact?

MR. McGAUGHY: No, sir, that's not a fact. We intentionally chose one FM and one AM. KNOE is the name of the station.

ACTING CHAIRMAN EBERSOLE: I know it's almost guaranteed a trip on TV anyway.

McGAUGHY: Yes, sir, the news if on both of those 24 hours stations, and also the news would be released through all the radio and TV stations, as well as information to the public.

ACTING CHAIRMAN EBERSOLE: Thank you. One other final technical comment. We know you are using solid state equipment here, and I want to just comment on the fire damage — the fire protection problem.

We have seen other applicants, and I am not sure what you have here, but you can talk to us about it later. But many applicants depend on isolation of fire effects by fusible lanes and damper systems.

Those lanes in general can be reverted and protective in preventing temperatures to be -- and full parking on the accesses that you expect the solid state equipment to operate.

In think therefore that we would like to see you investigate it if you have any of those in your

panel to block off any effects of fire from critical instrumentation and equipment. You need something besides fusible lanes; something that you will operate on another basis or lower temperature, or whatever. We can no longer depend on fusible lanes when we are dealing with solid state equipment off in distant rooms.

We get them, it's a distant effect from the fire.

I have no further questions here. Does anyone else want to raise any questions?

A VOICE: None that I know.

ACTING CHAIRMAN EBERSOLE: I want to make an observation here. I have been hired by the Chairman to tell you what we now expect to do.

We expect that we will see you in October at a Full Committee Meeting. On the other hand, I don't know if we will be ready at that time to give you a complete decision on your operation.

I would probably think that maybe full level power testing, or something like this, might be brought up and analyzed. In any case, we will give you new Agenda at the time here to bring up that.

John Kimberly will contact all of us here, and we will very shortly put together an Agenda for your appearance in Washington at the October Meeting.

I want to thank all of you for a very good turnout and a very fine presentation. The meeting is closed.

(Whereupon, the meeting was adjourned at 5:43 p.m.).

AUTHENTICATION

This is to certify that the attached proceedings before the NUCLEAR REGULATORY COMMISSION,

In the Matter of:

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
AD HOC WORKING GROUPS MEETING ON THE
NUCLEAR SAFETY RESEARCH, DEVELOPMENT AND DEMONSTRATION

at JACKSON, MISSISSIPPI

Friday, September 18, 1981

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

Jean Tillman
Field Reporter