UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

Title: **DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT - PUBLIC MEETING**

PART I

Location: **Russellville, Arkansas**

Date: **Tuesday, November 14, 2000**

Pages: **1 - 53**

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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DRAFT SUPPLEMENT ENVIRONMENTAL IMPACT STATEMENT

FOR THE ARKANSAS NUCLEAR ONE

LICENSE RENEWAL APPLICATION

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PUBLIC MEETING

Holiday Inn Russellville

Route 7 & I-40

Russellville, Arkansas

Tuesday, November 14, 2000

The above-entitled meeting commenced, pursuant to notice, at 1:30 p.m.

APPEARANCES:

CHIP CAMERON

BARRY ZALCMAN

CHRIS GRIMES

ROBERT PRATO

ANDREW KUGLER

THOMAS KENYON

On Behalf of PNNL:

EVA ECKERT HICKEY

On Behalf of ANO-1:

GARRY YOUNG

P R O C E E D I N G S

MR. CAMERON: Good afternoon, everyone, welcome to the NRC's public meeting on the Draft Environmental Impact Statement for the license renewal application for Arkansas Nuclear Unit One. I think the people who are going to be doing the presentations are going to call it ANO-1 throughout the presentations, so that will be the acronym that we'll go using today.

My name is Chip Cameron and I'm with the NRC's Office of General Counsel on the Special Counsel for Public Liaison for the Commission, and I'm going to serve as your facilitator today. Before we get to the presentation, I'd just like to cover three things briefly with you. One is the objectives for the meeting; secondly, I'd like to talk about format for the meeting this afternoon and, third, I wanted to go over the agenda with you to give you an idea of what's going to be happening this afternoon.

In terms of objectives the NRC wants to inform you -- provide you with information about the Draft Environmental Impact Statement on the license renewal application and to also give you a status of the license renewal application generally.

Secondly, we want to hear any comments that any of you might have on the findings that are in the Draft Environmental Impact Statement. And the third ultimate

objective is that we want to use any comments or information that you have for us today in preparing the Final Environmental Impact Statement, and the NRC staff will be providing you more information on what this whole process is in a minute.

In terms of format today we're going to have a number of presentations for you that go through various parts of the license renewal process, and at the end of each of those presentations we're going to go out to you to see if you have any questions about that presentation or any comments on what was said during that presentation, and we think that you'll find that more interesting than just hearing a bunch of presentations and then just having feedback or comments after all of that is done. We're also going to save time at the end of the day so that if anybody does have a formal statement that they want to make, you will have time to do that then.

The NRC is also taking written comments on this Draft Environmental Impact Statement, and we wanted to be with you here today to talk to you in person about this and you may hear things today that will help you to prepare written comments if you feel like sending them in or it may be interesting for you to hear what other people in the community have to say on some of these issues.

I would note that any comment that you make today

is going to be considered with the same weight as a written comment that might be submitted. And we have our stenographer, Bert, over here; we are taking a transcript of this meeting and that transcript will be available.

When we get to the discussion periods on the agenda, if you want to make a comment or ask a question, just signal me and I will bring you this talking stick and if you could just state your name and affiliation, if appropriate, for the record so we'll know who said what, and then we'll try to answer your questions, if it's a question, or we'll note your comment.

There's only one guideline -- I don't think we have to worry too much about it -- but we want to make sure that everyone has an opportunity today to talk, so I would just ask you if you do have comments, try to be to the point and concise so that we can make sure that everyone has a chance to speak today. And I would just ask that if you, when we get to the formal statements, if you could keep that to ten minutes, we would appreciate that.

We do want to stay on the issue of the Draft Environmental Impact Statement. We know there may be broader concerns with either the facility or with nuclear power in general, and we're always ready to listen to those comments but we do want to make sure that we get all the information out to you on the Draft Environmental Impact

Statement and hear all the comments on that, so that's going to be our first priority.

And I would like to thank all of you for being here today with us, and I'm going to introduce the NRC and our contractor personnel who are going to be doing presentations in the context of the agenda for today. In about a minute we're going to go to Barry Zalcman, who's right here, who's going to give you a few words on meeting overview and end purpose. And Barry, as you will note from your agendas, is a section chief of a branch in the NRC that's the Generic Issues, Environmental, Financial and Rulemaking Branch, okay.

And all of these people from the NRC that are going to be doing presentations are within an office at the NRC called the Office of Nuclear Reactor Regulation.

Now in terms of Barry's section, his section supervises the preparation of environmental impact statements for license renewal applications generally, so they have a lot of experience and you will be hearing more about that. But it includes not only ANO-1 but other facilities around the country who have come in with license renewal applications.

Next we're going to go to Chris Grimes, who is right here, and Chris is the chief of the License Renewal and Standardization Branch at the NRC. And that branch has

the overall responsibility for integrating the safety analysis on the license renewal application with the environmental analysis that comes out of Barry's section, and they also integrate any inspection findings in there and we'll be telling you about how that process works in a few minutes.

Next we're going to go to Bob Prato, and Bob is also -- Bob is in Chris Grimes' branch, the License Renewal and Standardization Branch, and he's the safety project manager there, and he's going to tell you about the overall license renewal process so you know what context this environmental information how that fits into the overall license renewal process.

And next we're going to go for an overview of the National Environmental Policy Act process. This is the act that requires the preparation of environmental impact statements and Tom Kenyon, who is right over here, is going to talk about that. And again, he's in the Generic Issues, Environmental, Financial and Rulemaking Branch at NRC, and he's the environmental project manager for ANO-1, for this particular facility.

Then we're going to get to the meat of the discussion in terms of the Draft Environmental Impact Statement and we're going to go to Eva Hickey from Pacific Northwest National Lab, and Eva is going to be taking us

through the results of the environmental review.

And we're also going to have Andy Kugler from the NRC staff participate in that. Again, he's an environmental project manager in the Generic Issues Branch that I mentioned earlier. And then we're going to go back to Tom Kenyon for some preliminary conclusions and then talk to you, see if anybody has a formal statement.

But again, if you look at your agenda, we're going to be going out to you at various times to see if you have comments or questions about any of these various preparations. Again thank you, and I'm going to turn it over now to Barry.

MR. ZALCMAN: Welcome, my name is Barry Zalcman, as Chip indicated. The title of the branch is the Generic Issues, Environmental, Financial and Rulemaking Branch, and within that we have a broad range of responsibilities. For those of you familiar with the deregulation of the utility market, there has to be financial qualification reviews; that's also done within our branch. We're responsible for a number of rulemaking activities where we establish new regulations as well.

But principally for this activity, we focused on the environmental staff; we have environmental specialists working in the branch; we have project managers. And that is our responsibility to implement the NEPA program within

the Office of Nuclear Reactor Regulation; it's to consider the agency's regulations and environmental protection space, and it's also to assure that we have technical expertise on staff and access to technical experts at National Laboratories. But we also deal with contractors and we also have contract specialists that work with us to assist in that review.

When we were here in April to talk to you about the scope of the NRC environmental review for Arkansas Nuclear One, Unit 1, it was because of an application submitted by Entergy requesting for the renewal of its license, and we indicated at that time we were seeking public engagement to determine the scope of the environmental review. That was to supplement the agency's vision of what issues had to be considered and reach out to the public and the community around the plant, licensee, itself and any other interested party that would be aware of additional information that we ought to consider in our review.

We are now into the next stage, which is the consideration of our independent assessment, and provide you with the preliminary results of that review. And that is contained within the document, the Draft Environmental Impact Statement for ANO, Unit 1. We plan to put the environmental review effort in proper context because it's

just one of several activities that have to go on before our Commission can actually pass judgment on renewal of the license.

We'll talk a little about the statutory as well as the regulatory framework of requirements for this action, the purpose of the review, the process that we go through in conducting our review, the preliminary results of that review and the schedule that we're working to.

We need to make sure that you understand that this is a meeting for you and with you. We need to participate to develop a product that we all can factor in supporting the Commission's decision regarding license renewal.

We'll provide you an opportunity to give us any input that you may have on these preliminary results or ask about any of the issues that you've heard today. Most importantly through this discussion we want to hear from you either today or during the public comment period on the draft document. So let me provide you a little bit of background on this effort.

The operating license for Unit 1 of Arkansas Nuclear One -- and just recognize that we're dealing with Unit 1; this is a two unit plant -- currently expires in 2014. As will be discussed, the Atomic Energy Act allows for a licensee to seek the renewal of an operating license. In this situation the licensee seeking the renewal is

Entergy, and for purposes of this license renewal application, they are considered an applicant.

The NRC has established the renewal of an operating license for a nuclear power plant can be for a period of up to twenty years. Part of the license renewal process requires NRC to systematically consider environmental impacts during its decision-making process on this matter. This review must comply with the National Environmental Policy Act -- we'll be calling that NEPA through much of the discussion this afternoon -- as well as NRC's own environmental protection regulations.

ANO-1 submitted its license renewal application in January of 2000. The NRC environmental staff and its contractors conducted a site review in April of this year, and we had two public meetings dealing with scoping. During that meeting we identified the environmental issues that we would be considering and sought public input to consider additional issues that may be of relevance or significance in our decision making.

Thereafter, we had an on-going dialogue with Entergy during the review period to resolve any additional questions that we had while conducting our review and performing our independent assessment. On October 3rd of this year the NRC issued a Draft Supplemental Environmental Impact Statement that describes the results of our review.

We are currently in the middle of that comment period for the document, during which time we expect and hope to receive comments from interested members of the public.

Comments on the environmental issues discussed in the report may help the staff evaluate the acceptability of the environmental aspects of ANO, Unit 1, license renewal application, and that brings us to the specifics of why we're here today.

Now the purposes of today's meeting are to discuss NRC's mission and how NEPA factors into it; discuss the environmental review process that we execute; discuss the results of our review; provide the review schedule; receive any comments that you have today and explain how you can submit comments to us before the end of the comment period.

Now with that, I'm going to hand this over to Chris Grimes. Chris is the branch chief of the License Renewal and Standardization Branch, and Chris is the one that integrates the results of our review with the safety review to make recommendations to the Commission of whether or not to consider the license renewal application.

MR. GRIMES: Good afternoon. I would like to start off by explaining what the NRC's mission is and to give you a framework in terms of how the NRC serves the public interest and performs its functions. The NRC's mission is to regulate the nation's civilian use of nuclear

materials; first, to ensure adequate protection of public health and safety; second, to protect the environment and, third, to promote the common defense and security.

This mission and the NRC's authority is derived from the Atomic Energy Act of 1954, as well as amendments to those acts, and to other laws involving security, waste and energy policies. The NRC's regulations are issued under Title 10 of the United States Code of Federal Regulations, and for our purpose today we will refer to that as 10 CFR for short.

The NRC established its requirements for nuclear power plant design and operation as well as limits for radiological exposure and releases and then enforces those requirements in order to achieve our mission. Environmental protection is achieved by those requirements. However, we also perform environmental impact evaluations, which we will describe today, to achieve the environmental protection mission of the National Environmental Policy Act -- the National Environmental Protection Act, which we refer to as NEPA, as Barry previously mentioned.

For commercial power reactors the NRC's regulatory function includes licensing. A nuclear power plant license is based on a set of established regulatory requirements to ensure that the design and proposed operation of the plant are safe based on sound radiological safety standards.

Those requirements also include provisions for a security program to safeguard safety related equipment and nuclear materials, and the NRC conducts routine inspections to assure that plant design and operation conform to the license requirements and enforcement actions are taken in the event that those license requirements are not being satisfied. So that is the basic function and conduct of the NRC's regulatory responsibilities.

And I am now going to ask Bob Prato, who is the project manager for the safety review of the Arkansas Nuclear One, Unit 1, renewal application to describe the rest of the aspects of the renewal process.

MR. PRATO: Thank you. Can you hear me? Thank you.

Again, my name is Bob Prato; I am the project manager for the license renewal application for Arkansas Nuclear One safety evaluation. I'm going to cover license renewal in general, and I'm going to give a brief overview of the process. I've got a lot of ground to cover so if you have any questions, please jot them down next to the slide and I'll be glad to answer them at the end. I will also take any questions on the safety review after I finish the presentation.

Beginning with slide eight, Atomic Energy Act. NRC regulations limit commercial power license to forty years,

but it also permits the renewal of such licenses for up to twenty additional years. The forty year term was originally selected upon the basis of economic and antitrust considerations, not technical limitations. But once the licensing term was established, the design of several system structures and components were engineered on the basis of an expected forty year service life. The safety requirements for the initial forty year license are contained in 10 CFR, Part 50.

When the first reactors were constructed, major components were expected to last at least forty years. Operating experience has demonstrated that this expectation was unrealistic for some of the major components such as steam generators and pressurized water reactors. However, research conducted since 1982 and plant operating experience has demonstrated that there are no technical limitations to plant life since major components and structures can be refurbished or replaced, thus the plant life is determined primarily on economic limitations.

As a result the NRC established regulatory requirements in 10 CFR, Part 54, to provide for license renewal. The rule, which was initially issued in 1991 and amended in 1995, provides the basis on which a plant was originally licensed remains valid after forty years and can be carried over into the twenty year period of extended

operation. The rule requires that an applicant demonstrate that applicable aging effects will be adequately managed for a defined scope of passive, long-lived systems, structures and components.

The Commission determined that aging of active components is adequately managed by existing maintenance activities and surveillance programs, and other aspects of the existing license requirements can continue throughout the license extension period. The rule also requires that certain time-dependent design analyses be identified and evaluated as well.

A new license can be granted upon a finding by the Commission that actions have been or will be taken so that there is reasonable assurance that applicable aging effects will be adequately managed for the period of extended operation, and whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decision makers would be unreasonable.

The United States currently receives about twenty percent of its power from -- twenty percent of its electricity from the 103 operating nuclear power plants. The electricity sector is moving rapidly to a deregulated market in which energy supply choices will be dictated by cost to the consumer. At the same time there are growing

pressures to limit fossil fuel emissions because of continuing concerns for clean air and the potential global climate changes.

Deregulation and competition have raised the interest in license renewal to strategic importance because large generating plants become vital economic assets to plant owners. Operating nuclear plants are expected to remain competitive after retail electricity restructuring, provided that the cost associated with operating the plant safely in the future can be reasonably predicted.

Some current operating U.S. plants will not apply for license renewal for economic reasons. NRC established the license renewal requirements so that any plant that is financially and materially capable of operating safely beyond a current term of the license should have that opportunity, and clearly understand the requirements of such extended operation, as is described in the Generic Environmental Impact Statement for license renewal.

Calvert Cliffs in Maryland was the first plant to apply for license renewal. Their application was submitted April, 1998 and a license was granted in March of 2000. The renewal application for ANO-1 was submitted by letter dated January 31, 2000. Although the ANO-1 license does not expire till 2014, the licensee is interested in license renewal today to ensure that they certainly understand what

requirements will be necessary for an extended license prior to the expiration of their current license for future financial considerations.

The license renewal process consists of parallel safety and environmental reviews which will be documented in a safety evaluation report for the age and management review and a supplement to the Generic Environmental Impact Statement for the environmental impact review. The age and management findings in the NRC staff safety evaluation will be verified by the NRC inspection. The renewal application and safety evaluation will also be reviewed by the NRC Advisory Committee on Reactor Safeguards in accordance with the usual practices for issuing a license.

The NRC plans to complete the safety evaluation report for ANO-1 renewal application, which will address the scope of passive systems, structures and components, their applicable aging effects and the age and management programs that Entergy, the licensee, will rely on to ensure that the plant is safely maintained for a period of extended operation. The initial report will identify any open items and any confirmatory matters related to the safety review under Part 54 which must be resolved before the Commission can complete its decision on a renewed license; that report will be made available to the public.

The NRC's licensing process includes a formal

process for public involvement through hearings conducted by a panel of administrative law judges who are called the Atomic Safety and Licensing Board. That process consists of a petition to hold hearings on particular issues to be litigated by that board. There were no petitions submitted on ANO-1 renewal application, so there will be no formal public hearing.

Despite the absence of a formal hearing, interested members of the public who are concerned about nuclear safety issues can raise those issues informally during the various public meetings that the NRC will hold with Entergy to discuss the safety aspects of the proposed extended period of operation. Time is usually provided at the end -- at the conclusion of each meeting for public comment and questions. Meetings on technical issues are usually held at the NRC headquarters in Rockville, Maryland. However, some technical meetings and meetings to summarize the results of the NRC inspection findings will be held near the plant in a place that is accessible to the public.

The ANO-1 renewal application, safety evaluation report, meeting summaries and other related correspondence are available for public review at the NRC public document room in Rockville or at the NRC electronic public document room at the Website www.NRC.gov. Many of these materials can also be found on the NRC Website under the reactor and

licensing renewal icon. Paper copies of the application, reports and significant correspondence are also available to the local residents at the Pendergraft Library at the Arkansas Technical University located at 305 West Q Street in Russellville.

The Advisory Committee on Reactor Safeguards, or ACRS, performs an independent review of the renewal application and the safety evaluation, and they report their findings and recommendations directly to the Commission. They also hold public meetings which are transcribed; oral and written statements can be provided during the ACRS meetings in accordance with the instructions described in the notice of their meetings in the Federal Register.

At the end of the process the final safety evaluation report, the final supplement to the environmental impact statement, the results of the inspections and the ACRS recommendations are submitted to the Commission with a staff recommendation. Those documents and any formal Commission meeting to discuss the staff's recommendation are also accessible to the public.

Each Commissioner will vote on the proposed action and their decision is formally sent to the NRC staff for whatever action they conclude is appropriate for the renewal application. The individual Commissioners' votes, and their instructions to the NRC staff are also made part of the

public record.

Throughout the NRC review of the license renewal application, the NRC continues to conduct regular inspections and amendments to the current license. The NRC's inspections and plant performance review are continually evolving with the NRC's initiatives to improve the reactor oversight process.

If you are interested in learning more about the renewal inspection and oversight process, there is information available to the NRC Web page and in NUREG-1649, Revision 1. The normal regulatory process and amendments to the existing license will continue in parallel with the renewal application and address matters of interest such as operational events, spent fuel storage, security and emergency plans.

If there are any questions relating to the presentation or on safety review, I will take them at this time before Tom describes the environmental review.

MR. CAMERON: Anybody have any questions on Bob's excellent overview of the license renewal process and how all of this fits together?

MR. PRATO: Anything? That's all, thank you.

MR. CAMERON: All right, now we're going to go to Tom Kenyon who's going to focus us in on the National Environmental Policy Act requirements, specifically

environmental impact statements and other aspects. Tom.

MR. KENYON: Good afternoon, my name is Tom Kenyon. To make sure you understand the distinction of the two different project managers that have been up here, Bob looks at the safety aspects of renewing the license, and I'm looking at the environmental impacts of renewing the license. I intend to spend the next fifteen minutes or so talking about the process that's required by the National Environmental Policy Act, the so-called NEPA process, and then I'm going to describe how that process has been incorporated into the NRC regulations and, more specifically, how it's being applied to ANO, Unit 1.

NEPA was enacted in 1969 and it requires all federal agencies to use a systematic approach to consider environmental impacts during certain decision-making proceedings. It is a disclosure tool that involves the public, and it involves the process whereby information is gathered by federal agencies; we document that information that we gather, and then we invite public participation to evaluate it.

The NEPA process results in a number of different kind of documents, chief among them are the environmental impact statement, which we call EISs, which describe the results of our rigorous review that we do to evaluate the environmental impacts of a proposed action that may

significantly affect the quality of the human environment.

Now the NRC has already determined that license renewal is such a major federal action, which is why we're here today.

Now this slide describes the objective of the review, but to paraphrase it, we're simply taking a look to determine whether or not the renewing of the ANO license for an additional twenty years is acceptable from an environmental perspective.

Now to give you a little bit of history, I'd like to spend a few moments describing how the staff incorporated the NEPA process into the regulatory framework of the NRC and then how we perform our reviews.

The NRC's implementing regulations for carrying out the NEPA process are located in 10 CFR, Part 51. The regulation outlines the contents of our environmental impact statements and describes the process that we're required to follow in order to ensure NEPA has been followed.

Now early on in establishing the license renewal process, back in the 1980s and '90s, it was recognized that the original environmental impact statements that were developed when the nuclear power plants were first being licensed, back twenty or more years ago, would have to be updated to reflect the additional twenty years that's being proposed. So the NRC undertook a rulemaking effort to

modify Part 51 and to address license renewal aspects.

As part of the rulemaking effort, the staff developed a generic environmental impact statement -- what we call the GEIS -- which took a systematic look at the thousands of hours of operations of nuclear plants in the United States to help us identify what potential environmental impacts we would see.

In addition, the staff developed and uses an Environmental Standard Review Plan for license renewal to help guide us in our reviews. There are copies of all these documents in the back on the table if you want to take a look at them today. In addition, you can go to our Web page and view those documents there as well.

Now this next slide gives a little more detail of the previous graphic of our license renewal process. Since I'm going to be talking about this process for the next couple of minutes, you might want to refer back to it from time to time.

Now, as far as the NEPA process goes, there are certain steps that the NRC are required to follow. These steps are consistent for all environmental impact statements that are prepared by federal agencies for any proposed major federal action.

Now the first step in the process was the notice of intent whereby we notified members of the public that we

intend to prepare an EIS for ANO-1; this occurred back in March. During that time, we put together a team of NRC staff with backgrounds in specific technical and scientific disciplines that are required to perform environmental reviews.

In addition, as has been mentioned, to supplement the expertise of the staff we engaged the assistance of Pacific Northwest National Laboratory to make sure we had a well- rounded knowledge base to perform the review. We put together a team of about twenty people, many of whom are here today to hear the comments you may have and to answer any questions that you have.

Now the next step was the scoping process, which has already been mentioned, where we identified the scope of the environmental impact statement. Now for ANO-1 this occurred back in April and May, and we held two public meetings in this hotel at that time to discuss the scope of our review.

Now our review team went to the ANO site to acquaint ourselves with the area, and we discussed all the questions that we had after taking a look at ANO's application. As the review progressed, we talked with federal, state and local authorities, and we looked at a number of issues, including the environmental impacts of continued operation. We looked at alternatives to the

proposed actions and what the environmental impact would be to those alternatives, and then we looked at possible mitigation measures, which are things that can be done to mitigate the environmental impact of the license renewal.

We completed our review at that time and by October 3rd -- on October 3rd we issued our Draft Environmental Impact Statement for public comment. Now this was Supplement 3 to the GEIS. It's a supplement to the GEIS because we rely on the findings of the GEIS for some of our decisions. Now the report is a draft not because it's incomplete but rather because we're at an intermediate stage of our decision-making process.

We are in the midst of a second public comment period now to allow you and other members of the public to take a look at what we've done and to provide us with feedback you may have to the report. Now after we gather our comments -- gather your comments and we evaluate them, we may decide to change the Environmental Impact Statement. Once we complete our evaluation, we will then issue the final EIS.

Now that I have given you a general idea of the overall process, let's talk about what we did as far as our review. As NRC's staff, we reviewed Entergy's application; we discussed their evaluation process with them; we visited the site, and then we took a look at the comments that were

received as part of the scoping process. All the comments that we received during the comment period were considered in our review.

In addition, we contacted federal, state and local officials, as well as the local service agencies in the area to obtain information on the unit.

Now the next two slides give you an idea of the kind of things we look at, things such as aquatic ecology, threatened and endangered species, land use, human health and socioeconomics. I'm not going to talk about them in very much detail because we're going to go into detail in the next presentation.

Now there are certain things in the regulations that the staff does not look at during its environmental review, including the need for power and the cost of power, spent fuel disposal, except for transportation in this area. In addition, my team does not look at the environmental -- I'm sorry, my team does not look at the safety related issues; that's being handled by Bob Prato under -- in his review.

Now that completes my part of this presentation, but before we go on, I think I'd like to open the floor one more time to see if you have any comments or questions.

MR. CAMERON: Anybody have a question about the overall NEPA process before we get into some of the

specifics? Okay, thank you, Tom.

MR. KENYON: With that, Eva Hickey from Pacific Northwest National Laboratory, she's the task leader on the team, and she will be presenting the results of the review.

MS. HICKEY: Good afternoon and welcome. As Tom said, my name is Eva Hickey; I work for Pacific Northwest National Laboratory, and I'm in the environmental technology division. Today what I'd like to talk about is the process that we used for our environmental review; then I'm going to talk a little bit about the report, the draft SEIS, that we created. We brought some of our team of environmental scientists here today, so if you have any questions on some of the specifics, we'll be glad to answer them.

Tom talked a little bit about the generic environmental impact statement, the GEIS. I want to spend a few more minutes talking about that. It was published -- it's NUREG-1437, and it is the basis for the revision of 10 CFR, Part 51. The NRC worked with the states, the Council on Environmental Quality, CEQ, and the Environmental Protection Agency and a number of other groups to develop this final generic environmental impact statement.

During the time NRC used its staff to identify what environmental impact issues need to be reviewed during license renewal, the staff identified and categorized the environmental impacts that were specific to license renewal,

and in that they came up with 92 particular issues or potential consequences, and these were evaluated in generic environmental impact statements.

Sixty-nine of these issues were found to be generic, and by that it means that the findings are the same for all plants, and it doesn't matter where the plants are located or what type of plant they are. Those issues have been called Category 1 issues. An example of a Category 1 issue would be offsite radiological consequences. When developing the GEIS, the staff looked at it -- looked and saw that the offsite doses during the license renewal period would not be any higher than they are during the first forty years of licensed operation.

They did a historical review and they looked at the doses to the public and they notice that they have been well maintained and, in fact, they often are going down. The staff could see no reason that these doses would increase during the license renewal period because expected radiological impacts by all plants in a similar manner, and the significance was that offsite radiological impact was considered small at all plants, the staff concluded that this item could be addressed on a generic basis, and that's what we call Category 1. As I said, there are 69 of those issues.

That does not mean that our environmental review

team did not look at these issues, but what we did look for was to see if there was any new and significant information since the time the generic environmental impact statement was published.

As part of our review, we required the applicants to inform the NRC in their application -- and Entergy did this -- as to whether it is aware of any new and significant information regarding the Category 1 issues. During the scoping phase of the review we looked at comments that the public, federal, state and local authorities to determine whether or not there's any significant new information on these Category 1 issues. If some new and significant information is revealed by this, then an additional evaluation would be made. If not, then NRC adopts the generic conclusions provided in the GEIS.

The remaining issues of the 92, which is 23 of those as categorized, are called Category 2 issues, and we also looked at these in detail. The review process is designed to help the NRC determine whether or not there's any significant new issues that were not identified four years ago and covered in the GEIS. If the significant new issue is identified as a result of the current review process that was not considered in the GEIS, then it will be reviewed on a plant-specific basis as though it were a Category 2 issue.

When we looked at Category 1 issues, the team reviewed the information that was provided in the environmental report. We discussed the information with the Entergy staff when we were here on site in April. We sought public concerns during the public scoping meeting and during this scoping period, and we looked at environmental standards and regulations.

And as I said before, part of our review was to evaluate if there was any new and significant information, and we determined during this review that, in fact, there was no new and significant information on the Category 1 issues and, therefore, we rely on the conclusions in the GEIS.

Now Category 2 issues, these are issues that we look at on a site-specific basis, and there's 21 of these considered. Five of the issues in the GEIS are not applicable to ANO and, therefore, we did not look at those. There is an additional four issues that are not applicable because they are related to refurbishment and Entergy has stated that they have no plans for major refurbishment activities and, therefore, these issues are not relevant.

So that leaves twelve issues that were addressed, and we found that there was small significance from these issues. There's also an additional two issues that have not been categorized, environmental justice and chronic exposure

to EMF, and we looked at those as though they were site-specific issues.

Next, I want to talk just a little bit about following our environmental review, the Draft Supplemental Environmental Impact Statement that we put together. This draft followed the same format as the GEIS; it's organized in the same fashion. We have a Chapter 1, which is an introduction and it briefly describes the NEPA process.

Then Chapter 2 is a description of the site and the surrounding environment around Arkansas Nuclear One. I will be going back in a moment and giving you a little more specific detail on these issues, but I just want you to take a look at the slide; you can see what we looked at was fairly comprehensive.

Chapter 3 discusses refurbishment; however, since Entergy stated that they had no replacement of components related to extended operation at this facility and any additional inspection activities are within the bounds of normal plant replacement and inspections and, therefore, it's not expected to affect the environment beyond what was stated in the final environmental impact statement.

Chapter 4 addresses environmental impact of operation during license renewal, specifically discusses both Category 1 and Category 2 issues that are relevant to the plant and the site. We looked at the impact for the

cooling system, impacts from transmission lines, radiological impact, socioeconomic impact, ground water use and quality and threatened or endangered species.

Chapter 5 discussed postulated plant accidents and includes a review of severe accident mitigation, which Mr. Andrew Kugler will describe in just a few minutes.

Chapter 6 takes a look at the complete review of the uranium fuel cycle and the solid waste management process and it looked at the impacts to the environment from the fuel cycles. In Chapter 7 we looked at the impacts of decommissioning, which will happen at the time the plant ceases operation.

And Chapter 8 evaluates alternatives to license renewal. It describes the methods that can be used to obtain the same amount of power without having to renew the license at Arkansas Nuclear One.

And finally, Chapter 9 is a summary of our conclusion. So with that I'd like to spend a few more minutes going over the specifics from our environmental review for ANO-1.

First, let me take a minute to talk about the cooling system at ANO-1. Unit 1 uses a once-through core to condense steam in our operation. It takes water from the Illinois Bayou of Lake Dardanelle -- so for those of you not familiar with the plant but you may have seen the cooling

tower, that's appropriate for Unit 2, not Unit 1. The water is taken into the plant through an intake structure which includes bar grates, traveling screens and four circulating water pumps. After passing through the traveling screens, the water enters the circulating pumps. After flowing through the condenser, the water is then discharged back to Lake Dardanelle.

So I'd like to discuss some of the environmental affect from this cooling system used at ANO-1. In order to determine the effects of continued operation, we looked back at the history of the life of the plant during the operation. We reviewed many of the environmental studies that the utility and other organizations have conducted over the past twenty years.

Some of the specific effects we were looking at are entrainment, and entrainment occurs when platonic larval fish and shellfish, particularly in the Illinois Bayou, are carried with the cooling water through the intake screens, pumps and condensers. There's a high mortality rate to these larval fish. ANO conducted monitoring of entrainment for ten years, between 1977 and 1987, to determine if entrainment was impacting the fish population in Lake Dardanelle. ANO determined that most of the fish entrained were not sport fish, that is gizzard shad and threadfin shad -- that's the little critter you see here on the slide.

In the monitoring reports ANO indicated that entrainment does not adversely affect the fish or aquatic organisms in Lake Dardanelle. Also, the Arkansas Game and Fish Commission concluded that entrainment losses have not affected the recreational fishing in Lake Dardanelle.

When we looked at entrainment, we looked at impingement, which is when small fish or shellfish get stuck against the traveling screens located on the intake. These are meant to keep debris out of the cooling water, but sometimes smaller fish are also caught on them. Studies of impingement show that the major species impinged at ANO are the gizzard shad and threadfin shad.

Because of cold temperatures in Lake Dardanelle in the winter months, many of these fish do not survive, and what was found is that these were the fish that tend to be impinged. So it appears that much of the mortality from impingement is not directly related to the plant itself but rather the result of cold water in the winter.

Some of the other affects on the cooling system we looked at were heat shock. As I said, water from Lake Dardanelle is used for cooling at ANO-1. When the water is discharged back to Lake Dardanelle it must meet specific limits that are described in the National Pollutant Discharge Elimination System, the NPDES, permit. We determined that ANO does have a current NPDES permit and that they meet the

discharge limits. Therefore, the impact due to heat shock is considered small.

We also looked at microbial organisms. This is the last of the Category 2 issues relating to cooling system affects. We looked to see if microbial organisms, thermophilic pathogens, those pathogens that thrive in warm or hot water or that they love the heat, to determine if there was an elevated risk from these in Lake Dardanelle from ANO.

ANO took part in a study in 1981 in which it was determined that there were no thermophilic pathogens found in the intake canal or the discharge embayment. Also, the Arkansas State Board of Health was contacted, and they stated that they were unaware of any human health issues, exposure problems in Lake Dardanelle related to ANO.

We looked at the transmission lines. ANO has 240 miles of connect -- transmission lines connected to the site. We looked at the acute effects from electromagnetic fields, that is those that have immediate impact, and we looked at chronic effects from extremely low frequency electromagnetic field exposure. We looked to see if there were any new and significant issues related to these and we found none; therefore, we followed the GEIS conclusions that the impact is small.

Radiological impacts are considered a Category 1

impact, and there's no anticipated increase in public or occupational radiation dose during the license renewal term.

Now I'd like to go out for questions, if there are any, before we continue with the rest of the environmental impact discussion. Anybody have any questions? Okay, then I guess we'll go on.

We did quite an extensive review of socioeconomic impacts, which is the next area that I want to talk about, and there's a variety of these impacts that I'm going to discuss. The first is housing impacts that may result if ANO hired additional employees during the license renewal period.

The plant is considered to be in a low population area, which is described in the GEIS, and the area does not have any growth control measures. However, Entergy has not identified any increase in staffing related to license renewal activities and, therefore, there is not an anticipated change in housing needs for ANO staff.

Our staff also consulted real estate professionals in the same area -- in the area and concluded that impacts on housing during the licensing renewal period would be small. They also looked at impacts on public utilities, both for plant demand and plant related population growth. Since Entergy does not expect to have any additional employees, they also do not expect to have any additional

demands on public utilities, so, therefore, in discussions with the city of Russellville we determined that public utility impacts would be small.

Russellville -- the city of Russellville is planning on doubling the current water treatment processing capacity, but that's not related to the operation of ANO.

Other socioeconomic impacts that we looked at are offsite land use and determined that this will not be an issue. We'd like to point out, however, that the continued operation of the plant will provide a significant continuing tax revenue to the county with tax payments from the site representing about one-third of the Pope County tax revenue.

Transportation in the area around the site is not expected to be impacted by renewal of license since employment at the site would not contribute to anticipated population growth in the area.

One of the other areas that we looked at is historic and archaeological resources. There are no plans for future area disturbance within the site boundary. We did note that there are many potential archaeological sites, both Native American and Euroamerican, and the site has no nationally registered historic places. Historic and archaeological resources appear to be unaffected by the renewal of the license and extension of the operating term since there are no plans for future land disturbance,

structural modifications beyond routine maintenance. Because there is no plans for future land use, then the impact is determined to be small.

Finally, the last issue in socioeconomics is environmental justice. Environmental justice refers to the federal policy in which federal actions should not result in disproportionately high and adverse impacts on low income or minority population. Although the impacts that are identified for the ANO-1 license renewal were small, the staff examined the geographic distribution of minority and low income populations as recorded during the 1990 census and supplemented the inquiries from local planning departments and social service agencies in Pope County.

It was found that, in general, minority populations were small and dispersed, located primarily in the surrounding towns of Russellville, Clarksville, Conway and the outskirts of Morrilton. Information from social service agencies indicated that the Hispanic population has increased significantly in recent years. It was determined that there is no specific methods or pathways that would result in disproportionate adverse impacts on these populations. Specifically looked at were pathways related to subsistence agriculture or fishing.

Next we looked at water use and quality. ANO uses surface water from Lake Dardanelle. We found no groundwater

use issues. Potable water and makeup water is obtained from the Russellville water -- the Russellville water treatment plant, and the water quality is regulated by the NPDES permit.

We looked at threatened and endangered species. We consulted with the Fish and Wildlife Service and determined that there were no federally protected species on the ANO site or the transmission lines right-of-way. There are two endangered species in the area; the Gray Bat is found downstream and the Interior Least Tern has breeding grounds to the west of the site. But it was concluded that there would be no impact from the continued operation of ANO on these endangered species.

We looked at the environmental impacts of the uranium fuel cycle. There are no Category 2 issues related to this, and in discussions and we found no new and significant information and so we are adopting the conclusions in the GEIS.

Likewise, we looked at the impacts of decommissioning, and there are no Category 2 issues here, nor do we find any new and significant information, and we are adopting the conclusions listed in the GEIS.

Finally, we looked at the alternatives to license renewal; this is another part of the NEPA process. Because there is many possible energy sources and mix of energy

sources, we limited the analysis to those that have been demonstrated with capability of sufficient generating capacity to replace the ANO nuclear plant. The alternatives also include a no action alternative, which would simply mean that the NRC would not renew the operating license and Entergy would decommission the plant either at the time of the license expiration, which is 2014, or sometime prior to that.

Two of the alternatives that we did consider that seemed to have the most promise for large scale replacement of power are coal-fired power generation and gas-fired power generation. We looked at the impacts of these alternatives and we discussed them in several different ways. First, with plants located at the ANO site using once-through cooling and, secondly, with plants located at the ANO site but using cooling towers rather than once-through cooling.

We also looked at the potential for closing the site and building an alternative energy plant somewhere else that would be considered a green field site. Green field is a natural site that might currently be forested or that has not been dealt with in any way.

We looked at options for building coal-fired plant or gas-fired plant and the option of using once-through cooling or cooling towers. These are also some of the other options that we looked at. On this slide you can see some

of the other alternatives, including nuclear, which ANO is. The other alternatives were not evaluated in depth because it was either considered that they do not have the capacity or the generating -- or the capability to replace power at ANO.

I do want to point out that we looked at combining alternatives, such as using conservation, the purchase of power from another site and perhaps a new generation -- a new way to generate power at ANO as one of the alternatives to license renewal.

If you are interested in any more of the specifics, because this is a very detailed and in depth chapter, I would ask you to go and look at Chapter 8.

The alternative actions, including no action alternative, have environmental effects that, at least in some impact categories, reached large or moderate significance. As we discussed earlier -- well, actually we didn't discuss earlier -- but a moderate impact is one that is sufficient to alter noticeably but not destabilize important attributes of a resource. And a large impact has an effect that is clearly noticeable and sufficient to destabilize important attributes of resources.

Rather than going into an entire analysis, we've talked about a few of the examples, and I refer you back to Chapter 8. For the most part, the impacts on land use and

ecology range from moderate to large for coal-fired generation and gas-fired generation because additional land would be required for facilities and would require use of land that is currently vegetated. Depending on where the site is located the impacts on water quality might increase to large, especially if it's located in an area which would require ground water for cooling.

So to end my discussion I'd like to discuss our preliminary conclusion, which is that the significance of the environmental effects of license renewal on ANO are small for all of the impact categories that we looked at. Small means that the effect is not detectible or it's too small to destabilize or noticeably alter any important attribute of the resource.

With that I'd like to turn the discussion over to Andy Kugler who will be talking about severe accident --

MR. CAMERON: Let's just check and see if there are any questions on the last part of Eva's presentation on alternatives or any of the other impacts that she noted. All right, good, thank you.

MR. KUGLER: Good afternoon, my name is Andy Kugler and, as Eva indicated, I will be talking about the impacts of postulated accident. In our review we look at two different types of accidents; we look at design basis accidents and severe accidents.

Design basis accidents are designated a Category 1 issue, and we did not discover any new and significant information related to design basis accidents so we adopted the conclusions in the GEIS, and I don't intend to talk about that area any further.

Severe accidents are a little different. There is one aspect of severe accidents that is a Category 2 issue requiring a plant-specific analysis, and that aspect is the possibility of severe accident mitigation alternatives -- you will also hear those referred to as SAMAs. Now severe accidents refer to accidents in which the core is damaged, generally due to some sort of failure of the core cooling systems. This failure would be brought on by some combination of hardware failures and human errors. These types of accidents are captured in the probabilistic safety assessments for ANO-1, and these studies then form the basis we use for our study of accident mitigation alternatives.

The generic environmental impact statements considered severe accidents and looked at the risks that they posed to the public at each of the sites. For each of the sites we determined what the potential releases were related to severe accidents, and then we also looked at the impacts of those releases to the offsite population.

In looking at those we determined that the probability-weighted consequences to the public were small

for all sites. So on that basis we determine that severe accidents themselves are a Category 1 issue and we don't discuss the severe accidents in our environmental impact statement. However, in accordance with the NEPA regulations, we do look at alternatives that could mitigate the impacts of severe accidents, and that's what I'm going to spend time talking about for this afternoon.

The purpose of our evaluation is to make sure that we have determined or developed the possible changes to the plant that could mitigate accidents and then assess those changes. We look for alternatives that either reduce the likelihood that a severe accident will occur or that could mitigate the consequences of an accident once it does occur. The changes that we look at could be hardware changes to the plant; they could be procedure changes, training, anything like that, so it's a very broad review.

Now I'd like to discuss the approach that we took in evaluating severe accident mitigation alternatives. The first thing we needed to do was determine what are the sources of risk for ANO-1, and we relied heavily on the plant specific probabilistic safety assessments that had been done.

These assessments were done for both internal events, such as a pipe break, and for external events, something like a seismic event. In addition, we looked for

insight in other documents, such as generic studies and plant-specific studies that were done at other sites.

Once we identified the sources of the risk, we went about identifying potential changes that could be made to reduce that risk. Again, we used a lot of information out of the ANO-1 specific studies to help us identify where there might be changes that could be made to reduce risks. We also looked beyond that; we looked at the generic studies and other plant studies. Through that process over 150 potential improvements were identified.

At this point we took that group and started to look at the potential changes to determine whether or not they would be beneficial -- cost beneficial to the site. In the first step we eliminated those changes that either did not apply to ANO-1 because of the specific plant design or that had already been implemented at this plant and, therefore, were no longer available to reduce risk.

Once those items were eliminated, we went about assessing what benefit would come from each change, how much of a benefit would be obtained and then converting that into a value. And we also assessed the cost of each change to determine how much it would cost to implement. Some changes were clearly not going to be cost beneficial in that their costs far outweighed the benefits. Some changes also were eliminated because they had a very small impact on risk

reduction and, therefore, would not -- would not be implemented because the cost would outweigh the benefit.

In going through this process we determined that of all those changes fifty made it through the first screening process and only one had a positive value impact. In other words, the benefit gain would outweigh the cost of implementing the change.

Now the last criteria we looked at the bottom of this slide is this risk reduction related to aging effects in the license renewal period.

For the one potential change that was identified as being cost beneficial, we looked at that and determined that it was not related to aging effects during license renewal. The issue relates to training for operators for a particular phase of an accident and is more appropriately considered in terms of the current license.

Entergy is currently evaluating whether to implement this change in the current license, and we are waiting to see what decision Entergy makes and we will evaluate it at that point. But it is not related to aging management and, therefore, it is not related to license renewal.

As I had indicated, all the other enhancements had negative value impact ratio. So our overall conclusion with respect to accidents is that there are no additional plant

improvements that should be made to further reduce the risk of severe accidents for ANO-1 for license renewal. And that's it for severe accidents.

MR. CAMERON: Any questions for Andy on the severe accident analysis? Okay, thanks, Andy. We're going to go to Tom Kenyon now to talk about some preliminary conclusions from the NRC staff on the analysis.

MR. KENYON: You will be happy to hear that we're coming to the end of our presentation -- formal presentation. So now to summarize, Supplement 3 to the GEIS contains a summary of the results of our review as well as potential preliminary conclusions. I'd just like to remind you that the overall decision is not only based on the results of our environmental review but also on the safety review that's being performed under the direction of Mr. Prato.

The preliminary conclusions will be based on the analysis of the findings of the GEIS, Entergy's application, consultation with the local, state and federal agencies and our own independent review, but the staff concludes that the adverse environmental impacts of license renewal for ANO-1 are not so great that preserving the option of license renewal for energy planning decision makers would be unreasonable. Or in other words, extending the license for an additional twenty years is acceptable from an

environmental standpoint.

Now the period for providing your comments on our Draft Environmental Impact Statement ends on January 4th of next year, and after the comment period ends, we're going to assess all the comments that we receive and determine whether or not they're applicable to the environmental aspects of the license renewal for ANO-1. And, if appropriate, we may find ourselves modifying our environmental impact statement to address other comments.

Now in the final version of Supplement 3 all the comments will be identified in Appendix A to the document and we will -- in Appendix A, we'll describe or summarize the comments and we'll also describe how we addressed all the comments. And again, as we did during the issues raised during the scoping period, issues that do not have a bearing on the decision to renew the license will be referred to the appropriate NRC program manager, such as the Operating Plant Project Manager or the Allegations Coordinator.

Now this slide gives you the environmental review milestones; key point there is that the environmental impact statement is planned to be issued in July of next year.

The next two slides will give you my phone number and NRC addresses. As we mentioned earlier, the application and the Draft EIS are located in a hard copy form at Pendergraft Library at Arkansas Tech. You can also review

these documents at the URL shown, and you can look at other related documents at the NRC Website.

Now comments should be provided to the chief of the Rules and Directives Branch either by mail to that address, in person if you want to come down to Washington or by e-mail at that address. And that ends our formal presentation. And in closing I want to thank you for your attention.

Now before we continue on I just want to thank you for attending today's meeting because public participation is an important part of the license renewal process. It's important that you participate because it makes for a better process; after all, you folks know this area a lot better than we do.

I do have one administrative matter I need to address before we continue. We would appreciate it if you would fill out a brief questionnaire that we attached at the end of our handout package to help us improve our future presentations. And if you need pens or you need another copy of the questionnaire, you can get them from the folks at the back or the table. That ends our formal presentation.

I'd like to offer you the opportunity to ask any more questions you might have or to make any formal comments.

MR. CAMERON: Why don't we go to formal comments and then we'll see if there's any additional questions. Garry, did you want to come up and either use the podium mike or, if you want to use this one, you can.

MR. YOUNG: Thanks, Chip. Good afternoon, I'm Garry Young and I'm the project lead for the license renewal project for Arkansas Nuclear One, and I'd like to take this opportunity to thank the NRC staff for the work they've done on preparing the Unit 1 Supplemental Environmental Impact Statement. This document is both thorough and comprehensive for addressing the environmental topics important for consideration at Arkansas Nuclear One, and the range of topics and the level of detail clearly indicate the NRC's diligence in preparing this document and also it provides an excellent source of information for the public about the environment around Arkansas Nuclear One.

I, along with many other Entergy employees that live in Pope County, we love living in this area and enjoy the benefits of living in this community. That's why we share an interest with our neighbors in protecting the environment. As indicated in the summary of the document, the option of licensing renewal for ANO-1 is reasonable from an environmental impact viewpoint. This conclusion is consistent with the findings made by Entergy prior to making the decision to seek license renewal.

I'd also like to thank the Entergy personnel and consultants who supported the license renewal activities that are the basis for the document that we're here to discuss today. This includes the employees who have supported the first 25 years of operation and who have maintained a high level of environmental awareness during those 25 years of operation. Without their commitment to the continued safe, economic and environmentally friendly operation, we would not be here today seeking license renewal.

And finally, I would like to thank our neighbors in the community that are represented here today. As I mentioned earlier, we, the Entergy employees that live in the community, appreciate the support of our community and we appreciate the opportunity to be your neighbors. We are committed to protecting the health and safety of the residents around Arkansas Nuclear One as well as the environment, and this commitment will continue as long as Entergy is a part of the community. Thank you.

MR. CAMERON: Thank you, Garry. Do we have anybody else that would like to make a formal statement? Any questions on any of the presentations that we heard? Okay, well great, thank you all for being here. And for your information, we are going to do another meeting tonight starting at seven o'clock for those people who could not

come out during the day and, of course, any and all of you are welcome to join us again at that time. And I think we are adjourned.

(Whereupon, at 3:00 p.m., the meeting was adjourned.)