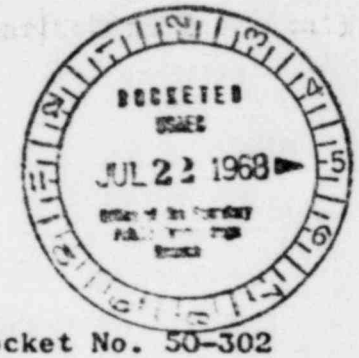
DOCKET NUMBER
PROD. & UTIL. FAC. 50-302

UNITED STATES ATOMIC ENERGY COMMISSION

IN THE MATTER OF:

FLORIDA POWER CORPORATION
(Crystal River Unit 3
Nuclear Generating Plant)



Docket No. 50-302

Place - Crystal River, Florida

Date - July 16, 1968

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BEFORE THE

UNITED STATES ATOMIC ENERGY COMMISSION

In the matter of:	
FLORIDA POWER CORPORATION	Docket No. 50-302
(Crystal River Unit 3 Nuclear Generating Plant)	

Auditorium
Crystal River Elementary School,
705 N.E. 3rd Avenue,
Crystal River, Florida

Tuesday, 16 July, 1968

The above-entitled matter came on for hearing, pursuant to notice, at 10:00 a.m.

BEFORE:

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

DR. EUGENE GREULING, Member

APPEARANCES:

EDGAR H. DUNN, JR., Esq., and HARRY A. EVERTZ, III, Esq., Florida Power Building, 101 Fifth Street South, P.O. Box 14042, St.Petersburg, Florida, 33733, and
ROY B. SNAPP, Esq., 1725 K Street, N.W., Suite 512, Washington, D.C., 20006,
on behalf of the Applicant, Florida Power Corporation.

T. T. TURNBULL, Esq., Assistant Attorney-General of Florida, Tallahassee, Florida, on behalf of the State of Florida.

JAMES F. FAIRMAN, Esq., Law Offices of George Spiegel, 2600 Virginia Avenue, N.W., Washington, D.C., 20037, on behalf of the City of Gainesville and the Gainesville Utilities Department.

GERALD F. HADLOCK, Esq., on behalf of the Regulatory Staff, Atomic Energy Commission, 4915 St.Elmo Street, Bethesda, Maryland

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P R O C E E D I N G S

CHAIRMAN JENSCH. Please come to order.

This proceeding is a hearing convened by the United States Atomic Energy Commission in accordance with a Notice of Hearing on application for a provisional construction permit, which application was filed by the Florida Power Corporation seeking such a permit. And the application was filed in accordance with Section 104(b) of the Atomic Energy Act as amended, and seeks a provisional construction permit for a pressurized water reactor designed to initially operate at 2452 megawatts thermal, and is proposed to be located on a site either owned or under lease by Florida Power Corporation on the Gulf of Mexico about seven and one-half miles northwest of the Town of Crystal River, Citrus County, Florida.

The Notice of Hearing on this application issued by the United States Atomic Energy Commission was given general public notice and included publication in the Federal Register in accordance with the practice of the Atomic Energy Commission in providing public notice of all of its public proceedings.

In addition to the formal publication undertaken by the Atomic Energy Commission, a so-called public information release was issued by the Public Information Section of the Atomic Energy Commission and that notice was sent to several of the newspapers in this region for publication and

information for the public.

In addition, the public officials of the County and the State were notified by the Atomic Energy Commission, including the Governor of the State of Florida and I believe the Attorney General, some of the State Commissions, and the County Board of Supervisors, if I use that term correctly, of Citrus County, Florida.

In accordance with the Notice of Hearing there was held on June 19th, 1968 in this room, the Crystal River Elementary School Auditorium, a pre-hearing conference at which the public was invited to attend, wherein there was participation by the applicant, Florida Power Corporation, the regulatory staff of the Atomic Energy Commission, the Attorney General of the State of Florida, and at which were present and whose names were listed, representatives of two, I believe, of the State Commission, and there were individual statements by some members but not officially on behalf of the Board, but members of the County Board of Citrus County.

The pre-hearing conference was convened for the purpose of establishing procedural arrangements which would aid in the expedition of the case, the presentation of the evidence, and a general discussion of the mode which the parties would suggest to this Board, the Atomic Safety and Licensing Board, for the conduct of the proceedings.

Arrangements were made at that pre-hearing

conference solely in reference to procedural matters. No evidence was received but inquiry was made as to the number of witnesses, the identification of the witnesses, the manner in which the evidence would be prepared for presentation if it were possible, and it was so indicated that it would be, that some of the statements by some of the witnesses could be prepared in advance since their testimony was known for presentation and exchange by and among the parties. And those arrangements have been completed.

This hearing today also in accordance with the notice of hearing issued by the Atomic Energy Commission is to provide for the submission, receipt, consideration of matters of evidence in accordance with the procedure established at the prehearing conference held on June 16th in this room.

This hearing is conducted by an Atomic Safety and Licensing Board which is provided by the Atomic Energy Act. The Atomic Safety and Licensing Board ordinarily consists of three members but the rules of the Commission provide that two members of such a board constitute a quorum and the proceedings can continue with the presence and attendance of two of the members of an Atomic Safety and Licensing Board.

And as you obviously observe, there are two members of the board present here this morning. Unfortunately and regretably a third member, Dr. Hugh Paxton, became suddenly ill yesterday and is and has been unable to attend this

proceeding. The laternate technical member is otherwise engaged on official business of the Government and unable to be here. Therefore, in accordance with the provisions of the Atomic Energy Act and the Rules of Practice of the Atomic Energy Commission, this proceeding will continue with the presence of two members of the Atomic Safety and Licensing Board.

By way of identification, as we did in the prehearing conference, on my left is Dr. Eugene Greuling of Duke University, Durham, North Carolina, who is one of the technical members named by the Atomic Energy Commission for this Atomic Safety and Licensing Board.

My name is Sam Jensch. I am a hearing examiner designated by the Civil Service Commission and assigned to the Atomic Energy Commission.

No member of the Atomic Safety and Licensing Board here present or named by the Atomic Energy Commission has had any prior connection with this proceeding until named by the Atomic Energy Commission for the consideration of this application and since that time, our concern has been limited solely to those matters which are made a part of the public record of this proceeding, which public record is available for inspection by any member of the public at the Public Document Room of the Atomic Energy Commission in Washington, D. C. or any member of the public may examine

the public records which I have with me, which I believe to be complete in all respects except for a few letters that may have come in in the last few days, of which I believe I have all of the copies thereof.

But in any event, any member of the public who desires to review the public record in this proceeding is afforded the opportunity to do so.

End 1

In addition I might add that in accordance with the practice which these Atomic Safety and Licensing Boards undertake, which we hope is not too burdensome, we offer to the members of the public the services of the Regulatory Staff of the Atomic Energy Commission so that any inquiries a member of the public may have may be directed to them and they can readily assist in a review of the public record, or a discussion of the procedures, or any other matter that they are able to assist the public. The Regulatory Staff of the Commission has always done so, and I am sure they will do so for this proceeding.

This hearing, as indicated, concerns itself with the application filed by the Florida Power Corporation for authority to construct and ultimately to operate a pressurized water reactor.

The Atomic Energy Commission desires that a statement be made at the outset, first in reference to jurisdiction and second in reference to procedures.

The Congress of the United States has not granted to the Atomic Energy Commission jurisdiction to consider many matters that in other proceedings many members of the public would desire to have considered at a hearing of this kind. The authority granted by the Congress to the Atomic Energy Commission is limited to two subjects: radioactive safety considerations and common defense and security.

In many proceedings members of the public are concerned with other matters over which the Atomic Energy Commission and likewise this Atomic Safety and Licensing Board have no authority to consider. One of the frequent illustrations of that problem is the effects of additions of thermal enrichment or pollution or disturbance or increase in the cooling waters that may or are proposed to be used for a nuclear power facility.

The Atomic Energy Commission does not have authority to consider the effects of thermal releases from such plants in rivers or other bodies of water that may be utilized for a proposed nuclear power facility.

Likewise, neither the Atomic Energy Commission nor this Atomic Safety and Licensing Board has authority to consider zoning matters or aesthetic considerations or beautification problems that may be in the minds of many members of the public or residents nearby. Nor does the Atomic Energy Commission, nor does this Atomic Safety and Licensing Board have any jurisdiction over general water pollution matters which may or may not arise in the course of the ultimate, if the authority is granted, operation of this facility.

Congress has enacted a Federal Water Pollution Act and the Department of Interior has concerns in that respect. Other agencies of the Government likewise have concern with

those matters. The Federal Power Commission may have some jurisdiction concerning some aspects of the ultimate operation if the authority is granted, of this facility.

The Atomic Energy Commission and this Atomic Safety and Licensing Board do not have authority over those matters which are committed to other agencies or commissions of the Government.

In some proceedings another problem is sometimes raised that is related to alleged anti-trust considerations, the competitive aspects of an applicant, or related participants in electrical operations. Neither the Atomic Energy Commission nor this Atomic Safety and Licensing Board has jurisdiction over such matters.

I mention all that in accordance with the desire of the Atomic Energy Commission that the particular scope of this proceeding be kept in mind and the limited area in a sense in view of the broad spectrum of some problems that are sometimes sought to be raised in these proceedings to indicate that our concern in this proceeding will be limited to considerations related to radioactivity or the common defense and security.

The second matter. These preliminaries take a little time because the Commission is anxious that the public be informed regarding participation, as well as the scope of the consideration in this proceeding. The Rules of Practice

of the Atomic Energy Commission provide two methods by which persons may participate in a proceeding of this kind. One is called by way of intervention. Under that procedure the Rules provide that a person who has an interest likely to be affected by the outcome of the proceeding, and within the scope of the jurisdiction of this proceeding, may file a petition under oath setting forth what that interest is, what he believes will be the effect of this proceeding upon that interest and the contentions that he would raise in reference to this application. Such a petition is filed with the Secretary of the Atomic Energy Commission and also served upon the parties then known to the proceeding, which include, at the outset, the applicant here, the Florida Power Corporation, and that term will be used interchangeably here, and likewise the Regulatory Staff of the Commission, and any other parties who may have been designated by formal order at that time. Those parties have an opportunity within five days to answer such a petition, to either recognize the interest asserted or to make contentions with reference thereto. And thereafter this Atomic Safety and Licensing Board will give consideration to such a petition and such answers, and a formal order will be issued.

That type of participation by way of intervention entitles a person, if the authority is granted by an order permitting intervention, to participate in the proceeding as

a party, to present evidence, to cross-examine witnesses presented by other parties, to make arguments, contentions and file proposed findings and conclusions and briefs and exceptions to the record, and to participate in all respects as a regular party, as either an applicant or the Regulatory Staff of the Commission.

The second method of participation provided by the Atomic Energy Commission is by way of what is known as limited appearance. Under that procedure for participation a person seeks to make a statement of his interest, his concerns, his questions. His problems can be stated informally from the floor of a public proceeding of this kind or submitted in writing. That type of participation does not entitle a person submitting such a statement, either orally or in writing, to be a party and present evidence and cross-examine and file briefs and so forth. But the participation by way of limited appearance permits a person to, in a sense, fully express his concern so that the parties here can know what concerns there are by any of the persons making such limited appearances, and let the parties give consideration to those statements for such evidence as they may desire to adduce in reference to those problems or concerns.

The Commission invites participation in these proceedings by the public. And it is illustrated easily by the provision with reference to the limited appearance that

generally there is no time limit within which a person may make such a request. Although the Commission hopes that persons will indicate their concerns early in the proceedings so the parties may confer with them and learn their problems and concerns and prepare such evidence as they may desire to adduce in reference to those matters, or the Commission provides intervention in accordance with rules that permit the parties to focus upon real concerns as parties need to do in the proceeding.

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At the pre-hearing conference, as indicated, several members of the public speaking as members of the public and not officially as members of any official body indicated their desire to present statements by way of limited appearance at this proceeding. And a call will be later made to enable them to do so.

The State of Florida, through its Attorney General, indicated that it desired to participate in this proceeding in accordance with a particular section of the Rules of Practice of the Atomic Energy Commission which permit a State to participate in a proceeding without formally taking a position with reference to the contentions asserted in the proceeding; a provision especially relating to State participation. A call will be later made in that regard.

There had been presented prior to the convening of the pre-hearing conference a formal request for intervention

by the City of Gainesville, Florida. That petition, however, had not been filed prior to the pre-hearing conference in time to permit the parties, then the Florida Power Corporation and the Regulatory Staff, to answer the formal petition to intervene which had been filed. And provision was indicated that of course the parties would have the opportunity to file their answers, which they did file.

The Florida Power Corporation filed its answer opposing the participation by the City of Gainesville, Florida and the Gainesville Utilities Department in this proceeding.

The petition for leave to intervene by the City of Gainesville and the Gainesville Utilities Department also included a motion to broaden the issues prescribed by the Commission for this proceeding.

The Regulatory Staff of the Atomic Energy Commission filed its answer to this petition, and -- Likewise, it should be stated, the Florida Power Corporation also answered the motion to broaden the issues. The Regulatory Staff of the Atomic Energy Commission did not oppose the petition to intervene. It stated that it felt that under the decisions of the Atomic Energy Commission that discretion had been granted by the Commission to the Atomic Safety and Licensing Board in consideration of the petition such as had been filed by the City of Gainesville, Florida. The Regulatory Staff stated that it consented to the participation by the

City of Gainesville, Florida and the Gainesville Utilities Department to the petition to intervene. The staff and the Florida Power Corporation both, however, opposed the motion to broaden the issues which the Commission had prescribed for consideration by this Atomic Safety and Licensing Board on the grounds it may be stated that there was no jurisdiction in either the Commission or this Board to consider the matters sought to be introduced by way of the motion to broaden the issues.

This Atomic Safety and Licensing Board gave consideration both to the petition to intervene, the answer by the Florida Power Corporation and the answer by the Regulatory Staff of the Commission and considered that the consent by the Regulatory Staff amounted to a request, since the consent was somewhat neutral in its character, and construed the consent to be a request, and upon that basis granted the petition by the City of Gainesville, Florida and the Gainesville Utilities Department to participate as a party in this proceeding, limited to the issues prescribed by the Commission for consideration in this proceeding, and within the scope of the jurisdiction granted by the Congress to the Commission and likewise to this Atomic Safety and Licensing Board.

An order was entered by this Atomic Safety and Licensing Board granting the petition seeking intervention,

but denied the motion to broaden the issues upon the ground that the issues sought to be introduced by way of the motion to broaden the issues were beyond the jurisdiction of this proceeding.

We have not had a formal statement of appearance in this proceeding. And before asking for that, however, and related to the statement that the Atomic Energy Commission desires to have presented here, inquiry will now be made of the REgulatory Staff of the Atomic Energy Commission as to what agencies of State and Federal Government have been informed of this proceeding so that this record and the public here assembled may know that notice has been given to the State and Federal agencies concerning the pendency of this proceeding and the scope of the issues to be considered.

Therefore will the Regulatory Staff indicate at this time the scope, or rather the extent of the notice given respecting this proceeding, and in doing so will you kindly state your name making your appearance for the record?

MR. HADLOCK: Yes, Mr. Chairman.

I am Gerald F. Hadlock, counsel for the Atomic Energy Commission Regulatory Staff in Washington, D. C.

In accordance with the Commission's regulations, the Staff did notify the Governor of the State of Florida of this application, and in fact forwarded a copy of the application and all supplements and amendments thereto to the

Governor.

As Mr. Turnbull, who is Assistant Attorney General for the State of Florida, indicated at the pre-hearing conference through his office, the Public Service Commission and the State of Florida, the Air and Water Pollution Control Commission, the Board of Conservation, the Game and Fresh Water Fish Division, STate Board of Health and the Board of Forestry, have all expressed an interest in this proceeding and have been advised of all the proceedings as they progressed.

In addition, the applicant, in accordance with the regulations, we understand has advised the local authorities, particularly the Board of County Commissioners of Citrus County, of the proceedings, and kept them informed of the progess as it went along.

CHAIRMAN JENSCH: Were there any Federal agencies informed of the pendency of this application?

MR. HADLOCK: Yes, Mr. Chairman. In accordance with our usual procedure we sent applications, copies of the application to several of the Federal agencies, some of whom act as consultants to the Commission in particular respects. Some of those are U.S. Geological Survey, the Department of the Interior, U.S. Coast and Geodetic Survey, the Fish and Wildlife Service of the Department of the Interior. Copies are also sent to the Weather Bureau, and perhaps a couple of other Federal agencies which I cannot

recall at this particular moment. But all of the Federal agencies whom we consider to be interested in this and whom we know have an interest in this proceeding are informed.

CHAIRMAN JENSCH: Very wel l. Thank you.

By making that statement and in entering your appearance, perhaps this would be an appropriate time to have a formal statement of appearances in this proceeding.

Is the applicant, the Florida Power Corporation represented here? And if so, by whom?

MR. DUNN: Mr. Chairman, Edgar H. Dunn, Jr., Harry A. Evertz, III, both of 101 Fifth Street South, St. Petersburg; Mr. Roy B. Snapp, 1725 K Street Northwest, Washington, D. C., counsel for the applicant, Florida Power Corporation.

CHAIRMAN JENSCH: Thank you, sir.

Is there an appearance here on behalf of the City of Gainesville, Florida and the Gainesville Utilities Department?

MR. FAIRMAN: Yes, Mr. Chairman. My name is James Fairman. I am of the law offices of George Spiegel, 2600 Virginia Avenue Northwest, Washington, D. C. My appearance is on behalf of the City of Gainesville and the Gainesville Utilities Department.

CHAIRMAN JENSCH: Thank you, sir.

Is there an appearance on behalf of the State of

Florida, the Attorney General or any of the agencies of the State of Florida?

MR. TURNBULL: If it please the Court, my name is T. T. Turnbull, sir, Assistant Attorney General. I would propose to represent the Governor, the Florida Public Service Commission, who is also represented here by Associate Counsel, Mr. Kenneth Gatlin. I would represent the Board of Conservation, the State Board of Health, which board has counsel present, Mr. Robert M. Eisenberg. I would represent the Game & Fresh Water Fish Division. I would likewise represent the State Air and Water Pollution Control Commission.

The Board of Forestry of the State of Florida has declined to appear and make a statement, and I would represent them for the purposes of making that official statement to this Commission.

CHAIRMAN JENSCH: Thank you, sir.

Is there present here any person who seeks to participate in this proceeding by way of formal intervention?

(No response.)

CHAIRMAN JENSCH: The Board hears no such request.

MR. WOMACK: Mr. Chairman, I never did quite understand. I think I have a limited appearance. My name is W. B. Womack. But I think the group I represent, including myself, have a limited appearance. Do you wish the names of those?

CHAIRMAN JENSCH: I was about to get to that, Mr. Womack. I think this would be an appropriate time, now that you mention it, to do that.

First let me say that I hear no request from any person seeking to participate in this proceeding by way of formal intervention. Therefore we will inquire at this time from all persons who desire to present statements by way of limited appearances.

Before asking for your statement, Mr. Womack, it should be noted that it was indicated at the pre-hearing conference that Senator Lester Holland has submitted a letter for the public record expressing an interest in this proceeding and indicating his hope that this application might be approved.

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Also, there has been more recently received a letter from Senator George A. Smathers to this same effect, as I understand it, a copy of which I have not received, but I was informed from the official records this morning that Senator Smathers' letter is on file with the Secretary of the Commission.

In addition, Congressman William Cramer has submitted a letter, a copy of which I do not have, but I have been informed this morning that his letter likewise is a part of the public record of this proceeding.

The interests of those three public officials is noted and their letters, unless there is objection by any party, will be made a part of the correspondence record in the official files of the Commission.

With that, Mr. Womack, would you come forward, please, and give us your statement by way of limited appearance?

I see there has been arranged a podium and a loud speaker, and maybe this is an occasion for me to express on behalf of the Atomic Energy Commission our appreciation for the use of this school room and fine facility for this public hearing. We are grateful to the Board of Education of this County and particularly Mrs. Williams, the principal of this school, and all others who have helped to provide this fine facility which we appreciate.

Mr. Womack,would you state your full name and address, and proceed.

STATEMENT OF WILLIAM B. WOMACK, CHAIRMAN, BOARD OF COUNTY COMMISSIONERS, CITRUS COUNTY, CRYSTAL RIVER, FLORIDA.

MR. WOMACK: My name is William B. Womack, and I am from Crystal River, Florida.

Those for limited access, sir, Randy Houck -- all these people are from Crystal River, Mr. Leslie Wade, Mr. Stewart Ayers, Mr. Robert Hyde, Mr. Tom Bonsall, Mr. Arthur Colledge, Mr. Tom Downey, Sir Charles Stopford, Geore Dyer -- and if I have missed anybody-- I think that is the list.

CHAIRMAN JENSCH: You are speaking on behalf of all those gentlemen?

MR. WOMACK: Yes, all of those gentlemen.

CHAIRMAN JENSCH: Very well. Proceed.

MR. WOMACK: Would you like to proceed with the statement?

CHAIRMAN JENSCH: Yes, would you please? Unless there is some request by any person making a limited appearance, we would, in accordance with the usual practice, request their statements at the outset so that the parties may give consideration to their expressions before the proceeding receives evidence.

If any person desires to hold their statement

until the presentation of evidence has been completed, we will give consideration to that request.

VOICE: Mr. Chairman, am I to understand that Mr. Womack is making his statement on behalf of all thirteen?

MR. WOMACK: Oh, no, just for myself.

CHAIRMAN JENSCH: And the others will make statements?

MR. WOMACK: The others will make their own statements.

CHAIRMAN JENSCH: I misunderstood. I'm glad to have it corrected.

If you will proceed with your statement, Mr. Womack, we will take the other gentlemen in order.

MR. WOMACK: Thank you, Mr. Chairman.

Of course, we are a small community here in Crystal River. We don't have the reservoir of talent for the money that they have in the Dade County area or the Miami area.

There's seems to be an extensive investigation now. I notice this week that the Atomic Energy Commission has made a grant I think of $60,000 or so for the exploration of the hot water in the Gulf at Turkey Point. Although we don't have the deep water that they have there, I think that we necessarily, in our position, have to hitch our wagon to the star of Dade County.

To this end, I would like to introduce as

evidence in this hearing a complete article which appeared in the June issue of Business Week. This issue of course gives both sides of the conditions and certainly points out the lack of knowledge of thermal effects in the Gulf waters. That is, I think the health of the public comes in there.

If, by accident or so forth, marine life were to get contaminated, this article is-- It is a research article from Business Week and it is the last issue, June 29th, and it is under their research articles. And it says in large caps-- There is no use for the Reporter to take this, I'll give him a copy of the entire article.

CHAIRMAN JENSCH: Well, perhaps I did not express clearly enough, Mr. Womack:

Under the Rules of Practice of the Commission, a person making a limited appearance does not participate in such a way as to entitle him to introduce evidence. I think, however, that perhaps the parties might well desire to read the article to which you refer, but as a matter of evidence, it could not be received. But you may speak concerning your concern.

MR. WOMACK: For his information I can give him a copy of that. It's "Atom power plant in hot water." It says:

"Florida Power & Light's Biscayne Bay facility is under fire from conservationists for threat of thermal pollution. Outcome could affect

nuclear plants all around the country."

Then it is headed up: "Remote area."

"The battle of Biscayne Bay started quietly enough, when FPL ordered two 432,000-kw turbo generators and two boilers to expand its conventional power plant facility at Cutler, in Dade County. However, because of opposition from local residents, permission to add to the Cutler plant was denied by the Metropolitan Dade County Commission.

"FPL engineers -- headed by McGregor Smith, board chariman and himself a conservationist -- went looking elsewhere. They came up with an 1,800 acre site at Turkey Point, a remote and swampy area 20 miles wouth of Cutler, wehre the nearest residents and farms are 4 miles distant. The Metropolitan Commission granted its permission to operate the two conventional units at Turkey Point. The cost, including transmission, was estimated at $22 million.

"If FPL had let things alone at this point, the controversy would not have arisen. The conventional, oil-burning power plant would have required 275,000 gallon perminute of coolant water -- hardly enough to stir up conservationists.

"Uproar. But planning for additional power for the growing area and believing that atomic

power would be more economical over the long haul, FPL ordered two nuclear units rated at 760,000 kw each. These will bring the use of condensing water at Turkey Point up to 1.8 million gallons per minute by late 1971, while increasing the temperature of the water radically.

"This was the signal for the conservationists to rise in an uproar. Some insist that this volume of hot water will destroy the delicate marine ecology in Biscayne Bay and ruin a unique sub-tropical estuary.

"Rebuttal. --"

This is the rebuttal for Mr. Smith who I think is recognized as one of the most brilliant men in the power industry.

"Smith derides the claim, and he cites figures to back his position. He notes that 1.8 million gallons per minute add up to slightly more than 300 acre/feet of heated water an hour. In any 12-hour cycle, this is 3,600 acre/feet or the equivalent of 900 acres, four feet deep.

"The average depth of Biscayne Bay is about seven feet, and the bay takes in an area of some 220 square miles, or 140,800 acres. This means that the bay presumably contains about 1 million acre/feet

of water at low tide. Some 280,000 acre/feet will flow in and out of the bay during each tidal cycle, the average tide being two feet.

"'It can readily be seen," says Smith, "'that the amount of water discharged is quite low compared with the entire body of water in the bay, or even that coming in with the tide. Therefore, there's no chance of increasing the temperature of any appreciable part of the bay, as some people suppose.'

"Besides, as he explains: 'The truth of the matter is that practically nothing is known about temperature tolerance of species that inhabit south Florida.' He also deplores the emotional connotations of the term 'thermal pollution.' A more meaningful term would be 'thermal effect,' he claims.

"Studies.

"To get at the ecological truth of the matter, AEC has granted the University of Miami's Institute of Marine Sciences $60,000 to support a one-year study. This will take the form of a description of what life exists in the part of the bay where the plant is under construction, and its abundance and distribution in relation to environmental factors. The biochemistry of the bay also will be probed -- the organic and inorganic makeup of the water and how it affects animal and plant

distribution.

"A second grant -- aimed at providing some basis for compromise -- is expected shortly from the Federal Water Pollution Control Administration. This will be a kind of census of the fish, crustaceans, and bottom-dwelling animals, such as sponges.

"Dr. Durbin C. Tabb, an associate professor at the Miami institute, believes it's possible to make accurate estimates of the maximum temperatures that bay flora and fauna can tolerate. But he personally is convinced there will be a change in the ecology of the bay once the nuclear units go into operation. For one thing, he says, much elevation of the water temperature above 93F would bring it close to lethal temperature. And when the nuclear units are running, the temperature of some water could approach 110F.

"'They don't have to go much higher than 93F to affect the nature of protein,' he says. Furthermore, while he doesn't believe the entire bay would be affected, he thinks there would be 'radical changes' in perhaps 40 percent of the area.

'Costly.

"Smith has been sparing no effort to state his case. He made a presentation to the Senate committee headed by Senator Edmund S. Muskie (D-Me.), at hearings

held on the Turkey Point plant.

"But the utility chairman also appears to be trying hard to find a solution to the situation. Noting that plans for his giant power plant were formulated and at least partially begun before the federal Clean Water Restoration Act was passed in 1966 and a state pollution act in 1967, he insists; 'We are certainly willing to compromise on this issue, because a solution must be found that will be beneficial to all parties.'

"However, at the moment the alternatives all appear much too costly. For example, cooling towers could be used to reduce water temperature before it is returned to the bay. Or, a conduit could be run out 12 miles to sea so that the heated water would be discharged into the ocean.

"Cooling towers, however, would add $20-million to $30-million to the project, as a rough guess, and a pipeline to the Atlantic many millions more. Smith reiterates: 'We'll do everything within reason. I'm a conservationist, but not a fanatic.'

"Admittedly, there's a certain amount of self-interest in Smith's search for a solution. He knows that because of the bay's shallowness and lack of circulation his plant could run into a recirculation problem because

of its own effluent. In other words, under the present plan, some of the heated water might be recirculated back into the condensers, possibly causing a shutdown.

"'We know this is a possibility,' he says. 'That's one reason we're so anxious to work out some kind of solution. But we've got to decide before long.'

"In the middle.

"When and if the problem is solved, another obstacle looms. Unless federal legislation is passed, the final word on whether FPL's nuclear plant goes into operation will not rest with AEC but with the Metropolitan Commission, following a recommendation by its pollution control officer, Paul W. Leach. And Leach is by no means happy with the prospect.

"'If I am asked to offer an opinion as to whether a permit should be granted on the possibility of thermal pollution alone, I'd have to rule against the company,' he explains. 'But if I am asked to rule based on the total environment, the economy of the community, and the need for the plant, I'd have to say yes.'

"It's a decision that -- rendered either way -- is sure to cause a violent brouhaha. More important: It could serve as the rallying cry for fights over thermal pollution all over the U.S."

End

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That is, in its entirety, a couple of excerpts from a recent issue of Field and Stream.

CHAIRMAN JENSCH: Mr. Womack, would it interrupt you too much if I just asked you a question?

MR. WOMACK: Yes, sir?

CHAIRMAN JENSCH: Perhaps my own statement did not cover enough of the ground to indicate that while the Atomic Energy Commission does not express an opinion in these proceedings nor in its decisions at any time concerning -- if I may say -- the pro and con of the thermal effects, as Mr. McGregor Smith terms it, the Congress has not granted this Commission jurisdiction to consider that phase of it, and it is not to lessen your interest in the matter but merely to say that the Congress has not granted this Commission jurisdiction to consider thermal effects.

Would it interrupt your statement, sir, too much if I requested, as is sometimes done in these proceedings, a statement by the applicant and the regulatory staff concerning not only these matters of jurisdiction but the evidence that each would propose to adduce? And then would you give us your further statement after their statement? Would that be agreeable?

End 4 MR. WOMACK: Certainly.

CHAIRMAN JENSCH: It is not that we are not anxious that you make a presentation fully as you see it, but it might be helpful, not only for your further statement, but for the others here, to have a statment by -- well, any of the parties, really, as to the scope of the evidence as they envision it to be within the issues we have for consideration. And if you wouldn't mind, I will ask Mr. Dunn to make a statement, or Mr. Hadlock, and perhaps Mr. Turnbull and Mr. Fairman, to give us an outline of the proceeding as each of them does envision it. And then perhaps you and the other limited appearances could guide your statements accordingly.

Would that be all right?

MR. WOMACK: Certainly, sir.

CHAIRMAN JENSCH: Very well. I will ask Mr. Dunn. Will you kindly make a statement as you see the scope of the issues and the evidence that you propose to adduce for this hearing?

There are several people here. I don't know whether it would be equally convenient for you to stand and face them with the microphone, and they might be able to hear you better.

MR. DUNN: Mr. Chairman, I think we have an adequate P.A. system here, and it would expedite this matter a little bit, we have a lot of papers to shuffle here, if I may be permitted to make my statement from here.

CHAIRMAN JENSCH: Very well. Proceed.

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STATEMENT OF EDGAR H. DUNN, JR. ON BEHALF OF FLORIDA POWER CORPORATION.

MR. DUNN: Mr. Chairman and members of the Board:

It is the objective of the applicant in this proceeding, following comprehensive legal process established by federal statutes and rules and regulations promulgated by the Atomic Energy Commission, to inform the public of the nature of the applicant's Crystal River Nuclear Generating Facility. This information will comprehensively cover the plant's design and the meticulous care that has gone into assuring the protection of the health and safety of the public, while also maintaining its functional reliability. The issues to be resolved by this proceeding are:

1. Whether in accordance with the provisions of Section 50.35(a) of the Atomic Energy Commission's rules and regulations: (a) The applicant has described the proposed design of the facility, including, but not limited to, the principal architectural and engineering criteria for the design and has identified the major features or components incorporated therein for the protection of the health and safety of the public; (b) Such further technical or design information as may be required to complete the safety analysis, and which can reasonably be left for later consideration will be supplied in the final safety analysis report; (c) Safety features or components, if any, which require research and

development, have been described by the applicant and the applicant has identified, and there will be conducted, a research and development program reasonably designed to resolve any safety questions associated with such features or components; and (d) On the basis of the foregoing, there is reasonable assurance that (1) such safety questions will be satisfactorily resolved at or before the latest date stated in the application for completion of the proposed facility; and (2) taking into consideration the site criteria contained in Part 100 of the rules and regulations of the Atomic Energy Commission, the proposed facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public;

2. Whether the applicant is technically qualified to design and construct the proposed facility;

3. Whether the applicant is financially qualified to design and construct the proposed facility; and

4. Whether the issuance of a permit for the construction of the facility will be inimical to the common defense and security or to the health and safety of the public.

Florida Power Corporation has accepted the burden of proof of these issues and expects to sustain such burden through competent and relevant evidence that can be comprehended by the public and accepted by technically trained nuclear experts.

The regulatory process through which an applicant must

traverse in seeking a construction permit for a nuclear generating plant is most stringent, thorough and comprehensive. It must be in order to accomplish the sole objective of the Atomic Energy Commission, which is to ensure that the plant has been designed and will be constructed and operated in such a manner as to protect the health and safety of the public and so as not to jeopardize the common defense and security of the United States.

Florida Power Corporation has filed its application under Section 104b of the ATomic Energy Act of 1954, as amended, and pursuant to 10 CFR, Part 2, Section 2.101 of the Atomic Energy Commission's rules in order to obtain authority to construct and operate its Crystal River Nuclear Generating Plant.

It is a voluminous document. It consists of six volumes of over 1,800 pages. It details technical design data and other detailed information necessary for the Regulatory Staff of the Atomic Energy Commission to review the application in order to make a determination regarding the issuance of the construction permit.

After the Regulatory Staff of the Atomic Energy Commission has been satisfied insofar as the issues involved in this proceeding are concerned, the entire application must then be reviewed by an independent statutory body known as the ACRS -- Advisory Committee on Reactor Safeguards. It is

only after the ACRS has been satisfied as to these same issues and reports its satisfaction to the Atomic Energy Commission that the application is certified to the Atomic Safety and Licensing Board convened here today for its consideration of the issues.

I feel sure that all here today will agree that many, many hours of study, research and operating experience and almost countless thousands of manhours of work have thus far gone into this project.

Since a nuclear-powered generating station cannot be built or operated without obtaining, first, a construction permit and then an operating license from the United States Atomic Energy Commission, it is patent that, because of the necessary stringent requirments for public safety, the licensing procedure for the granting of such a permit must necessarily involve a penetrating and searching analysis of the safety factors involved in a proposed nuclear generating plant, not only by the Atomic Energy Commission's own highly qualified and skilled Regulatory Staff, but also by expert advisers retained by the Commission. This licensing procedure correctly provides a forum through which state and local authorities, as well as the general public, may be kept fully informed on the progress of the license application and an opportunity to participate in hearings such as this prior to the time action is taken to grant or deny such a license.

To obtain a construction permit from the Atomic Energy Commission, an applicant must establish technical qualifications and financial responsibility and must clearly satisfy the Atomic Energy Commission that a proposed nuclear generating plant will be constructed and, thereafter, operated in a manner that will protect the health and safety of the public.

The Atomic Energy Commission's analysis of an application so as to assure the safety of the public takes into account the size and design of the proposed nuclear generating station and the nature and characteristics of the proposed site. There must be convincing evidence that, under all circumstances up to and including an hypothesized "loss-of-coolant accident," the quantity of radioactive material released to the environment would not exceed the stringent limits established by the Atomic Energy Commission's radiation protection regulations and reactor siting criteria. The Commission's analysis also considers those transients and abnormalities in which the reactor's control and protection systems are relied upon to protect the core and reactor coolant system from damage. The accident referred to above involves the loss-of-coolant resulting from the double-ended rupture of a 36" reactor primary coolant loop pipe. The engineered safeguards are designed to safely shut down the reactor and prevent the release of radioactive material to the environment

in any significant amounts.

During the months that have elapsed since Florida Power Corporation's application was filed on August 10, 1967, the application, as well as members of Florida Power's nuclear team and its principal supplier, the Babcock & Wilcox Company, have been under close study and scrutiny by the staff of the Atomic Energy Commission's Division of Reactor Licensing. Numerous facets of this project have been studied by independent expert consultants who were retained by the Atomic Energy Commission's staff. Their reports are a matter of public record. The inquiry of the Atomic Energy Commission has not extended to such matters as conservation, aesthetics and thermal effects. These are matters reserved to other agencies, both federal and state.

These interested federal and state agencies have been duly kept informed on the plans and efforts of the applicant to have proper and legal regard for conservation, aesthetics and thermal effects. They have also been kept informed of the progress of this application and we feel that their concerns have been satisfactorily resolved to date. Copies of the application and preliminary safety analysis report have been available for public review in the Office of the Chairman of the County Commission of Citrus County, Florida (filed with the Chairman of the County Commission on August 25, 1967); applicant's district office in Crystal River,

Florida; applicant's Crystal River Power Plant site near Red Level, Citrus County, Florida; applicant's Division Office in Ocala, Florida; in the offices of the Governor, the Attorney General, the Florida State Board of Conservation, and the Florida Public Service Commission, all in Tallahassee, Florida; and in the office of the Florida State Board of Health in Jacksonville, Florida.

Since the efforts of the Atomic Energy Commission's staff have been devoted almost exclusively to issues of public health and safety, this inquiry has been of an extremely penetrating nature. Appropriate representatives of Florida Power Corporation and its suppliers have met frequently with the Commission's staff to discuss and evaluate on a continuing and progressive basis all of the elements of the Crystal River Plant which will assure the protection of the health and safety of the public. We have responded to many searching questions and inquiries concerning the adequacy of the plant design and we have furnished in minute detail technical data which we and the Commission's staff have deemed necessary to ensure a full and comprehensive public safety analysis of the Crystral River Plant.

The application, which includes the Preliminary Safety Analysis Report (Five volumes), has also been carefully reviewed by the Advisory Committee on Reactor Safeguards, which I have already mentioned. This Advisory Committee

consists of nuclear scientists and engineers who are drawn independently from the industrial and academic communities in America and who represent all of the scientific disciplines involved in an evaluation of reactor safety. As with the technical experts of the Office of the Director of Reactor Licensing of the Commission, members of our company's nuclear team, key personnel of our supplier, the Babcock & Wilcox Company, and our consultants met with the Advisory Committee on Reactor Safeguards on April 27th of this year and with an ACRS site subcommittee on February 15, 1968, to review the Crystal River Nuclear Plant design, together with its proposed site, and to answer in depth their questions and inquiries relating to the protection of the health and safety of the public.

The Advisory Committee's inquiry and review are most thorough and comprehensive. At this point one could correctly surmise that the design of the applicant's nuclear generating station has been thoroughly X-rayed by the world's most competent nuclear experts; however, this penetrating probe for ensuring a safe plant is only the embryonic stage of scrutiny.

After a permit to construct the plant is granted by the Atomic Energy Commission, in order to ensure the public safety on a continuing basis, it will through its Division of Compliance carefully scrutinize and monitor the construction of the plant to satisfy itself that rigid quality controls

are maintained and that construction of the plant is accomplished strictly in accordance with the permit and applicable regulations. Upon completion of the physical plant, there will again be a thorough review of the posture of the plant upon a request by Florida Power Corporation for an operating license. The predicate for this request will be the filing of all documents necessary to complete the final Safety Analysis Report. Here, again, to continue the requirement for protecting the health and safety of the public, the operation of a nuclear generating station under an operating license is subject to continuing surveillance by the Atomic Energy Commission's Division of Compliance.

Because the regulatory process of the Atomic Energy Commission is most rigorous and thorough, I hope you do not take from this opening statement that the responsibility for safe design, construction and operation of the Crystal River Nuclear Plant rests with the ATomic Energy Commission. The converse is true. It is the responsibility of Florida Power Corporation to design, construct and operate the Crystal River Nuclear Generating Station in a manner that is safe to the public and to its employees and that will in no way endanger their health. This is required by the Atomic Energy Act of 1954, as amended. Our company has been carefully and thoroughly preparing for this responsibility for approximately 12 years through management involvement in nuclear programs

studies and we sincerely believe that we will be capable of establishing in the course of this proceeding that we are now ready to assume this responsibility upon the issuance of the construction permit.

At this time I wish to state for the record that the application of Florida Power Power Corporation was filed with the Atomic Energy Commission on August 10, 1967, pursuant to 10 CFR Part 2, Section 2.101. The application has been fully reviewed by the Regulatory Staff of the Atomic Energy Commission and by the Advisory Committee on Reactor Safeguards in compliance with the requirements of 10 CFR Part 2, Section 2.102 and that, pursuant to Subsection (c) of Section 2.102, the Director of Regulation of the Atomic Energy Commission has made the written report of the ACRS a part of the record of this application.

The applicant, Florida Power Corporation, will stipulate for the record that proper and lawful notice of this hearing has been given in accordance with the requirements of 10 CFR Part 2, Section 2.104.

Pursuant to Section II(e) of Appendix A to 10 CFR Part 2, Florida Power Corporation has filed its "Summary Description of Application" and the "Safety Evaluation Report" of the Atomic Energy Commission Regulatory Staff has been duly filed.

In addition to serving copies of our application and

the Preliminary Safety Analysis Report on the chief executive officer of Citrus County as required by the Atomic Energy Commission's rules of procedure, complete copies have also been delivered or mailed to the Governor of Florida, the Attorney General of Florida, the Florida Public Service Commission, the Florida State Board of Health, the Florida Board of Conservation, and the Florida Development Commission. We have endeavored to keep everyone legitimately interested in our Crystal River Nuclear Plant as fully informed as possible.

I would now like to give a succinct review of the evidence that we will present in this proceeding in addition to the company's application and supporting documents heretofore filed in the proceeding:

1. The first witness will be Mr. J. G. Loader, Treasurer of Florida Power Corporation, whose testimony will relate to our financial qualifications to construct the Crystal River Nuclear Plant. He will also touch upon our company's arrangement for obtaining specified amounts of insurance coverage against possible public liability.

2. Our second witness will be Mr. Joel T. Rodgers, Nuclear Project Manager of Florida Power Corporation, who will describe the reactor and the site. His testimony will cover the evolution of the design of the plant and will emphasize the measures which have been and are being taken in our design of the plant and the steps that will be taken in the

construction and operation of the plant to ensure the public health and safety under the scrutiny of this Commission. A summary description of the reactor and a thorough evaluation of the considerations important to the safety of the public are reflected in our Summary Description of Application. This summary further discusses the matter of the siting of the reactor, as well as safety features of the reactor, including engineered safeguards. This Summary Description of Application, of course, will be made a part of the record of this proceeding.

Mr. Rodgers will also describe Florida Power Corporation's procedures for ensuring qualified personnel to create and implement the design, construction and operation of this Crystal River Nuclear Plant.

Also included in Mr. Rodgers' testimony will be a summary of the company's experience and involvement in nuclear generating projects over the years so that this hearing board and the public will know how this experience will be of benefit to us in the construction and operation of the Crystal River Nuclear Plant.

3. Our remaining witnesses will be a panel of five experts who will be sworn and sit with Mr. Rodgers for the purpose of assisting him in responding to any questions propounded on cross-examination by any interested party or by the members of this hearing board. These witnesses will be Mr. Donald J. Rowland, of Florida Power Corporation; Messrs. Carl E. Thomas and Robert E. Wascher, of the Babcock & Wilcox

Company; Mr. E. Robert Hottenstein, of Gilbert Associates, Inc.; and Dr. Morton I. Goldman, of NUS Corporation.

Florida Power Corporation will also have available a group of backup experts who will be available to answer such questions, under oath, as may be referred to them by Mr. Rodgers.

At such time as the Board requests the applicant to proceed with the presentation of its evidence, I will request that the testimony of Mr. J. G. Loader, upon stipulation with the parties in this proceeding, not be read aloud but that the same be received by the Board and into the record as if read. Mr. Loader will be subject to cross-examination by any party as directed by this Board. Thereupon, I will hand copies of his prepared testimony to the Board and to the official reporter. The parties in this case have already received their copy.

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CHAIRMAN JENSCH: Does this conclude your statement?

MR. DUNN: Yes, sir.

CHAIRMAN JENSCH: Consideration will be given to your several requests later on during the hearing without making any disposition of it now.

Does the staff desire to make a statement?

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OPENING STATEMENT OF GERALD F. HADLOCK ON BEHALF OF THE REGULATORY STAFF, ATOMIC ENERGY COMMISSION, 4915 ST. ELMO, BETHESDA, MARYLAND:

MR. HADLOCK: I think that there is very little I could add to your excellent statement concering jurisdiction of the Commission, or to Mr. Dunn's statement concerning the extent and nature of the Staff's review of this application.

I cannot say that the staff agrees with the statement concerning the jurisdiction of the Commission. The Commission's jurisdiction is limited to matters of public health and safety and the common defense and security and does not include matters such as thermal effects, aesthetics, conservation and zoning, anti-trust matters, and any other matter other than public health and safety and the common defense and security.

As Mr. Dunn has indicated, the staff's review of this application began some eleven months ago, and it has been very extensive and exhaustive. We have met several times

with the applicant and his consultants. We also employ consultants, as Mr. Dunn indicated, including other Federal agencies such as U.S. Geological Survey which looks at the geology of the site, the Coast and Geodetic Survey who looks at seismicity, and also looks at the hydrology. We also have private consultants who look at structural design and various other specific matters. All of those consultants have submitted reports to the staff which we have considered in our review.

Following our review we issued a Safety Evaluation which has been prepared in this case, copies of which are available for members of the public on the back table. That Safety Evaluation has been in the public document room of the Commission for approximately a month now, and has also been distributed to the Board and to the other parties in this proceeding.

As our testimony, the staff's testimony in this proceeding, we will offer the Safety Evaluation. In addition we will offer the testimony of Mr. Charles Lovejoy concerning the financial qualifications of the applicant.

By stipulation, Mr. Chairman, we would propose to offer Mr. Lovejoy's testimony without his being here. As I understand the ruling of the Commission in the pre-hearing conference, that can be done. We have received no request from the Board, as I understand it, that Mr. Lovejoy

be here, and accordingly he is not here today.

I would, however, like to supplement the opening statements here concerning the nature and extent of the staff's review by a summary statement by one of our technical members, Mr. Denwood F. Ross, who can outline in detail the specific technical review that was given to this particular application.

We can present that either now or at any other time the Board wishes, Mr. Chairman.

CHAIRMAN JENSCH: It might be well, by way of general outline, if we may have it now, if it is convenient to your arrangements.

I have received -- or rather there were on the table when the Board came in this morning a statement, or rather a two-page statement by Denwood Ross. Is that the statement to which you refer? Has that been made available to the parties generally?

MR. HADLOCK: That statement has been made available. It consists of five pages. I believe what you have are the technical qualifications, Mr. Chairman. I did distribute to the Board this morning statements of technical qualifications of several of our witnesses which have not previously been sent to the Board.

I also put on the table a suggested agenda which I thought might be helpful, with a check list. I don't

necessarily propose that that be incorporated in the record in any formal way. Those have also been distributed to all of the parties and are also available to the public, to the extent we have additional copies on the back table.

CHAIRMAN JENSCH: Very well. Consideration will likewise be given to some of your specific requests later on in the proceeding.

In the meantime, however, I think it would be well, as you suggest, to have a statement of the technical aspects as they are reviewed by the Division of Reactor Licensing, and Mr. Ross, without being sworn now, unless you desire to have him sworn, can make a statement similar to that which applicant's counsel has given by way of general outline. I think it would be helpful not onlyto the Board, but to the public who are here assembled.

Will you proceed, Mr. Ross?

MR. ROSS: The Florida Power Corporation applied to the Atomic Energy Commission on August 10, 1967 for a permit to construct and operate a pressurized water reactor at its Crystal River site in Citrus County, Florida.

Technical safety reviews of the proposed nuclear generating station have been performed by the Commission's Regulatory Staff, based on the applicant's Preliminary Safety Analysis Report (PSAR) and five subsequent amendments. We have also had the benefit of several meetings with the applicant and his contractors and consultants.

We also received reports from consultants on special aspects of the application, including: seismicity, U.S. Coast and Geodetic Survey; geology and hydrology, U.S. Geological Survey; hurricane effects, Coastal Engineering Research Center (of Army Corps of Engineers); meteorology, U.S. Weather Bureau (of Environmental Sciences Service Administration); and, for environmental considerations, the U.S. Fish and Wildlife Service. We also received a report from Nathan M. Newmark Associates, our structural design consultant.

The proposed reactor system, to be furnished by the Babcock & Wilcox Corporation, is designed to operate initially at nuclear power levels up to 2452 Mw thermal. The thermal and hydraulic characteristics of the reactor were reviewed for operation at 2452 Mwt. Since the applicant anticipates that the maximum power level may ultimately be increased to

2544 Mwt, the evaluation by both the applicant and the staff of the engineered safety features and the accident consequences wa performed for the higher power level of 2544 Mwt.

We reviewed the site-related aspects with the assista of our site and environmental consultants. The significant sit aspects that were reviewed include the predicted effects of a Maximum Probable Hurricane, and the methods of filling and controlling solution cavities in the foundation limestone. We conclude that the hurricane protection standards are acceptable based on criteria now available. We also conclude that the foundation is acceptable, based on the proposed grouting procedures for filling and controlling cavities.

The reactor system is essentially identical to those proposed for Duke Power Company's Oconee units and the Metropolitan Edison Company's Three Mile Island Station, for which construction permits have been issued. Items of similarity include the core thermal-hydraulic design, control rod drives, steam generator design, and pressure vessel design. The containment structure is to be designed by Gilbert Associates, who also designed the containment for the Three Mile Island unit.

The Crystal River application was reviewed in depth with respect to: the radioactive waste disposal system; the emergency power systems; the response of the reactor system to combined loadings of a loss-of-coolant accident and a maximum

probable earthquake; the structural design criteria; the emergency core cooling system (ECCS); and the ECCS response to a spectrum of breaks in the primary coolant system. WE also examined the technical qualifications of the applicant, including the contractors and vendors, and the applicant's planning for conduct of operations, both normal and emergency.

Eight items have been identified by the applicant as requiring research and development effort during the detailed design for the plant. These include R&D experimental work on: steam generator, control rod drives, in-core neutron detectors, thermal and hydraulic aspects of the core, iodine-removal spray systems, fuel rod performance in a loss-of-coolant environment, and core barrel check valve vibration studies. Further analytical work is required on the xenon oscillation phenomenon and on the potential effects of a positive moderator coefficient. We conclude that there is reasonable assurance that these programs will be completed on a timely basis relative to the applicaton for a provisional operating license. Work is continuing by the Babcock & Wilcox Company on effects of combined seismic and loss-of-coolant accident loads. We will review that information when available. The B&W Company is also continuing studies on pressure-vessel thermal shock and a failed-fuel-element detection scheme. The applicant will submit the result of these analyses to us for review when available.

The offsite power system has been revised following specific comment by the Commission's Advisory Committee on Reactor Safeguards. The applican has listed the revised design criteria in the Summary Desc.iption of Application. We expect to review the final design when available. The hurricane-protection design will be reanalyzed utilizing new criteria now under development by the Environmental Sciences Service Administratior.. The applicant has listed his intention in the Summary Description.

The Commission's Advisory Committee on REactor Safeguards (ACRS) performed an independant review of the proposed plant and provided comments and recommendations in its May 15, 1968 report to Chairman Seaborg. The ACRS recommended that the applicant modify its offsite power system to comply with General Design Criterion 39. The applicant has proposed an acceptable design basis for compliance with the ACRS recommendation. Other ACRS comments referred to items in the ACRS reports on Oconee and Three Mile Island plants and have been considered by the applicant in its PSAR. The ACRS concluded that, if due consideration is given to the mentioned items, "the proposed reactor can be constructed at the Crystal River site with reasonable assurance that it can be operated without undue risk to the health and safety of the public."

As a result of the safety reviews by us and the ACRS

the design of several safety related items was modified, in addition to the change in the offsite power noted previously. The design of the emergency core cooling system was also revised to conform with the intent of General Design Criterion Number 44, by providing for two independent pumping systems. Each system is capable of coping with the full spectrum of breaks. The testing program for the core barrel check valve was extended to provide experimental verification of vibration characteristics. The reactor control and protection system was revised to provide additional separation of control from protection channels, and to separate the control rod assembly clutches into several independent circuits. The reactor coolant flow-rate detection system was improved by providing direct measurement and protective action for flow-rate abnormalities.

We considered radiation exposures which might occur during normal plant operation and those which might occur in the unlikely event of an accident. We concluded that none of the events would lead to offsite doses in excess of Part 100 guidelines.

We conclude, based on our review of the PSAR as amended, that appropriate findings can be made on the issues set forth in the Notice of Hearing in this proceeding.

CHAIRMAN JENSCH: Does that conclude the staff's statement?

MR. ROSS: Yes.

CHAIRMAN JENSCH: Thank you.

It occurs that it might be added that, as was suggested in the statement given by the staff, that this hearing for a provisional construction permit generally envisions within its scope a consideration of a proposed design of a facility with the principal architectural and engineering criteria for the design, as the staff's statement indicates, the developments of modern technology will be available during the course of the construction to be applied to the details of the design as the construction work progresses, if a provisional construction permit is granted.

Procedures are also provided by the Atomic Energy Commission for a further hearing if a provisional construction permit is granted and if construction proceeds in accordance with that permit, and if the applicant later applies for authority to operate the plant the Atomic Energy Commission has provided that there will be a hearing at the operating permit stage if a request is made for a hearing by a party or if in its consideration any person files and requests and whose interest is such as to qualify for consideration for a hearing at the operating permit stage.

In those several respects, then, it should be

indicated that not only does the applicant have further work to do on design, but the Regulatory Staff of the Commission continues to review the developments as modern technology develops to permit the application of certain aspects to the design, but that likewise the separate statutory group provided by the Atomic Energy Act known as the Advisory Committee on Reactor Safeguards will again review the final design as will do the Regulatory Staff. But, likewise, there may be a public hearing when the final design has been determined and established and an application has been made for an operating license.

The statement should also be made as to what the hours are in a proceeding of this kind. This is a little longer than we ordinarily continue, but sometimes the recesses are guided by the convenience of the witnesses, of whom there has been none so far in this proceeding, and because many of the statements presented are those which the reporter can check against the public record statements.

I don't mean to minimize our consideration for our reporter, but generally unless he shows some exhaustion, we try in these opening portions of an evidentiary hearing to extend our session a little longer than ordinarily.

The hours of the proceeding are generally from 10:00 in the morning until 12:30, and from 2:00 until 4:30, and either of those termination hours are subject to change,

depending upon the convenience of the witnesses and how the subject matter is being presented, and may be extended somewhat.

Likewise, the reconvening of the morning sessions can be changed, depending upon the suggestions of the parties and the wishes of the participants in the proceeding.

All members of the public are directed to be informed of the hours by attendance of the hearing or reference to the public record prepared. No further notice will be given of changes. They will probably be designated in the course of the proceeding. And we might, for instance, meet at 9:30 in the morning and we might go on until 5:00 or 5:30 or 6:00 in the evening.

During each of the morning and afternoon sessions we generally take a recess for a few minutes, five or ten minutes. We have not done that this morning because we have felt our reporter is holding up well, and the statements can be reviewed for accuracy at a later time.

We will, however, provide for recesses when the matters in evidence are presented. We will continue without a recess unless the necessity of the case requires.

Let me turn to Mr. Turnbull.

I don't ask you, sir, to give your statements from the agencies which you represent which you desire to make, but do you desire to make any general statement at this time

and then later present your statements from the agencies?

We would be glad to have that if that is agreeable.

OPENING STATEMENT OF T. T. TURNBULL,

ASSISTANT ATTORNEY GENERAL OF FLORIDA,

TALLAHASSEE, FLORIDA, ON BEHALF OF THE

STATE OF FLORIDA.

MR. TURNBULL: Mr. Chairman, I think it would be wise for me, representing the State, briefly to indicate what the State's position might be.

CHAIRMAN JENSCH: Proceed.

MR. TURNBULL: I would suggest to you, sir, and to the members of the public who are here, because I think they are the ones more concerned with our position today --

CHAIRMAN JENSCH: Mr. Turnbull, I know your voice carries very well. I don't know whether the use of the microphone would assist the members of the public. Somebody is waving their hand saying yes.

MR. TURNBULL: Suppose I use this one, your Honor.

CHAIRMAN JENSCH: Very well.

MR. TURNBULL: The State's position basically is, sir, that we recognize that the State as such has no jurisdiction in the question of safety, that aspect having been preempted by the Federal Government, and rightly so. However, in the question of pollution as it may occur, if it does, from this date forward the State conceives its position to be that State law will then control.

And at that time, if it becomes necessary to do so, the State will enter into the picture under the State's law, working always of course with the Federal Government, who likewise has a pollution control law, to do then what the exigencies of the situation appear to need to be done.

Consequently, our position today will be that we will recommend to the Commission that the license today be granted to Florida Power Corporation, knowing full well that the Federal Agency will look to the safety aspects; likewise knowing full well that at such time as it may be necessary to do so, the State under its law may proceed if pollution should possibly occur.

Briefly, then, Mr. Chairman, that is the position of the State.

CHAIRMAN JENSCH: Thank you, sir.

Mr. Fairman, do you desire to give some statement of your position or the scope of the matters you believe, and are you going to introduce evidence?

OPENING STATEMENT BY JAMES F. FAIRMAN ON BEHALF OF GAINESVILLE AND THE GAINESVILLE UTILITIES DEPT.

MR. FAIRMAN: Mr. Examiner, we will have no direct evidence. We do plan to cross-examine the witnesses.

I think for the benefit of those of you who are attending I should say this on behalf of Gainesville.

The City of Gainesville and the Gainesville Utilities Department has for some time been negotiating with the applicant for an interconnection electrically to serve those territories that are contiguous with their properties in the Gainesville area. And earlier this year, the Federal Power Commission in their initial decision ordered this interconnection.

There are some disagreements presently as to just what the terms and conditions should be, but as I understand it, this is the basis on which the Board today has permitted us to intervene and at least have an opportunity to present some questions to the Commission's staff and the applicant.

We are restricted somewhat because this case for this hearing has been, as you have been advised, limited to the research and development aspects and as a result, some of what we think are more interesting problems will have to await consideration by another body at a later date.

However, it is the position of the City of Gainesville that the Florida Power Corporation and themselves,

mutually concerned for their public utility responsibility, ultimately serving Florida residents with available electricity and with reliable power systems, that the end result of what you are seeing the beginning of here today is in fact a very dependable, reliable system which is being added to the Florida Power Corporation's physical plant. And we will, insofar as we are able to do so, demonstrate that much has gone on; many years of development and research have been undertaken by the manufacturers of nuclear power equipment, and that indeed, the Florida Power Corporation with their twelve years of preparation, ten years that the Babcock and Wilcox people have been undertaking, this work for the utilities industry, does in fact point to what our conclusion would be, namely, that this in fact is [illegible] and dependable operation.

CHAIRMAN DEKLE: Mr. [illegible].

MR. DUNN: Mr. Chairman, I'd like the record to reflect to correct two statements [illegible].

In the first [illegible], this Commission has dictated through its Chairman that Florida Power interconnect with Gainesville only after certain things have been accomplished.

Secondly, there is a highly controversial item in that proceeding before the Federal Power Commission as to whether or not the City of Gainesville [illegible]

anything to the integrated system of the Florida Power Corporation.

I realize, sir, that these are issues outside the scope of their authority to intervene in this case.

CHAIRMAN JENSCH: Very well.

If we may turn again to the matter of limited appearances, Mr. Womack, if there has [illegible] reference to your statement, do you desire to make a further statement in reference to your limited appearance and if so, you were present, were you not, during all of the statements by Mr. Dunn and Mr. Hallock, [illegible] Turnbull and [illegible]

MR. WOMACK: [illegible]

CHAIRMAN JENSCH: [illegible] consideration to these statements in your [illegible]

MR. WOMACK: [illegible]

Mr. Turnbull expressed it, [illegible] that this country was built [illegible] the unknown. There is no question [illegible]. But the [illegible] thing that we objected to [illegible] the Florida Power Company [illegible] complimented on a wonderful plan. [illegible] thoroughly and I know [illegible] from the foundation to the containment and for the hurricane [illegible] and what they have done for that, and the atomic waste disposal, and the power on and off the site, and the backup of the generators with diesels. But

the power-- All the power leads -- they have batteries to keep the monitoring system going.

It is just a wonderful document from the layman's standpoint. I can say that.

But as Mr. Turnbull has so amply said, the only thing that we are afraid of is the pollution part of it, certainly not the construction of the plant because I don't think-- I have never seen a document any more complete than the construction of that plant, and I am certain that Florida Power is just as concerned as we are about the pollution of their Bay because it would mean sudden dealth to this community, there's no question about that.

So as I say, we certainly want to still pierce the unknown but we don't want a shot in the dark in that area, so I think that would be the consensus of the opinion. As I say, as Mr. Turnbull so amply stated, if the regulatory bodies will regulate-- But it has always been, as I can see it, to the contrary.

I think possibly we can think about the Rock Creek Park, for instance, in the shadow of the Lincoln Memorial. The entrance of it is completely polluted, and that is where the regulatory people live. The Potomac is the most beautiful body of water in the world and it is entirely polluted. The water we're talking about out here now is already polluted. It used to be one of the finest oyster places in the world,

the Crystal River oysters. Now they are condemned.

Where are the regulatory bodies? Crystal River itself is already polluted. Even our Health Officer here in the County doesn't have a boat where he can go out and take a sample. So it seems that the ones that pollute has more power than the regulators. So that's what concerns most people.

So certainly if they build the plant -- and I am sure that Florida Power is just as anxious to preserve the marine life of this area as we are, and certainly I hope that the research will go along with the building of the plant, which I am sure it will.

And I appreciate your indulgence, sir.

CHAIRMAN JENSCH: Mr. Womack,you have taken up all of these subjects for some time. I wonder if you have noted, for instance, that -- I believe it is entitled the Federal Clean Water Pollution Act -- was only recently enacted within the last two or three years, so that there has not been jurisdiction granted by the Congress to maybe start doing what they are starting to do. You recognize that?

MR. WOMACK: It's wonderful news to hear it, and I understand that they are going to clean up the Potomac at least.

(Laughter.)

CHAIRMAN JENSCH: I don't think they have overlooked Crystal River. They will get to it in time.

MR. WOMACK: There is one other thing I would like to bring out in a constructive way, not in a destructive way but in a constructive way for the Florida Power and Light Company now.

Most of us that live here in Crystal River-- They have one plant that is operating -- has been operating about a year, and when we go outside to fish, we tell the direction and velocity of the wind by which way the smoke is running. So we can tell that-- Sometimes the black smoke is as far as you can see on the horizon. And I am sure that Pittsburgh didn't start out to be polluted. It must have started out with one chimney, and I think there is something Florida Power could do. I don't know whether they have or will, but we can always tell how to get back into Crystal River by the smoke coming out of the stack of Florida Power's one plant now.

So that just as a constructive suggestion I would think that if Florida Power and Light could get some kind of an arrester to stop that smoke --

CHAIRMAN JENSCH: Don't you want to get back?

(Laughter.)

MR. WOMACK: They're going to paint the stack red I understand, and we'll find it.

(Laughter.)

CHAIRMAN JENSCH: Mr. Womack, I know you want to give credit where credit is due. I think you said Florida

effects on the environment are considered, and this part of the study begins from the moment the site isis selected.'"

So if we had been carrying on some research work in this area since the site was selected we would have the answer; I'm sure of that.

Thank you so much, sir.

CHAIRMAN JENSCH: Thank you, Mr. Womack.

Power and Light. You meant Florida Power?

MR. WOMACK: Yes, sir.

And I am certain that they contribute a lot to this County. We are not against Florida Power Corporation, I will guarantee that, and we want to be a partner to them, and I am not saying this as destructive criticism, as I say. I meant it to be constructive criticism.

CHAIRMAN JENSCH: I think the article from which you read from Business Week I think indicated that everybody has really studies this and the proper agencies are trying to put their shoulder to the wheel to see that all interests can be accommodated within the necessities of society. You recognize that?

MR. WOMACK: Certainly, I realize that, and there is a lot being done all over the country.

And some of the top power and light people-- If I may just read one thing? It is constructive, I think. It has no relation to the power but you might recognize this gentleman. It says:

"Other planners in industry might heed the recent comment of Northeast Utilities Chief of Environmental Sciences & Services, Dan Hedden."

The technical world knows about him.

"'The time has come,' Hedden believes, 'when plans for any new plant are not complete until its

CHAIRMAN JENSCH: Do we have another request for limited appearance? If so, kindly state your name and address.

STATEMENT OF HOWARD ZELLER, ON BEHALF OF THE FEDERAL WATER POLLUTION CONTROL ADMINISTRATION, WASHINGTON, D. C.

MR. ZELLER: I am Howard Zeller and I represent the Federal Water Pollution Control Administration, which has been referred to on several past occasions.

CHAIRMAN JENSCH: By the way, while you are introducing that subject can you, just for the record, tell us when was the Federal Water -- Clean Water Act enacted?

MR. ZELLER: In 1965, with amendments in 1966.

CHAIRMAN JENSCH: Thank you, sir. Will you proceed?

MR. ZELLER: I am appearing on behalf of our regional director, Mr. John R. Thoman, who was unable to be present here today, and I should like to make a statement in his behalf.

CHAIRMAN JENSCH: Proceed.

MR. ZELLER: I will preface my comments by stating that although we understand today's public hearing does not address itself directly to possible thermal effects of cooling water discharged from the Florida Power Corporation's Crystal River Unit No. 3 Nuclear Generating Plant, we believe that significant temperature increases should be an important

concern in considering this power generating facility. AS I am sure you are aware, as the demand for more power increases and more generating plants are constructed, the problem of thermal pollution grows proportionately; for wherever and whenever a new power plant is built, the attendant problems or effects of heat discharged into the environment must be weighed.

Thermal pollution is not new, but it is a problem that has only recently received widespread public attention. In fact, concern about thermal pollution is a prime example of the public's rapidly increasing interest in the possible harmful encroachment of the needs of civilization on our natural environment. This concern adds a critical dimension to the considerations of both sites and design of power generating plants.

Unfortunately, however, while public awareness and concern have increased, our knowledge of the effects of thermal discharges into natural water environments has sadly lagged. We do have some general information, however, about effects of heat discharges. For one things, as the temperature of a body of water increases, its ability to hold oxygen decreases. Secondly, the metabolic activity of many aquatic organisms is doubled for every 10°C. rise in water temperature according to vant'Hoff's Law. And thirdly, as water temperature increases, the toxicity of poisonous materials in a body of water may be increased, and susceptibility of fish

to many diseases may also be increased. On these fragments of knowledge alone, it is evident that thermal effects must be included in considering any discharge from the Crystal River facility or any other plant.

According to information provided us by the Fish and Wildlife Service, the Crystal River Nuclear facility under consideration today, would be located adjacent to Crystal River Unit No. 1 presently in operation and Unit No. 2 which is under construction on the Gulf of Mexico Coast, 7.5 miles northwest of Crystal River. Two pressurized water reactors, designed for a combined ultimate output of 5,088 thermal megawatts and a net electrical output of approximately 1,758 megawatts, would be used as a power source. The heated effluent from the cooling system will be discharged into a shallow water area between spoil from the condenser water discharge channel and spoil from the Cross Florida Barge Canal. This 350-acre area is open to the Gulf of Mexico on the west at Demory Gap. The bottom of this shallow water area is predominantly hard sand and rock.

Several large bars of "coon" oysters occur within the area and small patches of Cuban shoalweed are found in the vicinity of Demory Gap. Although commercial net fishing in the area is limited, crabbing along this section of Gulf of Mexico coastal marsh is extensive. There is a valuable sport fishery for redfish (channel base) and seatrout

in the estuarine area surrounding the project site during winter months.

According to statements of Florida Power Corporation personnel, water in the area of the proposed cooling water intake reaches a seasonal high temperature of 84°F. to 86°F. during August, and surface temperature reaches 92°F. during calm days. An anticipated 8° to 10°F. gain in temperature will occur as the cooling water passes over the condensers. The gain in heat will remain more or less constant, while the volume of cooling water required will vary according to sea temperature and operational demands. Water requirements for cooling the conventional coal-powered units vary between 285,000 g.p.m. (3,800 c.f.s.) for a single unit to 600,000 g.p.m. (8,000 c.f.s.) for both units. Estimates of the quantity of water required for the operation of each nuclear unit vary between 668,000 g.p.m. (1,500 c.f.s.) and 1,032,000 g.p.m. (2,300 c.f.s.) with a calculated average of 810,000 g.p.m. (1,800 c.f.s.).

We believe that because of the limited size of the area to receive the discharge, a significant portion of the 8° to 10° increase at the condenser may occur in the receiving waters.

We are not able to say at this time whether or not that temperature rise will be in compliance with federal-state water quality standards as they apply to Florida. As you may know, Florida's water quality standards have not yet been approved

by the Secretary of the Interior.

One reason is that we have not been able to work out a mutually satisfactory criterion on temperature, which is an especially complex issue in Florida. Several suggested criteria are being considered, and we expect a satisfactory resolution of the problem in the near future. At the time standards are approved we and the state will, of course, advise all interested parties of those standards as they relate to the Crystal River Plant.

Meanwhile, we concur with the request of the Fish and Wildlife Service that the Commission urge the Florida Power Corporation to:

1. Cooperate with the Fish and Wildlife Service, the Federal Water Pollution Control Administration, the Florida Air and Water Pollution Control Commission, the Florida State Board of Conservation, the Florida Game and Fresh Water Fish Comm ssion, and the Florida State Board of Health, and other interested State agencies to develop ecological surveys, initiate these studies at least two years before reactor operation, and continue them on a regular basis or until it has been conclusively demonstrated that no significant adverse conditions exist.

2. Meet with the above-mentioned federal and state agencies at frequent intervals to discuss new plans and to evaluate results of existing surveys.

3. Make such modifications in project structures and operation as may be determined necessary by the pre-operational or post-operational surveys to protect the fish and wildlife resources of the area.

While recognizing the absolute necessity for increased power generation by this facility to meet rapidly growing demands, we urge that continued careful consideration of the applicant be given to maintaining and protecting the quality of the environment surrounding this installation.

Thank you.

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CHAIRMAN JENSCH: Before you leave, Mr. Zeller, you were here, were you not, when the applicant and the Regulatory STaff and the State of Florida made their statements?

MR. ZELLER: Yes, I was, sir.

CHAIRMAN JENSCH: Now you also heard Mr. Womack express his thoughts about the thermal effects?

MR. ZELLER: Yes, sir.

CHAIRMAN JENSCH: Now you are from -- are you from the Department of the Interior?

MR. ZELLER: Yes, sir, I am from the Department of Interior, from the Federal Water Pollution Control Administration. I came forward at this time because it would appear pertinent that my comments be made at this time with regard to jurisdiction, authority and so forth.

We recognize, of course, the function and the purpose of this hearing, and that is why my comments were directed along these lines.

CHAIRMAN JENSCH: Well, as you have heard, there seems to be quite an interest in this thermal effect problem. What kind of procedures does your agency make available for considerations of that kind, recognizing that this Atomic Energy Commission proceeding does not have jurisdiction in that regard?

MR. ZELLER: We have available through our Department technical services in cooperation with the

State. We also have available research and development grants through our agency to measure and evaluate effects of thermal pollution. We also have, as a regulatory function, as Mr. Turnbull referred to, State and Federal agency under the Water Quality Control Act. The Department of Interior and the State of Florida is jointly developing water quality standards that pertain to interstate and local waters, and within these standards are thermal criteria for discharges, which I think Mr. Turnbull was referring to.

CHAIRMAN JENSCH: Can you suggest to Mr. Womack and those perhaps whom he listed what you would afford as a remedy or procedure for their concerns?

MR. ZELLER: I should like to talk at some length to Mr. Womack when the hearing is adjourned. I think, Mr. Chairman, that this has been well summarized with regard to -- Mr. Turnbull, again, I think his comments were very clear in this direction, that as the plant proceeds with operation, should there be a need for intervention and working out problems, this will be done.

At the present time I think the matter, if I may quote, is"in capable hands."

CHAIRMAN JENSCH: Well, let me pose a question specifically.

What can Mr. Womack do by way of working with your agency? As has been indicated, the Atomic Energy

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Commission has provided two measures, two methods by which the public can participate in the consideration of public health and safety measures, and the Atomic Energy Commission encourages participation by way of limited appearances and makes provision for formal intervention.

Now what does your agency do for the thermal effects which Mr. Womack has mentioned as concerning him and several others?

MR. ZELLER: As I stated, we do have the possibility of making technical surveys available to evaluate the thermal effects should they occur, working, of course, in very close cooperation with the State, which has the primary responsibility in this area. Butwe would provide with the state, and with the state's permission technical back-up service to them for surveys to determine thermal effects.

CHAIRMAN JENSCH: What can Mr. Womack do to have a remedy through your agency?

MR. WOMACK: The most interesting to me was when he mentioned something about a grant that was available.

(Laughter)

CHAIRMAN JENSCH: I didn't understand that he was granting it to Mr. Womack. I understood that he was--

MR. ZELLER: There are grants available through our agencywhich have been made to countless universities and consultants for research and development along any particular

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line of water pollution control. In this respect thermal effects would be eligible as far as a grant.

Going back to Mr. Womack, I think he has fulfilled a very important function in his appearance here by pointing out his interest in the problem. And I am sure that through his appearance here, and other individuals who are appearing here, that many people will be alerted to his concern. And, as a result of this, there will be beneficial results forthcoming.

CHAIRMAN JENSCH: Let me ask: Is there any remedy or procedure for Mr. Womack with your agency to participate in the expression and consideration of the concern that he has indicated; at your agency?

MR. ZELLER: I'm not sure-- Yes, he could advise our agency of his concern, certainly. The primary responsibility in this matter is with the state agency.

CHAIRMAN JENSCH: Well, I just wanted the public to be informed, if you could so inform them, as to whether they can turn to your agency in any respect for the thermal effect problem which you recognized as a Federal-State concern, and not that of the Atomic Energy Commission.

MR. ZELLER: Well, of course, any citizen can contact our agency at any time with regard to any concern that he may have in the area of water pollution control.

CHAIRMAN JENSCH: But there are no proceedings

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wherein there are procedures for participation such as for Mr. Womack?

MR. ZELLER: No. Not for working with an individual.

CHAIRMAN JENSCH: Very well.

MR. WOMACK: Sir, I would just like to reiterate.

I know that the Florida Power Corporation is just as interested as the citizens. And certainly it will be a round robin type of thing before it is over, a long way before the operating plant starts. And we have a lot of time to do research. But I think the quicker we start the better.

CHAIRMAN JENSCH: That is Mr. Zeller's statement.

You recognize that the Atomic Energy Commission does not have thermal effect authority.

MR. WOMACK: Yes, sir.

end9 CHAIRMAN JENSCH: Very well.

CHAIRMAN JENSCH: Is there someone else who desires to make a statement?

MR. BRYANT: I would like to make a brief comment, sir.

CHAIRMAN JENSCH: Will you state your name and address, please?

STATEMENT OF LOWELL BRYANT, RESIDENT OF CITRUS COUNTY

MR. BRYANT: I would just like to say this, that I have confidence in the various agencies of our Government and of our State that they will act as watchdogs and will protect the interests of the public and our interests here in Citrus County. And of course there has been much research done and I am sure that there will be more done, and I sincerely hope that we will not throw any stumbling blocks in the way of this program or this proposition.

I for one feel that and have confidence in the various agencies that are going to look out for us, and I hope that Florida Power will be successful in getting their permi. and can go forward with using atomic energy to help men instead of destroy men.

CHAIRMAN JENSCH: Sir, will you come forward, please, and give your name and address?

Let me state, if a specific request is not made by name to an individual heretofore designated in the record

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for a statement of limited appearance, will all persons come forward themselves, whether they are specifically named in the calls, so that we will include--

Now for instance, I have a letter from one Norton Holmes from Babson Park, Florida, and the reason I have that is that this letter apparently just came in and I have it as a recent submittal. If there are others who have written and who are present or can be informed to be present, will you all inform them to come forward with their statements, and we will appreciate having them.

Will you proceed, sir?

zxzx STATEMENT OF KENNETH D. MORRISON ON BEHALF OF THE FLORIDA AUDUBON SOCIETY

MR. MORRISON: I am Kenneth D. Morrison of Babson Park, Florida. I am a member of the Executive Committee of the Florida Audubon Society, speaking on behalf of its more than 8500 members.

The basic concern of our organization is the health of the environment that man shares with many other forms of life.

We are alarmed by the deterioration of our environment and are determined to speak and act in defense of a healthy environment at every opportunity.

We are particularly concerned, just now, about two potential threats to the healthy functioning of the

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ecosystem constituted by our Gulf Coast waters, which include some of the most productive and valuable estuarine areas in the world. One is the projected construction of the so-called "missing link" of the intracoastal waterway from Anclote to St. Mark's. The other is the effect on marine life of thermal pollution from the operation of a nuclear power generating plant just north of the point where Crystal River meets the Gulf of Mexico.

A few people are annoyed that the term "pollution" is applied to the release of heated water into estuaries, bays, rivers, et cetera. We submit that "thermal pollution" is a good phrase. It confirms the findings of ecologists that waters and the life they support can be damaged by the incursion of varying amounts of anything that alters the delicate balance that exists there.

It is now clear that the conventional substances -- silt, chemicals, oil, et cetera -- must move over and make room for still another pollutant, hot water. That I might be able to drink this pollutant and survive does not, unfortunately, mean that an estuarine area such as that around the Crystal and Withlacoochee Rivers can absorb billions of gallons of heated water per day without seriously damaging its ability to support the varieties and quantities of organisms that make it more productive than most Florida land.

It has been estimated that two-thirds of the

fish harvested in the United States depend on estuaries for part of their existence. In view of the extreme delicacy of the balance of their biological communities, we can only endorse this statement of Dr. C. P. Idyll of the University of Miami -- and I quote:

"Proposed changes in estuaries must be examined with a cold and critical eye."

The Florida Audubon Society is in no position to predict whether or not there will be adverse consequences in the Gulf waters from theoperation of the nuclear power plant at Crystal River. The sad truth -- as has been pointed out here today -- is that too little is known about the effects of thermal pollution.

For this reason, our Society is gratified that the Atomic Energy Commission has made a $60,000 grant to the Institute of Marine Sciences at the University of Miami to finance special studies in this field relating to construction of the Florida Power and Light nuclear unit at Turkey Point near Miami.

We suggest that additional studies ought to be conducted at this Crystal River site before this application is granted. Ecological conditions vary so greatly from one area to another that it is risky to apply data from one place to another, even though both are on the Florida coast.

Man has already dealt such severe body blows to

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Florida's natural environment that we should be extremely cautious about all future plans that may affect our environment in an adverse way.

My understanding is that the main concern of the AEC at this hearing today is in the field of human safety. May I usggest that, in the broadest sense, the human race is not safe when it alters environments without as full knowledge as possible of the consequences thereof.

I might just add to that that we certainly would endorse the previous statement concerning the need for ecologic studies at least two years in advance of site selection. We feel thatthis is extremely important, especially in view of the statistics which were cited by Mr. Zeller in regard to the probable increase of water temperatures resulting from the discharge from this plant.

And while we realize thatyour Commission apparently cannot take these things into consideration, we submit, sir, that there should be some way in which these matters are considered before an application is granted because of their tremendous importance.

Thank you.

CHAIRMAN JENSCH: Let me ask you a question, sir:

As I understood it, you said you were worried about the thermal effects of pollution from a nuclear plant. Is your concern because of the nuclear aspects of the

release or because of the thermal aspects of the release?

MR. MORRISON: It would be more because of the thermal aspects.

CHAIRMAN JENSCH: It would be true than that your concern then would be related to both fossil fuel, the oil or coal plants, as well as the nuclear plants; is that correct?

MR. MORRISON: That is correct. But of course we understand that the amounts of water that must be used by the nuclear plant are considerably larger than those required by fossil fuel plants, and that they are returned to the water of the Gulf or elsewhere, usually at a higher temperature than from the fossile fuel plants. And this is our concern.

I notice in the circular distributed by the Florida Power Corporation in the back of the room it says that by 1975 there may be two nuclear generating units at this site, which means that the amounts of hot water being discharged into this area may be double what we are talking about today.

CHAIRMAN JENSCH: I just wanted to be sure you are concerned with, let me say, hot water from whatever source; is that correct?

MR. MORRISON: Yes, that's right.

CHAIRMAN JENSCH: Whether an oil plant or a coal plant or a nuclear --

MR. MORRISON: And of course we are concerned

about all pollutants, not just hot water. But this being the subject here today, this is why we dwelt on this.

CHAIRMAN JENSCH: Well, I wanted to be sure that you have a broad concern then with hot water and not with any particular -- well, I won't say "concern" about the nuclear aspects. You are satisfied with the nuclear aspects but it's the hot water that bothers you; is that correct?

MR. MORRISON: That is true, yes.

CHAIRMAN JENSCH: Very well.

Here is another gentleman. Will you come forward, please?

Will you state your name, please, sir?

STATEMENT OF T. F. BONSALL, RESIDENT OF CRYSTAL RIVER, FLORIDA

MR. BONSALL: My name is T. F. Bonsall.

CHAIRMAN JENSCH: And your address?

MR. BONSALL: Crystal River.

I am part of Mr. Womack's group.

My very brief remarks are germane, I think, under the AEC's responsibility for common defense and security, although they do concern hot water.

(Laughter.)

I have had some formal training as a meteorologist and I am a retired Signal Corps Colonel. What I have to say here has not been coordinated with the Department of Defense

and is my own opinion as a citizen entirely.

The hot water discharge that Florida Power now uses and which, I assume, will continue to be used under the nuclear plant, is located about two miles from the entrance of the cross-Florida barge canal.

Now with that amount of warm water -- and the channel to the canal entrance passes almost directly over the discharge. With the discharge of that volume of warm water and with the cold air that we have here during the winter, I can foresee a considerable amount of fairly heavy convection fog in the vicinity of the entrance to the plant -- to the canal.

Now, one of the reasons for the existence of that canal was its place in the scheme of defense, of national defense. Those fogs are going to be much heavier at night, and it's possible to see or foresee a considerable backing up of canal traffic during periods of those fogs.

I might add, too, that the addition of cooling towers will not help in this fog situation because they are as good evaporators as natural water. My concern then is for that facet, and I think that is recognizable as part of the AEC's responsibilities at this time.

CHAIRMAN JENSCH: You envision that within the common defense and security?

MR. BONSALL: Yes, because it denies the use of

that canal, in other words, during certain periods.

CHAIRMAN JENSCH: Very well.

End 10 Does another gentleman desire to make a statement?

STATEMENT OF ROBERT S. SHOLTES, PROFESSOR, ENVIRONMENTAL ENGINEERING, UNIVERSITY OF FLORIDA, GAINESVILLE, FLORIDA:

MR. SHOLTES: We seem to be bantering about hot water today, and I appreciate that this is not in the purview of the Commission at this time. I think the audience should be brought to realize, first of all, that this hot water can be controlled, and it is technically feasible to cool it to the extent that we would have no more "thermal pollution" than we do now. So this is not a hopeless situation. And from my point of view I see no reason to deny a construction permit for these reasons, even if you were to consider them.

I would also point out that this problem of thermal pollution -- call it what you will -- is one that is very popular with this plant and many other nuclear plants around the country. And if my information is correct, which it usually is, from a newsletter out of Washington, Senator Muskie, attached an amendment to a water pollution bill last week which passed the Senate and placed the consideration of thermal pollution within the proper purview of AEC. Maybe not now to you at this point. But the interesting possibility that it brings up, at such time as there are hearings such as this for the operating permit, at that time it may be proper and required that you consider thermal pollution, if this bill passes the House, presumably

this week.

CHAIRMAN JENSCH: If I may interrupt. You, I take it, are following this pretty closely. You understand that the Atomic Energy Commission has expressed the policy that if the Congress grants the authority, the Commission will proceed to full depth on the problem. There is no hesitancy on the part of the Atomic Energy Commission respecting this matter. They just have not been granted the authority by the Congress.

MR. SHOLTES: What I am saying is that the Senate has now passed that. It presumably will go to the House this week or next. If it becomes law, then perhaps by the time the hearings are held for the operating permit, this will be a legitimate conversation such as we seem to be having here today.

My information is from the Air and Water Pollution Report which comes from Washington weekly.

So this is a hot topic. While it is not within your jurisdiction today, three weeks from today it might be. And I think this is good information for those who are sitting here.

CHAIRMAN JENSCH: Yes, I think it is.

Let me ask you. In reference to Mr. Bonsall -- Col. Bonsall's statement. You are a professor of environmental engineering?

MR. SHOLTES: Yes. Unfortunately I am not in water pollution, but I am quite familiar with this as a related area. We studied the smoke that was alluded to a while ago.

CHAIRMAN JENSCH: Let me ask, with reference to the item that he brought up, there are such things as fog dispellers. I think he has shown a concern about the barge canal, that there are such things as fog dispellers for short distances that could open up a barge canal. Are there not?

MR. SHOLTES: It is technically feasible but economically probably not.

CHAIRMAN JENSCH: I understood that the airlines were doing a great deal in that regard, and I thought you might have some knowledge in that respect.

Is there any other person who desires to submit a statement by way of a limited appearance?

My thought was if we could inquire now, and after lunch we would proceed to the evidentiary matters.

The lady in the back. Will you come forward, please and give your name and address?

VOICE: Mr. Chairman and gentlemen and ladies, I am here speaking for --

CHAIRMAN JENSCH: Will you give your name and address, please?

MRS. MORRISON: I am Helen C. Morrison, a resident

of Crooked Lake in Polk County, and I am here in answer to the name that you have of Mr. Norton L. Holmes, and I will be very glad to file his statement with you.

CHAIRMAN JENSCH: Very well, or you may give it orally, if convenient to yourself.

MRS. MORRISON: Thank you very much.

He requested that I ask you if a copy of transcripts will be available. He would like to get his name on the list.

CHAIRMAN JENSCH: Well, let me dispose of that situation at the moment.

The public document room of the Atomic Energy Commission does contain transcripts of all public hearings. It will be available for review by the public when it has been filed in the public document room, and it will be so filed as soon as it can be completed.

The other source for transcripts is to make a purchase from the gentleman who is sitting at the front of the room. They do sell transcripts and will sell a copy of the transcript of this proceeding, which would permit persons of course to take such a transcript home and study it and mark it up, or do what they want with it. Otherwise it remains -- there is a copy in the public document room in Washington, D.C.

MRS. MORRISON: I see. And do you have any idea what the cost will be for the one that we may take home?

CHAIRMAN JENSCH: The gentleman here can inform you about that after the session, and will be glad to make all data in that regard available. It is a matter that he handles. The Atomic Energy Commission does not sell the transcripts.

MRS. MORRISON: Well, I just would like to say that we have a very nice custom in many of our public hearings of having the transcript mimeographed at very little cost, and it makes very, very interesting reading and reference.

CHAIRMAN JENSCH: Well, it has been the practice in some of the proceedings, and the reporting agency -- this gentleman is not connected with the government. He is connected with a reporting agency, and they have found that that got to be so popular that they couldn't sell any, everybody was just copying one, so they are trying to afford distribution by way of selling copies.

MRS. MORRISON: I see. I understand.

XXXXX STATEMENT OF MRS. HELEN C. MORRISON, RESIDENT, CROOKED LAKE, POLK COUNTY, FLORIDA.

MRS. MORRISON: I consider myself fortunate to be able to learn more here about Florida Power Corporation's request for construction of a nuclear unit application for their crystal River Plant.

Notice of today's hearing was, unfortunately, inadequate in our part of the Central Florida area

a little bit lacking in certain information. So for those of us who had about a three-hour drive, we just didn't learn until the last minute what time you were meeting, but we are very glad to have you here.

A civic affairs group for which I am here as an observer received the necessary information at the last minute through similarly interested citizens.

Women are very much interested in electric power because, as you all know, we benefit greatly from using it. We learn more about it by field trip visits locally and to larger installations such as Crystal River and Turkey Point near Miami. Some of us read the current articles and books telling of the advances being made in this and inter-related fields. And I would like to say that I concur very much with what Mr. Zeller, or Dr. Zeller said here a few minutes ago about the need for studies. This certainly we all know is showing up in all of the literature currently in this tremendously exciting field.

You doubtless know about studies underway concerning the Gulf of Mexico by the Oceanography Department of the Florida Institute of Technology as well as the University of Miami Marine Science Institute's studies.

The Atomic Energy Commission is to be commended for funding one of the latter institute's studies on the biochemistry of the Biscayne Bay Estuary waters.

The Federal Water Pollution Control Administration we know is concerned about the highly nutritious and economically valuable marine life of those same estuary waters.

We are very glad, as citizens, to see our Federal agencies following the Executive order calling on all Federal agencies to "provide leadership in cutting water pollution."

Through scientific studies the knowledge gained will lead to correcting the various kinds of pollution that exist now and can be prevented in the future, be they raw sewage, over-fertilization, thermal or oil spillage type of pollution.

I would like to say that the public interest of all the people of Florida, the power companies, the users, the other private industries, will be best served by studies of the estruary area to be affected by a nuclear unit added to the Crystal River Power Plant preceding your authorization of a license to construct the unit.

To be wrong is like being just a little bit pregnant. The day of delivery comes. It helps to be well prepared for the health and safety of everyone concerned. While recognizing that Florida Power Corporation has prepared for twelve years for this application to be considered by you, we need to remember that Florida, and our nation, have prepared the area

that is under consideration for many millions of years. The studies certainly are very necessary for the public interest, to preserve and protect them.

In closing I would just like to say that in Polk County some of you may know we are in water crisis now that was predicted for the 1970's and 1980's, according to Col. James Solohub, head of the Florida Conservation Department's Water Resources Division, who met with us the end of last month.

Now, water supply and needs relate us, one county to another, whether we realize it or not. Such things as salt water intrusion, which is becoming a greater problem on the Gulf Coast, I understand. Thermal effects in the degree of the heated water that is returned to the receiving waters. Lowered water tables. All of these things make us neighbors. And we need to be good neighbors all over the State as well as all over the country.

Thank you very much.

CHAIRMAN JENSCH: Do I understand then that Mr. Holmes will not be present and does not desire to make any additional statement other than that you made, Mrs. Morrison?

MRS.MORRISON: He asked me to file his statement and to speak in his place.

CHAIRMAN JENSCH: Very well. Thank you for making the statement.

MRS. MORRISON: He did not know what time the meeting was going to be and he could not leave this morning at 7:30 as we did.

CHAIRMAN JENSCH: Well, it may be that if he desires to supplement his statement, and if we are still in session, we will give consideration to an arrangement whereby he can add something further when he can be present.

MRS. MORRISON: Thank you.

How long will the record be open for additional statements?

CHAIRMAN JENSCH: Well, thatis something that we can consider at the conclusion of the proceeding, and if any person who is making a limited appearance would desire to file a supplement, perhaps at the conclusion of the evidentiary matter, we can make an arrangement in that regard so that a full limited appearance presentation can be made.

MRS. MORRISON: In other words, somebody may send something in for the record then who is not able to attend?

CHAIRMAN JENSCH: We will try to make an arrangement-- We would not want to try to make an arrangement for Dade County and Polk County, for separate letters to come in. If there is something that hasn't been covered, we will make arrangements I'm sure for additional submittals. But if one statement will be like another, the accumulation of the same kind might extend the record longer and in greater scope than we need to have to have the points presented.

Would that be agreeable to your understanding for an arrangement?

MRS. MORRISON: Yes. I think though it does indicate to you the State-wide interest that there is in such an application, you see.

CHAIRMAN JENSCH: Are you stating that you are having a watertable problem in Polk County?

MRS. MORRISON: Yes, sir.

CHAIRMAN JENSCH: And when was that measured? Before the last rains?

MRS. MORRISON: Yes, sir, and we are still having it.

CHAIRMAN JENSCH: Very well. Well, we are glad to have your statement.

Are you connected with the Audubon Society?

MRS. MORRISON: We are related by marriage, sir.

(Laughter.)

(The letter from Mr. Holmes, previously referred to, follows:)

P. O. Box 174

Babson Park, Florida 33827

July 12, 1968

Mrs. Helen C. Morrison

Babson Park, Florida 33827

Dear Mrs. Morrison:

If I should not attend the Crystal River AEC meeting scheduled for 16 July 1968 would you please speak for and/or question the Board in my stead?

I would be interested in knowing if there will be any deleterious effect upon the flora and fauna of the surrounding area; and also, if the functioning of the proposed plant will have any disturbing ecological effect, or interfere with the safety of the waters of the Gulf estuary.

If convenient I would appreciate receiving a copy of the July 16 hearing proceedings depending on the cost.

Very sincerely,

Norton L. Homes.

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CHAIRMAN JENSCH: There is a gentleman now standing at the podium. I wonder, would it be convenient if you were here this afternoon?

Mr. Turnbull came up during the presentation and said that there were three State officials who were here and their duties are such that it would be convenient to them if they could have the accommodation of presenting their statements now. And if it would not be an inconvenience to you, we would appreciate if we could make that arrangement.

Is that all right with you, sir?

VOICE: Yes, sir.

CHAIRMAN JENSCH: Mr. Turnbull, will you call the gentlemen?

MR. TURNBULL: Mr. Chairman, may I present, from the Governor's Office, Mr. Reed who will make a statement for the Governor.

CHAIRMAN JENSCH: Mr. Reed, will you come forward please and give your name and address, please?

STATEMENT OF GOVERNOR CLAUDE R. KIRK, JR.,

PRESENTED BY NATHANIEL P. REED, SPECIAL ASSISTANT

MR. REED: Thank you, sir.

My name is Nathaniel Reed. My address is the Governor's Office, the Capitol, Tallahassee, Florida.

CHAIRMAN JENSCH: Thank you, sir.

MR. REED: This statement is prepared by the

Governor of the State of Florida, the Honorable Claude Kirk, for presentation today before the United States Atomic Energy public hearing on the Florida Power Corporation application for a nuclear generating plant, Crystal River, Florida, July 16th, 1968.

Mr. Chairman, Members of the Commission, as Governor of the State of Florida, I am delighted to have the opportunity to welcome you to our State. You are meeting in one of the most beautiful, uniquely beautiful, sections of Florida. There are few few places on earth that produce equal quantities of flowing clean water, great tree hammocks, abundance of game and fish, and probably the richest body of salt water in the world, the Florida Gulf.

This area attracts thousands of visitors and has a growing dynamic local population.

The Florida Power Corporation has applied to add a nuclear power plant to its present fossil fuel operation. In 1957, our State Legislature enacted the Florida Nuclear Code and Southern Interstate Nuclear Compact Law to indicate that we desired, even then, to do everything necessary to promote the growth of private atomic energy facilities, with full consideration for the health and safety of all residents.

Nuclear-fueled electric power generation has become almost commonplace in several sections of our nation, and we customers in Florida, too, will soon share in this

technological advancement which has been studied and evaluated for many years. Large capacity plants producing low cost electricity without the blemish of air pollution has been a dream of many years. The State of Florida welcomes the promise of low cost electricity, of efficiency, of new jobs, of a reduction in air pollution and of the creation of satellite industries.

As Governor I am pleased by the great strides made by our power companies to produce enhancement of our environment. The Florida Power Corporation has made it clear that they intend to protect Florida's heritage. I congratulate their attitude and interest.

As Chairman of the Florida Air and Water Pollution Control Commission, the Board of Conservation, and the Trustees of the Internal Improvement Fund, my interest is in protecting Florida's natural resources. Florida Power is a leader in one of America's most important industries. They have been good business for Florida. I am of the opinion that Florida Power will honor its responsibilities to the citizens of Florida to protect the natural values which make Florida nature's land.

Claude R. Kirk, Governor.

CHAIRMAN JENSCH: Very well. We are happy to have the statement from the Governor.

MR. TURNBULL: Mr. Chairman, Randolph Hodges,

the Director of the Florida Board of Conservation, who would like to make a brief statement.

CHAIRMAN JENSCH: Will you give your full name, if you will, please, sir, and your address?

STATEMENT OF RANDOLPH HODGES, DIRECTOR,

FLORIDA BOARD OF CONSERVATION

MR. HODGES: I am I am Randolph Hodges, Director of the Board of Conservation. My address is 107 West Gain Street, Tallahasee.

The Board is composed of the Governor and six other elective administrative officials -- the Secretary of State, the Attorney General, the Comptroller, the Treasurer, the State Superintendent of Public Instruction, and the Commissioner of Agriculcure. The Board is charged with the duties to conserve and develop the natural resources of the State, provided in Section 370.02, Subsection 1, Florida Statutues.

The Board performing this function is organized in six divisions. These are: Administration, Water Resources and Conservation, Waterways Development, Geology, Beaches and Shores and Salt Water Fisheries.

As Director, I am the agent of the Board in the discharge of its responsibilities in this field.

It is the duty of the Division of Salt Water Fisheries to preserve, manage and protect the marine, crustacean, shell and natural fishery resources of the State. It

is this responsibility of the Board of Conservation that brings me here today to present the views of the Board regarding the application of Florida Power Company to construct its proposed nuclear power plant.

This proposal admittedly is controversial. There are sincere, dedicated conservationsists who are urging the Board of Conservation to oppose the application of Florida Power Company because they fear thermal pollution will have an adverse effect upon the fishery resources of the Crystal River area, one of the more popular and more productive sport fishing grounds in our State. I cannot in good conscience follow this course, but neither can I endorse without reservation the proposed nuclear power plant.

Rapidly-developing technological changes have made nuclear power feasible and have greatly outstripped the understanding of marine biologists as to the effects of the thermal pollution that this new source of power may produce.

Some research organizations are undertaking thermal pollution studies at this time. Although the findings in some cases will not be applicable to Florida's warmer waters, the basic work going on in the north will be a help.

Our own reserach organization has completed extensive plans for evaluation of the effects of thermal pollution in the slightly-warmer waters along Florida's coasts. But this will be a long and involved project and results

should not be expected momentarily.

Menatime, we feel it would be well for us to maintain strict objectivity as we approach this new nuclear age and seek positive and definitive answers to our questions.

Since the original concept of the Crystal River plant some eight years ago, the management of Florida Power Company at appropriate times has consulted with our Agency in those matters of plant design and operations which might have an effect on the marine life in and around the plant site. Company officials also have consulted with our Agency regarding the proposed nuclear plant and its effect on the fish and wildlife just as had been done previously in connection with the present installation.

Florida Power Company officials have assured us that the company has taken, and will continue to take every precaution to assure that its power plant operation will not adversely affect the plentiful fish supply in the waters adjacent to this facility.

This was reaffirmed at a meeting held in Tallahassee in my office April 22nd, 1968, in which company officials presented to me and members of my staff their predictions of the expected thermal effects which would result from operation of all three units of the Crystal River plant. At this meeting, company officials accepted the recommendations of the United States Fish and Wildlife Service for the conduct

of both pre- and post-operational surveys.

The company further agreed thatthis program will be formulated and put into effect with the cooperation of the Board of Conservation, Florida Air and Water Pollution Control Commission, the Florida State Board of Health and any other State and Federal agencies that might be involved.

I am confident, based on long knowledge of the management, that Florida Power Company will honor its commitment to conduct these surveys and programs necessary to determine what the effects will be of the plant operation. The Board of Conservation will make its own surveys, and it is my hope that Florida Power Company rather than contract for its own studies, which might be suspect by some, would join in the Board of Conservation program by contributing to its financing.

It cannot be denied that the proposed nuclear power facility will contribute much to the economy of the Crystal River area. I am certain that the State, through the Board of Conservation and the Air and Water Pollution Control Commission, is fully capable of meeting and solving any problems that might arise from possible thermal pollution.

Thank you.

CHAIRMAN JENSCH: Thank you, sir.

MR. TURNBULL: Mr. Chairman, I have one other statement that I would like to present, and then I will be through.

CHAIRMAN JENSCH: This is within the scope of flexibility for schedules.

MR. TURNBULL: The Game and Fresh Water Fish Commission has prepared a statement by its Director, and I would like to call Mr. Wood, who will make the statement.

CHAIRMAN JENSCH: Mr. Wood, will you come forward, please?

MR. TURNBULL: May I say, sir, that I will present originals of all of these statements to the Board and to the Reporter.

CHAIRMAN JENSCH: Will you give your full name, sir?

STATEMENT OF R. W. WOOD, CHIEF, FISHERIES DIVISION, FLORIDA GAME AND FRESH WATER FISH COMMISSION

MR. WOOD: I am W. R. Wood, Chief of the Fisheries Division, the Florida Game and Fresh Water Fish Commission, Tallahassee. This statement will be made for our Director, Dr. O. E. Frye.

Gentlemen of the Commission:

The Game and Fresh Water Fish Commission, a constitutional agency of the State of Florida, is primarily responsible for management and supervision of grame and fresh water fish in the State of Florida. Basically, pollution, as such, is not this Commission's responsibility, except insofar as the pollution adversely affects either game or fish

habitats or populations.

Our biologists have reviewed the location of this new facility and feel that the fresh water fish and upland game resources in the surrounding area will not be seriously affected. Our concern from this new facility is directed towards its effects on estuarine resources, parimarily waterfowl and shore and wading birds. The grass falts are the primary feeding area for waterflowl and shore-waoing bird populations. The heated effluent effect upon these resources will be the replacement of grass flats with algae or bare sand.

With the proposed facilities in operation and with the prevailing winds, we expect the heated effluent to change the area north of the spoil bank created for the plant discharge up to and possibly past the Cross Florida Barge Canal channel. This area may extend as much as two to three miles into the Gulf of Mexico.

This area, during winter months, abounds with bird life and usually will winter as many as twenty thousand to thirty thousand waterfowl. Frequently found in this area of the Gulf Coast is up to eighty percent of the Red Head Duck population of the United States. It is reasonable to expect that as many as fifty thousand to one hundred thousand shore and wading birds consisting of as many as one hundred forty species are using this area.

Based on these preliminary expectations, the

Commission urges that the Florida Power Corporation give every consideration in their p..anning to provide additional cooling facilities such as:

1. A closed system of cooling and water reuse.

2. By pumping cooler bay water into the heated discharge outlet thus beginning the cooling process before it enters the bay. This could reduce the size of the area affected by the thermal outflow.

OUr Commission will continue to work through the Florida Air and Water Pollution Control Commission to hold to a minimum the area that will be affected by this thermal effluent. We also feel that at no time should the temperature or any other substance be allowed to exceed the established water quality criveria of the State of Florida.

These evaluations and recommendations are submitted in light of our incomplete knowledge of the effects of the thermal effluents or wildlife populations and habitats and should not be construed as representing our position insofar as future permit applications are concerned.

We sih to thank you for the opportunity of presenting this statement to your Commission.

Sincerely yours, Game and Fresh Water Fish Commission, Dr. O. E. Frye, Jr., Director.

CHAIRMAN JENSCH: Thank you, sir.

This is a little beyond our usual recess time, and

at this time let us recess to reconvene in this room at 2:15.

(Whereupon, at 12:45 p.m., the hearing in the above-entitled matter was recessed to reconvene at 2:15 p.m. the same day.)

AFTERNOON SESSION

(2:15 p.m.)

CHAIRMAN JENSCH: Please come to order.

I believe we are proceeding with some further limited appearance statements.

Is there a further presentation by way of a limited appearance?

MR. TURNBULL: If it please the Chairman, I would like to present, with the permission of the gentleman who is here before, and he has given it to me, three other statements for the State at this time.

CHAIRMAN JENSCH: Very well. Proceed.

MR. TURNBULL: The Florida Public Service Commission, Mr. B. Kenneth Gatlin.

CHAIRMAN JENSCH: Mr. Gatlin, would you come forward, please?

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STATEMENT OF B. KENNETH GATLIN, ON BEHALF OF THE FLORIDA PUBLIC SERVICE COMMISSION.

MR. GATLIN: Mr. Chairman, I am B. Kenneth Gatlin, Chief Rate Counsel of the Florida Public Service Commission. Our Commission's offices are at 700 South Adams Street, Tallahassee, Florida, and we appreciate the opportunity of being permitted to make this limited appearance in this hearing.

The applicant in this docket, Florida Power Corporation, is a public utility subject to the jurisdiction of the Florida Public Service Commission in those areas set forth and defined in the Constritution, Statutes and Court Decisions of the State of Florida. The applicant has, pursuant to our Commission's policies, notified us that it is undertaking the construction of a nuclear-fueled electric generating plant at Crystal River, Florida, as a prudent investment for the purpose of serving the public with timely, continuous and reasonably priced electric energy and service.

The applicant has been diligent in keeping our Commission abreast of the developments in the construction of this nuclear plant and also the proceedings before the Atomic Energy Commission. The Florida Public Service Commission fully understands that Atomic Energy Commission jurisdiction in these proceedings is in the areas of readiological health and safety and the common defense and security of the public and that matters such as possible thermal effects, as opposed to

radiological effects, of the plant operation on the environment, as well as the effect of the construction of the nuclear plant on recreational, economic or political activities of the area of the site, and even matters of aesthetics, are outside the scope of inquiry in these proceedings before this Board.

Our Commission's limited appearance is made for the purpose of informing the Atomic Energy Commission of our Commission's interest and concern in the applicant's project with respect to its cost as a prudent investment, the project as involved in applicant's financings, and the availability of electric supply from the plant in time for the applicant to perform its public service in supplying the public with adequate electric energy and service in 1972.

It is through this limited participation that our Commission may also continue to monitor the project and to take any necessary action within those areas of responsibility and jurisdiction of the Florida Public Service Commission which are collateral, but not overlapping or contrary, to the Atomic Energy Commission's authority in the matter. These areas of Florida Public Service Commission concern and jurisdiction in the applicant's nuclear project are:

1. The jurisdiction of the Florida Public Service Commission to ensure that the applicant, as a public utility, performs its duty in furnishing adequate, continuous, and reasonably priced electric energy and service to the public

pursuant to Section 366.03 of the Florida statutes. The applicant manifests that it needs this plant in operation in 1972 in order to perform this public responsibility;

2. To require, if and when necessary, applicant to extend its plant in order to promote the convenience and welfare of the public and secure adequate service to its customers pursuant to Section 366.05(1), Florida statutes;

3. Authority to regulate and supervise applicant with respect to the issuance and sale of securities. Our Commission has been informed that the applicant intends to issue securities in the future for the financing of this nuclear plant as a component part of its overall new plant construction requirements in order to render adequate service to the public. The approval for the issuance of securities by the applicant is a matter of exclusive jurisidiction of our Commission pursuant to the Federal Power Act and Section 366.04 Florida statutes; and

4. The responsibility of permitting applicant, as a public utility, a reasonable return upon money honestly and prudently invested and property used and useful in serving the public as required by Section 366.04(2), Florida statutes. If, in a matter collateral to the inquiry of these proceedings and the jurisdiction of the Atomic Energy Commission, applicant would be faced with resolving differences resulting from requirements of various state agencies, then such, within the

ambit of our Commission's jurisdiction, could become a concern to and an area for inquiry by our Commission.

From comprehensive information afforded our Commission by the applicant to this date, we are pleased that the applicant is possessed of sufficient foresight in undertaking this new type of generation of electric energy so that, in the utilization of this advanced technological art of electric generation, the public will be assured of electric service on a timely, continuous and reasonable-price basis.

Thank you very much.

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CHAIRMAN JENSCH: Very well, sir.

Do you have additional statements?

MR. TURNBULL: Yes, sir.

I present now, sir, the representative of the Florida State Board of Health, Dr. Williams. The State Board of Health is represented here by Mr. Eisenberg as an attorney, but he has asked that I present to you Dr. Williams who will present a statement.

CHAIRMAN JENSCH: Will you kindly give me your full name and address?

DR. WILLIAMS: I am Edwin G. Williams, Director of the Radiological Health Division of the Florida State Board of Health. I have a statement for the record prepared by me representing Dr. Sowder, State Health Officer, in connection with the United States Atomic Energy Commission hearing to consider the issuance of a construction permit to the Florida Power Corporation to construct a pressurized water reactor at Crystal River on the Gulf of Mexico about seven and one-half miles northeast of the Town of Crystal River, Citrus County, Florida.

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STATEMENT OF EDWIN G. WILLIAMS, M.D.

REPRESENTING WILSON T. SOWDER, M.D., STATE HEALTH OFFICER, FLORIDA STATE BOARD OF HEALTH.

DR. WILLIAMS: The Florida State Board of Health's interest in nuclear power generating stations stems from its public health responsibilities in ionizating radiation. Representatives of our Radiological Health Division have reviewed the submission of the Florida Power Corporation with the Atomic Energy Commission. Staff members have met a number of times with representatives of the Florida Power Corporation, Atomic Energy Commission and the United States Public Health Service to review matters of pertinent and common interest. The Preliminary Safety Analysis Report and supplements thereto have facilitated this review.

For the purpose of establishing base line information the State Board of Health has utilized its statewide water, air, milk and food monitoring programs which started in 1958. In reviewing these statewide data specific reference has been made to the intensive study developed for the earlier proposed reactor near Pierce, in Polk County; from the present study of the Cape Kennedy socioeconomic inpact area being jointly conducted by the U.S. Air Force -- using the Wright-Patterson radiological laboratory -- the U.S. Public Health Service -- using the the Southeastern Radiological Health Laboratory in Montgomery, Alabama -- and the Florida State Board of Health --

using its radiological laboratory in Orlando. Experience gained in the preoperational radiological surveillance program in the Turkey Point area has been helpful in this study. In view of our analysis of these data it was decided that sufficient information is at hand to draw with a great amount of confidence the conclusion that there is no preoperational radiological condition in the Crystal River area which would be prejudicial to the building or operation of a nuclear power generator in that area.

The proposed discharge of radioactive substances predicted by the company are of such low levels that there will be no adverse affect on the environment including public parks or schools in the surrounding area.

We have cooperated with several agencies in the area in the development of a competent radiation emergency team as a part of the statewide Radiological Emergency Network participated in by the Florida Highway Patrol, the State Board of Health, several units of the state university system, several county health departments, and other official units and by a number of private citizens.

In conclusion, we believe that discharges of radioactive materials from the proposed Crystal River facility will be maintained within appropriate levels. The State Board of Health is prepared to work with the Florida Power Corporation, the U.S. Public Health Service, and the Atomic

Energy Commission on a continuing basis to assure against inappropriate release limits.

end

CHAIRMAN JENSCH: Thank you.

MR. TURNBULL: May I personally read the Air and Water Pollution Control statement?

CHAIRMAN JENSCH: And who is the individual sponsoring that statement?

MR. TURNBULL: That report is prepared by and sponsored by Mr. Vincent D. Patton, Director of the Florida Air and Water Pollution Control Commission.

CHAIRMAN JENSCH: Thank you, sir. Will you proceed?

STATEMENT OF T. T. TURNBULL ON BEHALF OF THE FLORIDA AIR AND WATER POLLUTION CONTROL COMMISSION.

MR. TURNBULL: The Florida Air and Water Pollution Control Commission is generally responsible for statewide air and water pollution control, pursuant to Chapter 403, Florida statutes. Because of this responsibility, the Air and Water Pollution Control Commission has an interest in nuclear power generating stations, such as the station now sought to be licensed for construction purposes. The Bureau of Sanitary Engineering, as the agent of the Air and Water Pollution Control Commission, is charged with the review of submissions of the Florida Power Corporation with respect to air and water pollution offsite. Members of the Bureau of Sanitary Engineering have reviewed these submissions.

Additionally, the Board of Conservation, likewise an agent of the Air and Water Pollution Control Commission for this purpose, will make an independent background study with respect to the biological condition of the receiving waters offhsore from the plant site and such further action as may be required adequately to monitor conditions in the area will be taken by personnel of various state agencies under the general supervision of the Air and Water Pollution Control Commission, which Commission will establish and maintain actively liaison with all agencies of the state having any

interest in or control over the installation now sought to be licensed.

It is now noted that the State Board of Health concludes that discharges of radioactive material from the proposed plant will be within the appropriate release limits or levels. The Commission, under its statutory authority, will work either with the Bureau of Sanitary Engineering, the State Board of Health, the Board of Conservation and with the Federal Water Pollution Control Administration, with respect to maintenance of proper discharges, so that damages are not caused by the release of heated water or other pollutants.

Generally speaking then, the Florida Air and Water Pollution Control Commission has no objection to the issuance of the construction license and does not now believe that any problem will be created by the construction of a nuclear facility at Crystal River by Florida Power that cannot adequately, properly and promptly be handled under the appropriate Florida law and, to this end, expects to receive and anticipates that it will receive full and complete cooperation from Florida Power Corporation and its technical personnel.

Respectfully submitted to the Atomic Energy Commission with the request that this statement be included as a portion of the record of these proceedings.

CHAIRMAN JENSCH: Thank you, sir.

end

MR. TURNBULL: Mr. Chairman, I request at this moment to be permitted to read into the record, not necessarily for the benefit of the Commission, but for the benefit of the general public, the letters that were written by the Commission by Senator Holland senator Smathers, and by Congressman Cramer.

CHAIRMAN JENSCH: Very well. Proceed.

MR. TURNBULL: I have the authority of each of these individuals to do just that.

CHAIRMAN JENSCH: Very well.

MR. TURNBULL: The first is a letter from Senator Holland, addressed to you, sir. And it refers to this application.

"Dear Mr. Jensch:

"I am Spessard L. Holland, the senior Senator representing the State of Florida, and I am making this statement to record my enthusiastic support of Florida Power Corporation's plans to construct a nuclear-fueled generating facility at its Crystal River plant in Citrus County.

"I do not pretend to know all the technical details or design of a nuclear generating unit, but I am fully aware of the technological advancements made in the nuclear power field bythe electric industry of which Florida Power Corporation is a major member. The facilities owned and operated by this highly respected company for the past 65 years

leave no question in my mind that Florida Power's management and engineering staffs are fully competent and technically qualified to proceed into the field of nuclear-fueled generation of electric power.

"This company has been actively participating in the study of nuclear power for many years, and is a member of the Florida West Coast Nuclear Group. This association was formed to evaluate the economic application of nuclear power in the State of Florida.

"Florida Power Corporation operates and maintains one of the most modern and efficient power systems in the United States. I am certain that this company's application to construct, own, operate and maintain a nuclear generating facility at Crystal River will continue to carry on the highest tradition and sincere dedication of company policy, not only to their 360,000 customers, but especially for the direct economic benefits which will accrue to our entire State.

"Pursuant to Section 2.715 of the Atomic Energy Commission's Rules, I will appreciate your including this letter in the record of the hearing in connection with this application.

"I respectfully urge your favorable consideration of this application; it is a symbol of our State's progress.

"Yours faithfully, Spessard L. Holland."

The second of the letters is from Senator Smather

addressed to you, sir.

"Dear Mr. Jensch:

"I am George A. Smathers, United Senator for the State of Florida,and I sincerely appreciate this opportunity to endorse the application of Florida Power Corporation for licenses to construct and operate a nuclear generating facility at the site of its newest power plant in Citrus County.

"This company's Crystal River plant went into operation in 1966 and has attracted considerable attention; its impact on the progress and economical development of the entire area has been phenomenal. The advent of a nuclear-fueled generating facility at this location, too, will create an even greater influence on the growth of the West Coast of Florida. Tax monies derived from Florida Power's multi-million dollar investment at this power plant will help strengthen our State's economy, to say nothing about the needs for new homes, schools, churches, businesses and industries which will be required to support the predicted expansion of Citrus County and surrounding areas.

"I am proud to represent one of the most beautiful States in our nation, and the prospect of nuclear power plants is one that I endorse most heartily, not only from a safety aspect, but especially from the aesthetic point of view. Nuclear power has already proved itself as being a clean, non-pollutant source of electric generation. I am

pleased that Florida Power Corporation is continuing its goal of being a forward-thinking company which is proud of its role in keeping Florida healthy and beautiful.

"My personal endorsement of Florida Power's application to construct and operate a nuclear facility at Crystal River is respectfully submitted for the public record, in accordance with Section 2.715 of your Commission's Rules.

"Thank you for this opportunity, and with all best wishes, I am sincerely yours, George A. Smaters. United States Senator."

Lastly, Jr. Chairman, I propose to read a statement of William C. Cramer, Congressman, Eighth District, Florida. It is addressed also to you, and is as follows.

"Dear Mr. Jensch:

"I am United States Congressman William C. Cramer, and it gives me the great pleasure to publicly support the application of Florida Power Corporation for licenses to construct and operate a nuclear generating facility at its new Crystal River plant.

"I am well acquainted with the officers of Florida Power Corporation and know that these men are of high integrity and dedication to the goals of their company and to the customers whom they serve. The management team of Florida Power, their engineering staffs, and the consultants and suppliers who will be directly involved in the design and

construction of this nuclear facility are known and respected throughout the electrical industry. Their technical skill and qualifications are unsurpassed.

"Florida Power has been vitally interested in community affairs since its inception in 1896, and their 2,600 employees actively participate in the business, civic, professional and social functions of the cities, towns, and communities in which they live.

"Among the company's objectives in maintaining their power facilities, some are directed toward beautification, community development, public relations, and conservation of natural resources.

"The Crystal River plant area is no exception. For example, a few years ago the management of Florida Power made formal arrangements with the Audubon Society to create the plant site as a sanctuary for American Bald Eagles, one of the few in the United States. I could recite several other examples of how Florida Power has made major contributions to our State, including the donation of an obsolete hydroelectric power station and lake to the State solely for recreational facilities for the general public.

"Therefore I am making this statement to fully endorse the company's application for licenses to construct and operate this nuclear facility. I am satisfied that the Atomic Energy Commission is protecting the public and that

the operation of this nuclear facility will not in any way jeopardize the health or safety of the public.

"In accordance with Section 2.715 of the Rules of the Atomic Energy Commission, it would appear to be in order for this letter to be made a part of the record of the hearing to be held on this matter.

"Thank you very much.

"Very truly yours, William C. Cramer."

Mr. Chairman, I respectfully suggest to you, sir, that this will conclude the State's presentation, and I wish to thank you for being so courteous in allowing me to precede, shall I say, out of order.

CHAIRMAN JENSCH: I am sure the Atomic Energy Commission would want me to say that the State of Florida is never out of order.

At the request of each of the writers of those letters, it is granted that those letters may be part of the correspondence.

Are there any other persons here who seek to present statements by way of limited appearnace?

Come forward, sir.

We thank you for the interruption which you permitted for the presentation of the statements for the State of Florida.

STATEMENT OF DAVID A. GAVIN, RESIDENT,
CRYSTAL RIVER, FLORIDA, ON BEHALF OF
THE CRYSTAL RIVER COUNCIL.

MR. GAVIN: My name is David A. Gavin, a resident of Crystal River, and I am speaking on behalf of the Crystal River Council of which I am a member.

We would like to go on record as wholeheartedly endorsing the nuclear power plant just north of the city. We feel that it will be beneficial in every way to the area.

Now, speaking on my own behalf I would like to say a few more words. I worked at the Savannah River Plant for thirty months as a health physics engineer when it first started operation. We were operating five nuclear reactors at more than 1000 megawatts thermal power. We took 25,000,000 gallons an hour from the Savannah River and we turned it many times hotter than the proposed outflow of this proposed Florida plant. During the time that I worked there this water was checked several times daily and we never found any adverse effects on the plant and marine life in the river.

This plant has been in operation some sixteen years, and on checking with health physics there last year, they told me that there still has been no adverse effect on the plant and marine life in the river.

About three weeks ago thousands of fish were killed in the Gulf from the effects of cold water being stirred up

from the bottom by a tropical storm.

On the basis of these facts I feel that any temperature rise in the discharge canal would only be beneficial to the fish in the area.

end14 Thank you.

CHAIRMAN JENSCH: Is there any other person who seeks to present a statement by way of limited appearance?

Is Mr. Womack here? I wonder if he had any other persons with him who desire to make statements. Does any member of the audience know whether there are others seeking to present such statements?

(No response.)

CHAIRMAN JENSCH: I hear no such request and therefore it is assumed that all persons have presented their statements by way of limited appearance. And the matter of interventions having been considered previously, we are now ready for presentation of evidence.

Is the applicant ready?

MR. DUNN: Yes, sir, the applicant is ready.

CHAIRMAN JENSCH: Will you call your first witness?

MR. DUNN: Before I put my first witness on, sir, I would suggest that perhaps counsel for the AEC staff present a matter before the Board which will enable me to qualify this witness.

CHAIRMAN JENSCH: Very well. Will you proceed, staff counsel?

MR. HADLOCK: Mr. Chairman, I take it it would be appropriate at this time if we introduced what is commonly called Joint Exhibit A which consists of the application, the correspondence between the applicant and the staff, and the

responses to that correspondence.

I have prepared a record for hearing index, an index of this material which I have distributed to the parties. I will also give a copy to the Board at this time. And I would ask that --

CHAIRMAN JENSCH: The Board is now receiving a copy from staff counsel.

MR. HADLOCK: I would ask that the index be incorporated in the transcript at this point to indicate the documents which are included in this Joint Exhibit A, and Joint Exhibit A itself, which of course has been in the public document room as you indicated this morning, which is also available here for examination by any member of the public, be incorporated in the record of this proceeding by reference.

CHAIRMAN JENSCH: Is there any objection?

The applicant?

MR. DUNN: No, sir. The applicant stipulates with counsel that this be sponsored as Joint Exhibit A.

CHAIRMAN JENSCH: The State of Florida?

MR. TURNBULL: No objection.

CHAIRMAN JENSCH: Gainesville?

MR. FAIRMAN: No objection.

CHAIRMAN JENSCH: The request is granted and Joint Exhibit A as described in the summary index may be incorporated

by reference into the record of the evidence of this proceeding. The index, consisting of two pages, to which staff counsel has referred, may be incorporated within the record of evidence and may be included in the transcript as if read. And the reporter is directed to incorporate at this place in the transcript the two-page record for hearing index as submitted by staff counsel.

(JOINT EXHIBIT A FOLLOWS.)

DOCKET NO. 50-302

FLORIDA POWER CORPORATION

RECORD FOR HEARING

INDEX

Item No.	Description	Date
1.	Application for Licenses, including General Information, with Preliminary Safety Analysis Report Volumes 1, 2, 3, and 4 Crystal River Unit 3 Nuclear Generating Plant, consisting of: License Application - General Information Technical Information and Preliminary Safety Analysis Report Volume 1 - Site and Environment, Reactor, Reactor Coolant System Volume 2 - Containment System, Engineered Safeguards, Instrumentation and Control, Electrical, Auxiliary, Emergency, Steam and Power Conversion Systems. Volume 3 - Radioactive Wastes, Operations, Initial Tests, Safety Analysis Volume 4 - Appendix	8/10/67
2.	AEC letter requesting additional technical information.	10/19/67

Item No.	Description	Date
3.	Florida Power Corporation letter and Amendemtn No. 1 to Application with revised pages for Preliminary Safety Analysis Report.	1/15/68
4.	AEC letter requesting additional technical information.	1/19/68
5.	Florida Power Corporation letter and Amendment No. 2 to Application with revised pages for Preliminary Safety Analysis Report, response to AEC questions, and new Volume binder "Appendices"	2/7/68
6.	Florida Power Corporation letter and Amendment No. 3 to Application with revised pages for Preliminary Safety Analysis Report, and response to AEC questions.	3/1/68
7.	Florida Power Corporation letter and Amendment No. 4 to Application with revised pages for Preliminary Safety Analysis Report, and responses to AEC questions.	3/11/68
8.	Florida Power Corporation letter withdrawing their application for licenses to construct the Crystal River Unit 4 Nuclear Generating Plant.	3/25/68
9.	Florida Power Corporation letter and	4/1/68

Item No.	Description	Date
	Amendment No. 5 to Application with latest General, Financial, Statistical, and Technical information, and revised pages for Preliminary Safety Analysis Report.	

CHAIRMAN JENSCH: Does that complete the presentation with reference to Joint Exhibit A?

MR. HADLOCK: Yes, sir.

CHAIRMAN JENSCH: Is the applicant ready to proceed?

MR. DUNN: Mr. Chairman, I had previously suggested perhaps to the Board in the matter of expediency of time that perhaps Mr. Loader's testimony could be received into the record as if read. Copies have been previously given to the Board and to the parties, and the witness will come forward to stand cross-examination. Or, if the Board wishes, the witness can give this testimony personally.

CHAIRMAN JENSCH: There seem to be quite a few people from the public here, and I think they would be interested in your statement. And, while expedition of the proceeding is certainly a worthy objective, I think for the purpose of information it would be better served by having the statement presented.

Will you call the gentleman to be sworn?

MR. DUNN: Yes, sir.

Mr. Loader.

Whereupon,

J. G. LOADER

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

XXXXX
XXXXX

DIRECT EXAMINATION

BY MR. DUNN:

Q Please state your name, address and position at Florida Power Corporation.

A My name is J. G. Loader and my address is 10212 Tarpon Drive, Treasure Island, Florida. I am secretary and treasurer of Florida Power Corporation.

Q Please describe your educational background and experience.

CHAIRMAN JENSCH: Excuse me, Mr. Dunn. I wonder if I may have a copy of this statement. I do not seem to have my copy before me.

THE WITNESS: I am a graduate of the University of Alabama, holding a degree of Bachelor of Science in Commerce and Business Administration. I am a certified public accountant in the State of Georgia. I am a member of the American Institute of Certified Public Accountants and the Florida Institute of Certified Public Accountants.

When I graduated from college in 1951 I joined Arthur Andersen & Company, an international firm of certified public accountants in Atlanta, Georgia. During my four years with this firm I was on the public utility auditing staff specializing in accounting, finance and regulatory matters for electric and gas public utilities.

I joined Florida Power in June 1955 as a traveling

auditor in the Comptroller's Department. In May of 1960 I transferred into the Treasury Department and became Assistant Secretary and Assistant Treasurer. I held this position until September 1967 when I became Secretary and Treasurer.

BY MR. DUNN:

Q What are your responsibilities as Treasurer of Florida Power Corporation?

A As Treasurer of the company I am responsible for the preparation of operating budgets, the custody and disbursement of company funds, and the raising of both short-term and long-term capital.

Q Are you familiar with the accounting procedures and the books and records of Florida Power Corporation in general and specifically with respect to the financial statements filed in Florida Power Corporation's Application to the Atomic Energy Commission for authority to construct and operate the Crystal River Nuclear Unit 3?

A Yes, I prepared the statements and accompanying exhibits thereto. The financial statements filed with the application were obtained from the books of accounts of Florida Power Corporation which are kept in accordance with the Federal Power Commission's Uniform System of Accounts and accounting procedures as prescribed by the Florida Public Service Commission.

Q Do the financial statements, including those

embodied in the Annual Report to Stockholders filed by Florida Power Corporation as a part of its application present fairly the financial position of Florida Power Corporation as of the date of the filing of Amendment No. 5 on April 8, 1968?

A They do.

Q Has there been any material change in the financial condition of Florida Power Corporation since the dates on which the various financial data in the application were filed?

A No. Florida Power Corporation's financial condition is essentially the same.

Q Does your answer include Exhibit 3 and the accompanying notes to Exhibit 3 as contained in Florida Power Corporation's application to the Atomic Energy Commission?

A Yes. There are no changes to be made in the items and figures set forth in this Exhibit 3, as well as the accompanying notes to Exhibit 3.

Q Mr. Loader, is there an allowance for escalation and contingencies in the construction cost figures shown on Exhibit 3?

A Yes, there is an allowance for escalation and contingencies in the amount of $9,751,000 which is approximately 11 percent of the direct cost of nuclear production plant as shown on Exhibit 3.

Q Mr. Loader, what are Florida Power Corporation's construction budget expenditures for the period up to and including the year Crystal River Nuclear Unit No. 3 would come on the line?

A Florida Power Corporation's budgeted construction expenditures for the five-year period 1968-1972 including the cost of nuclear fuel are $365 million, ranging from $52 million to $100 million per year. It must be understood that this construction budget is tentative and it must be accepted in light of the usual practice of the art of planning public utility expansion programs.

Q Mr. Loader, will you state how Florida Power Corporation plans to finance the construction of the Crystal River Nuclear Unit 3?

A Florida Power Corporation expects to finance Crystal River Nuclear Unit 3 as an integral part of its normal construction program for plants and necessary attendant facilities through the use of funds internally generated and from funds derived from the sale of various senior securities in the same general manner as other conventional plant additions and facilities are financed.

Our present estimates show that the construction costs for the nuclear unit, including the initial cost of fuel, will be $126 million. Approximately 45 percent of these expenditures will be derived from internal sources and

the balance will be financed from the sale of securities.

In my opinion, based upon Florida Power Corporation's past record of earnings, depreciation accruals, and cash dividend distributions, and assuming the continuation of the level of earnings it is a fair representation to say that such internal sources should be able to supply a significant portion of these annual estimated requirements.

Further, it is my opinion that, in view of the size of Florida Power Corporation's resources, the strength of its financing position, its earnings record, and the regard held for it by double A and single A rated convertible debenture issues, it is reasonable to represent that the company should have little difficulty in selling sufficient securities in the form of common stock, preferred stock, debentures, first mortgage bonds, or whichever type security that would be the most prudent at the time to provide the remaining funds needed to finance the contemplated nuclear plant construction program. The amount and type of senior securities cannot be determined at this time, but will be issued to maintain sound capitalization ratios.

Q Can you give facts which would reflect that Florida Power Corporation is soundly financed and has the financial qualifications to construct and operate the Crystal River Nuclear Unit?

A The first mortgage bonds represent 50.6 percent of

the total capitalization and the convertible debentures 4.7 percent of total capitalization which is in line with similarly rated electric utility bonds.

The number of times interest earned before Federal income tax for the year 1967 was 5.1 and after income tax it was 3.4. The company's current Dun & Bradstreet credit rating is triple A-1, and Moody's Investor Service rates the company's first mortgage bonds as Double A (high grade), and its convertible debentures A (high medium grade).

Q Mr. Loader, how would Florida Power Corporation finance a permanent shutdown of the nuclear generating plant?

A I have been advised by our Nuclear Project Manager that upon the company's construction and operation of the Crystal River Nuclear Plant pursuant to the construction license to be issued by the Atomic Energy Commission, the plant will be safe to the public as required by the Atomic Energy Act.

Therefore, when the nuclear plant is ultimately shut down, the relatively small expense that will be necessary to continue the safe condition of the plant will be so small with reference to annual general revenue that such expenditure may be readily financed by the company either through internal cash generation or as a part of a normal permanent financing program.

Q Mr. Loader, would you briefly detail to this Board

the plans for, and the present posture of, Florida Power Corporation's obtaining all required property and liability insurance for the Crystal River nuclear unit, as well as for its nuclear fuel?

A In January of 1967, Florida Power Corporation retained the insurance firm of Marsh and McLennan, Inc., 70 Pine Street, New York City, to act as consultants in all matters pertaining to nuclear liability and nuclear property insurance for Unit No. 3 at Crystal River. Florida Power Corporation will fully comply with the requirements of the Atomic Energy Act of 1954, as amended, and the applicable Rules and Regulations of the Atomic Energy Commission.

As a condition to the granting of the operating license for Unit No. 3 at Crystal River, Florida Power Corporation will purchase nuclear liability insurance and nuclear property insurance in the amounts of $74 million and $74 million, respectively, from one of the available nuclear insurance pools, or in such other amount or amounts as may be lawful at the time.

Before delivery of the nuclear fuel elements to the plant site, but prior to their being loaded into the reactor, Florida Power Corporation will purchase nuclear liability insurance in the amount of $1 million from one of the available nuclear insurance pools.

I might add that in addition to the foregoing

nuclear insurance which Florida Power Corporation must purchase, as a further condition to the granting of the operating license, it will also enter into an indemnification agreement with the Atomic Energy Commission for the protection of the public in the amount of $486 million, or such other amount as may be prescribed by law.

Q In your opinion, can Florida Power Corporation finance the Crystal River Nuclear Unit 3 without jeopardizing the financial integrity and structure of the company?

A Yes. Construction of the Crystal River Nuclear Unit 3 can be financed without any material change to the financial structure of the company. This answer takes into consideration outside economic influences normal to all industries.

Q Mr. Loader, in your opinion does Florida Power Corporation have now, and is it reasonable to assume that it will have in the future, the resources to construct and operate the Crystal River nuclear generating plant in an appropriate manner and to pay Atomic Energy Commission charges for any materials or services that might be obtained from this Commission?

A Yes. I have become familiar with the nature of the company's new type nuclear generating station, together with the expenses that will be incurred during its construction, and, upon this knowledge and the testimony I have just given,

I am permitted to answer "yes" to your question.

Q Mr. Loader, from the purpose of meeting the requirements of the Atomic Energy Act of 1954 with reference to national defense requirements, will you state to this Board the residences as listed on the stockholders' records of the majority of the common stockholders of Florida Power?

A On instructions from our Company's general counsel, I requested this information from the Manufacturers Hanover Trust Company, New York, New York, our Transfer and Paying Agent for common stock. As of February 19, 1968, there were 133 stockholders holding 88,954 shares of common stock outside the continental United States, or slightly less than 1 percent of the total shares of 9,602,570 shares outstanding.

MR. DUNN: Mr. Chairman, this concludes the direct testimony of Mr. Loader and I tender him for cross-examination.

CHAIRMAN JENSCH: Cross-examination by the staff?

MR. HADLOCK: We have no questions.

CHAIRMAN JENSCH: The State of Florida?

MR.TURNBULL: No questions.

CHAIRMAN JENSCH: The City of Gainesville?

MR. FAIRMAN: Yes, the City of Gainesville has a couple of questions.

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CROSS-EXAMINATION

BY MR. FAIRMAN:

Q Mr. Loader, you testified to the prudent practices of financing utility capital plant and that the usual practice of the art of planning at page 4 is the basis of your decision or judgment.

My arithmetic shows that this nuclear plant at the cost of $126 million estimated represents roughly one-third of the $365 million planned for construction expenditures for a five-year period of 1968 to 1972.

Would you say that this is usual or in accord with the practices that prevail in Florida Power?

A This plant costs more than steam plants per kw and the efficiencies will come through reduced costs of fuel.

Q On page 6, in answer to your question with regard to financing a permanent shut down of the plant, the assumption

was that this was going to be a permanent shutdown-- I would feel if it is not said here it is implied that it's going to be an ultimate shutdown at the end of the 40-year license period.

Has any consideration been given in the event that this plant would be unable to operate under the criteria established by the Atomic Energy Commission or any of the regulatory agencies in the State?

A No, I have not given any consideration to that.

Q No alternatives have been considered with regard to almost 885 megawatts of power generation that might not be available?

A The considerations or the alternatives would have to be made by our engineering staff.

Q What would be the financial consequences to the company? Has that been investigated?

A No, I haven't.

MR. FAIRMAN: I have no more questions, Mr. Chairman.

CHAIRMAN JENSCH: Any redirect?

MR. DUNN: Not at this time, Mr. Chairman.

MR. FAIRMAN: May I ask as a point of information here -- Maybe Mr. Turnbull can tell me:

Are there any State agencies under which permits or licenses must be received by the applicant before he is

permitted to operate the plant?

MR. TURNBULL: Not to my knowledge.

MR. FAIRMAN: Is it common law or statutory authority dealing with pollution thatis your only regulation?

MR. TURNBULL: Statutory authority dealing with pollution. We have the additional regulation, of course, of the Florida Public Service Commission that supervises service and rate-making, but the Air and Water Pollution Control is a 1967 new statute.

MR. DUNN: Mr. Chairman, I think it might be propitious if Counsel for the intervenor would retain or associate Florida Counsel if he wants to be versed in Florida law on the operation of electric utilities in Florida.

CHAIRMAN JENSCH: Perhaps this is something that he would like to consider. I don't know thatit affects our proceeding.

Have you finished, Mr. Fairman?

MR. FAIRMAN: Yes.

CHAIRMAN JENSCH: Does the State of Florida have aany questions?

MR. TURNBULL: No questions.

CHAIRMAN JENSCH: Mr. Loader, let me ask you, in your statement -- Let me see if I understand -- on page 5, the third line, in speaking of the capability of Florida Power to finance the proposed construction and I assume

authorized to operate it as well, your sentence says, "assuming the continuation of the level of earnings."

Is that a condition to your opinion?

MR. LOADER: Not exactly, sir. The earnings retained in the business in the last five years have a compounded growth rate of 8.5 percent. The assumption that we went on were less than that amount. They were about 6.5 percent. The whole utility industry runs about 6 percent, and here in Florida we are a growth State so we grow a little better.

We wanted to make them as reasonable as possible so we did go less than compound growth rate in the last five years.

CHAIRMAN JENSCH: Well, assuming a continuance or assuming a level of earnings as you have stated of 6.5 percent, that would be adequate for the financing requirements of this project as well as your other financing?

MR. LOADER: Yes.

CHAIRMAN JENSCH: Your ratio, your bond-stock ratio is almost 54 46 percent. Is that approximately correct?

MR. LOADER: It is 50 percent in first mortgage bonds, and it's 4.5 percent in convertible debentures.

CHAIRMAN JENSCH: So it's 54 debt structure and 46 percent stock?

MR. LOADER: Yes.

tive, if I recall the ratio of two-thirds - one-third; is that about the average utility ratio, debt two-thirds?

MR. LOADER: Not the electric utility industry. It may be in the telephone industry but I'm not familiar with that.

CHAIRMAN JENSCH: Or the gas industry, perhaps.

Have you entered into any of your contracts for the construction you seek to have authorized here?

MR. LOADER: Yes, sir, we have.

CHAIRMAN JENSCH: And the amount of the debt contemplated by that is within th determination of adequacy of financial capability as you consider it; is that correct?

MR. LOADER: Yes, sir. That is in the total construction program.

CHAIRMAN JENSCH: This 45 percent internal generation of funds, does that assume a continuance of the present laws of depreciation?

MR. LOADER: It is book depreciation, sir.

CHAIRMAN JENSCH: Book entirely, and not tax --

MR. LOADER: That's right.

CHAIRMAN JENSCH: Has your rate of depreciation been fixed by regulatory authorities having jurisdiction in the matter?

CHAIRMAN JENSCH: Has there been a determination made?

MR. LOADER: I really don't know.

CHAIRMAN JENSCH: Have you considered your financial plans with financial consultants to have an independent review of your proposed financing?

MR. LOADER: No, sir.

CHAIRMAN JENSCH: Do you have outside financial consultants who work with you on large financing undertakings?

MR. LOADER: We don't hire outside consultants but we consult with outside people on Wall Street.

CHAIRMAN JENSCH: Yes. And have you done that for this project or for the next five-year program as you have set it forth here?

MR. LOADER: Yes. We do not have a definite five-year program and therefore I cannot tell you-- I can't tell you our program as we know it.

CHAIRMAN JENSCH: Well, all I was interested in:

Do your outside consultants agree with your conclusions as to the capability to carry out this program? Is that correct?

MR. LOADER: Yes, sir, they are aware of our plans.

CHAIRMAN JENSCH: I have no further questions.

Any more questions of this witness?

If not, thank you, Mr. Loader. You are excused.

(Witness excused.)

CHAIRMAN JENSCH: Will you call your next witness, please?

MR. DUNN: Mr. Chairman, at this time we call Mr. J. T. Rodgers and Mr. Evertz will conduct the direct.

CHAIRMAN JENSCH: Mr. Rodgers, will you come forward, please, and raise your right hand and be sworn.

Whereupon,

J. T. RODGERS

was called as a witness and, having been first duly sworn, was examined and testified as follows:

CHAIRMAN JENSCH: Did you prepare the evidence of Mr. Rodgers in advance of the hearing?

MR. DUNN: Yes, sir, we will have a copy for you.

Proceed, Mr. Evertz.

DIRECT EXAMINATION

BY MR. EVERTZ:

Q Would you please state your name, address, and position with the Florida Power Corporation?

A My name if Joel T. Todgers. My address is 4637 Bay Shore Boulevard, N. E., St. Petersburg, Florida. I am employed by Florida Power Corporation as Director of its Power Engineering and Construction Department.

In addition, I have been designated by its Board

of Directors as Nuclear Project Manager.

Q Will you please describe your educational background and experience?

A During World War II I was commissioned in the U. S. Navy as an Ensign and designated as a Naval aviator. In 1946 I entered the University of Florida, graduating in 1949 with the Degree of Bachelor of Mechanical Engineering. In July of 1949 I joined the Florida Power Corporation in its Production Department as Plant Operator.

In 1951 I transferred to the Mechanical Engineering Department as Assistant Mechanical Engineer responsible for power plant mechanical design. In 1956, I became Assistant Chief Mechanical Engineer, and in 1964, Chief Mechanical Engineer with the responsibility for all power generation engineering and construction.

During this period my experience includes participation in or full responsibility for engineering and construction of fifteen steam electric generating units, four diesel units, and four gas turbine peaking units.

In 1967 I was designated Nuclear Project Manager with full responsibility for Florida Power's nuclear power activities. In April, 1968, the name of the Mechanical Engineering Department was changed to Power Engineering and Construction Department to more functionally describe the activities and responsibilities of this department, and I

remained in charge as Director of Power Engineering and Construction.

I have attended the NUS Fuel Management Course, the Nuclear Engineering Indoctrination Course by Babcock and Wilcox Company, as well as numerous other special courses, seminars and conferences on nuclear power since becoming responsible for our company's continuing study, evaluation and entrance into the nuclear power generation field.

I hold memberships in the American Society for Mechanical Engineers, the American Nuclear Society, the Atomic Industrial Forum, Air Pollution Control Association, Southeastern Electric Exchange, Clean Air and Water Task Force, the University of Florida Department of Nuclear Engineering Sciences Visiting Committee and I am a Registered Professional Engineer in the State of Florida.

Power Corporation's Department of Power Engineering and Construction and its Nuclear Project Manager and specifically, how do they relate to the Crystal River Plant Unit No. 3?

A First, I would again point out that the Power Engineering and Construction Department is the same group of persons referred to as the Mechnical Engineering Department in the Application for Licenses including the accompanying Preliminary Safety Analysis Report and also in the Staff Safety Evaluation on Page 48, Section 8.1. My duties include direction of our company's generating plant design engineering and construction management necessary to assure timely installation of all new generating facilities regardless of type, size or fuel. As Nuclear Project Manager, I have broader responsibilities than just the engineering and construction of the nuclear generating unit. I am also responsible for its licensing, public information, fuel acquisition and management, training of both engineers and operators, and includes testing and initial start-up of the unit.

Q Will you describe in general terms the evolution, design, and characteristics of the Crystal River Nuclear Plant Unit No. 3?

A The Crystal River Plant Unit No. 3 is a pressurized water reactor. The Nuclear Steam Supply System being supplied

concept to others now in operation or under construction under AEC Licenses.

The evolution of B&W's reactor system proceeded on a schedule allowing in 1955 for them to contract for Indian Point No. 1 which went into service in 1963. In 1957, they entered into contract for the entire Propulsion Plant for the NS Savannah which was placed into service in 1962. Duke Power Company's Oconee Units 1, 2 and 3 were closely followed by Metropolitan-Edison's Three Mile Island No. 1 and Crystal River Plant No. 3. This is basically the evolution of the heretofore licensed reactors by B&W similar to Crystal River.

The reactor will operate initially at a nominal core power level of 2452 thermal megawatts. All physics and core thermal hydraulics information submitted in support of our Application is based on a core design for operation at that level. It is expected, however, that the nuclear steam supply system will be capable of an ultimate output of 2560 Megawatts thermal -- including 16 MWt contribution from the reactor primary coolant pumps. The facility systems, engineered safeguards and containment are designed consistent with safe operation at this ultimate power level. In addition, accident analyses presented have been made on the basis of the ultimate power level.

The reactor will be fueled with slightly enriched uranium

reactivity will be provided by a combination of neutron absorber and movable control rods. The neutron absorber, boric acid, is dissolved in the reactor coolant for the purpose of controlling the long-term reactivity changes of the core and provide cold shutdown. Silver-Indium-Cadmium control rods clad in stainless steel are employed to control short-term changes in reactivity levels and to provide fast shutdown capability.

Incore instrumentation, consisting of self-powered neutron detectors, will be located at pre-selected locations within the core. This instrumentation will monitor core performance. The fuel core will be supported within a heavy-walled steel reactor vessel, through which reactor coolant water will be pumped to remove the heat generated within the core. This thermal energy will be transferred to two once-through steam generators. The steam produced will be used to drive a steam turbine-generator, the capability of which initially will be about 855 gross megawatts of electricity. Ultimately, it is expected that the unit will have a gross electrical capability of about 885 megawatts.

There are numerous systems, components and features incorporated into theplant for the protection of the health and safety of the public. The first line of protection against the release of fission products from the reactor

for retaining fission products within their own physical structure. The fuel pellets are inserted in zirconium metal tubes which are designed and selected to withstand without failure much higher temperatures and pressures than those to which they will be subjected, thus preventing the escape of fission products. In the event of fuel tube failure for whatever cause with a release of any contained fission products, these fission products would remain within the liquid reactor coolant system contained in the primary coolant piping loops all of which are within the reactor building containment structure.

Finally, the reactor building containment structure encloses and contains the entire reactor coolant system to limit the release of radioactive fluids and vapors to the environment in the unlikely event of an accident. In the Crystal River Plant Unit No. 3 the reactor coolant system will be housed in a prestressed, post-tensioned concrete reactor containment building inthe shape of a cylinder. The inside diameter of the building is 130 feet and the inside height will be 187 feet. The reactor containment building will rest on an integral concrete slab approximately 10 feet thick. The building will be lined internally with 3/8 inch welded steel plate to provide vapor tightness. The reactor building containment structure is designed to limit radioactivity

10 CFR 100 guidelines published by the Atomic Energy Commission in the Federal Register.

Q Will you please describe in general terms the site of the Crystal River Plant and its characteristics?

A The Crystal River Plant site is located on the Gulf of Mexico, approximately 7-1/2 miles NW of the town of Crystal River and some 70 miles north of Tampa, Florida, in the remote and sparsely populated western portion of Citrus County. Florida Power Corporation wholly owns and controls the 4738 acre site with the plant itself at the center of an exclusion area having a radius of 4400 feet.

There are no known residents within a 3-1/2 mile radius and the low population zone has been established as 5 miles. Surface drainage and sub-surface water flow through the site area is toward the Gulf of Mexico only, and there are no potable water supplies which could be affected by the plant at this location.

The plant structure will be founded on underlying limerock which is geologically competent to support the loads to be imposed upon it.

The site is located in a relatively aseismic zone with structures designed conservatively to a horizontal acceleration of 0.05 gravity.

The nuclear generating unit will be protected against

probable hurricane.

Concerning meteorology in general, although the area of the site has a relatively high frequency of stable atmospheric conditions the diffusion of waste gases in the atmosphere is good. Wind direction is usually highly variable and wind speeds are seldom extremely low. A site meteorology program was initiated last year and 9 months accumulated data indicates those evaluations presented in the Safety Analysis Report are extremely conservative.

The location of the plant on the Gulf of Mexico provides direct access through existing intake and discharge canals for cooling water supply and discharge to the nuclear plant. This remote plant site is characterized by very favorable conditions of hydrology, geology, seismology and meteorology.

Q Will you describe the basic differences between nuclear power plants and conventional fossil-fire plants?

A Nuclear power plants are quite similar to the fossil-fire steam plants Florida Power Corporation is now operating. The fundamental difference is in the energy source used to make he steam to drive the turbines. In this nuclear plant the energy source is enriched uranium dioxide pellets contained in metal tubes, located within the nuclear reactor vessel. In Florida Power's conventional plants, coal,

... as energy sources. Both fossil units at Crystal River will burn pulverized coal. Both types of plants have steam generators to produce the steam for the turbines which directly drive the electric generators.

Q Will you please describe the experience of Florida Power Corporation in the design and construction of fossil-fired steam plants and hydroelectric plants?

A Florida Power Corporation has always actively managed the design and construction of its power plants regardless of size, type, or fuel to be used. The responsible engineering team, now called the Power Engineering and Construction Department, has performed site studies, unit evaluations, equipment procurement, and testing for start-up of its plants. Since World War II, this group has performed this management function and has been responsible for the design and construction of 18 steam-electric generating units ranging in size from 10 MW to 510 MW including the establishment of four new plant sites. We have been responsible for the installation of four diesel generating units and four gas turbine peaking units.

This same team has also been responsible for the retirement of two hydroelectric plants and major repairs on the Jackson Bluff Hydro Plant. Of the total system generating capability of 2,882,000 KW, including Crystal River Unit 3, Florida Power will have managed both engineering and construction activities for all but 60,000 KW, which were installed

partments degree of participation.

Included in the above 2,882,000 KW of generating capability is the 510,000 KW Crystal River Unit 2 presently under construction and schedules for start-up in December 1969, and four 30 MW gas-turbine, engine-driven units under construction for operation this year.

Q What experience have Florida Power's officers and employees had with nuclear technology?

A Beginning in 1956, Florida Power Corporation participated in the Florida Nuclear Power Group and subsequently in the Florida West Coast Nuclear Group in the study and conceptual design of a natural uranium, heavy water reactor project in a combined effort with the East Central Nuclear Group. This included the assignment of Company personnel to the General Nuclear Engineering Corporation as part of our participation in that project.

Mr. D. J. Rowland, a present member of our nuclear team, was one of the Company's employees assigned to work on the project for General Nuclear. We employed some three and a half years ago two former General Nuclear Engineering engineers at the time of that Company's acquisition by Combustion Engineering. These two, Messrs. Hobbs and O'Brien, have since received an additional degree of Bachelor of Nuclear Engineering with high honors from the University of Florida. In

Bachelor of Nuclear Engineering with honors.

We have been a member of the Savannah River Study Group and are currently financially contributing to plutonium fuel research through the EEI-APDA Program. Mr. W. J. Clapp, Chairman of the Board of Directors of Florida Power Corporation, is a former Chairman of the Edison Electric Institute Committee on Atomic Power, in addition to serving on the EEI Board of Directors and its Advisory Committee.

Through these years, Florida Power officers and employees have attended many seminars, conferences and special courses directed toward reactor technology. Since the purchase of the Crystal River Plant Unit 3 Nuclear Steam Supply System, these officers have participated in an indoctrination course sponsored by the B&W Company and directed specifically toward PWR concepts and theory.

On the staff of Florida Power's Power Engineering and Construction Department we now have one engineer holding a masters' degree in Nuclear Engineering and in June of 1968 the three members of this Department mentioned before were graduated from the University of Florida with the Bachelor of Nuclear Engineering degree, adding to those degrees they previously held.

Q You have stated that the reactor for the Crystal River Plant will be supplied by The Babcock & Wilcox Company.

respectively, of Florida Power Corporation and The Babock & Wilcox Company.

A Florida Power Corporation will be responsible for the design, purchasing, construction, testing and operation of the Crystal River Plant, Unit 3, a practice successfully followed for the Company's major generating facilities now in service or planned. The Company's Power Engineering and Construction Department has the responsibility for all design engineering concerned with this unit through its Manager, Power Engineering and for site construction activities concerned with this unit through its Manager, Power Construction. Both of these Managers report directly to the Nuclear Project Manager.

Florida Power has contracted with The Babcock & Wilcox Company to design, manufacture, deliver and erect a complete nuclear steam supply system, associated engineered safeguards systems, and fabricate its fuel elements. In addition, Babcock & Wilcox will supply competent technical and professional supervision for initial fuel loading, for testing, and for initial start-up of the complete nuclear steam supply system, with coordination, scheduling and administrative control by Florida Power Corporation personnel.

In the manufacture of the nuclear steam supply systems, B&W have developed quality control programs and

Savannah, Indian Point No. 1, Oconee units and Three Mile Island Unit 1. They are responsible for this quality control effort by contract to Florida Power Corporation who will provide for a separate audit of all such procedures and programs involved to assure performance in accordance with specified codes, standards or plant design criteria.

Q Has Florida Power employed independent consultants to render advice and assistance during the design phases? If so, please identify them and describe their assignments.

A Several independent consultants have been engaged to assist in the planning and design phases of the Crystal River Plant, Unit 3. Gilbert Associates, Inc., has been retained to render general consulting engineering services throughout design and construction of the Project. Included in the scope of design is the prestressed concrete reactor containment building.

Additional consultants retained either by Florida Power Corporation directly or through Gilbert Associates to assist in the design of this station include NUS Corporation inthe meteorology and environmental aspects, Southern Nuclear Engineering with Dr. C. Rogers McCullough as Technical Advisor, the University of Florida for performance of demography and population studies, training and education of operators, and its Departmentof Coastal and Oceanography

the foundation area, Weston Geophysical Engineers performed geological tests and Woodward, Clyde, Sherard and Associates in the area of soils mechanics under Gilbert Associates' direction. S. M. Stoller and Associates have provided evaluation data in the fuel acquisition and fuel economics.

There will arise from time to time a need for other independent consultants to assist the Project Management in our Quality Assurance Program. Throughout the project, Florida Power Corporation will retain full responsibility -- using its own Nuclear Project team employees -- for the complete safety and adequacy of the station design, construction and the education of the plant personnel.

Q Mr. Rodgers, under present regulations, an Applicant for a construction permit and operating license is required to provide protection against radioactive hazards to the public. Will you summarize what measures will be employed to fulfill this requirement and what engineered safeguards are provided in the design of the plant to assure its safety to the public?

A The Crystal River Plant, Unit 3 is being designed to rigid codes and standards to assure reliable safe operation without adverse effect from any release on the environment. It is a prime requirement that this plant operate continuously to supply reliable electrical power to the Company's customers in Florida. We are making every effort to assure

struction and the operation of the facility meet the highest standards for reliability and safety.

In the design, protection of the public is assured by the following engineered safeguards systems:

1. Redundant systems are provided which inject sufficient borated water directly into the reactor vessel to assure adequate cooling of the core and thus limiting any damage to the reactor fuel.

2. Two separate and redundant reactor building emergency cooling systems designed to cool gases and condense steam that might be introduced into the building in the event of an accident. These systems will limit the building pressure to less than its design pressure and will return the pressure to normal.

3. The reactor building containment structure is designed to safely contain the maximum pressure buildup resulting from complete rupture of the largest reactor coolant pipe.

Each of these safeguard systems include redundant components to assure their functioning as intended. These engineered safety systems will effectively protect the public from any credible accident in the Crystal River Plant, Unit 3.

Q The Application in this case covers one nuclear generating unit. Will you describe to what extent, if any, it

at Crystal River?

A The design, construction, and operation of the three units of Crystal River Plant will be fully coordinated to achieve maximum safety and reliability. The nuclear unit is physically independent to the extent that its operation will not be adversely affected by the fossil units under either normal or emergency conditions. The fossil units located at this site will supply external sources of power to the nuclear unit to add redundancy to the emergency power supply for the nuclear unit under normal or emergency conditions. The nuclear unit will have its own staff of personnel and facilities so that it will not be dependent on the fossil unit.

Q Inits letter of May 15, 1968, to the Atomic Energy Commission, the Advisory Committee on Reactor Safeguards recommended several matters for additional study, and concluded that these matters could be resolved by Florida Power and the REgulatory Staff during construction. Have any of the matters so cited already been resolved with the Regulatory Staff?

A Yes, we have resolved the specific concern expressed over the need for another source of off-site power supply to the engineered safeguards busses for the nuclear unit. This 4160 volt supply will be accomplished by installing a feed from the Unit 1 and 2 startup transformer direct to the

accomplished and use this redundant source of off-site power.

Reference to the ACRS letters for the Oconee units and the Three Mile Island Unit was a general and continuing concern by the Advisory Committee to assure that Florida Power Corporation, its engineers and its suppliers remain vigilant in the design and construction of Crystal River Unit 3. We have addressed ourselves to these specific concerns in our PSAR, Volume 4, Supplement 2, Informal Question 5.

Q Have you communicated to the appropriate authorities of the State of Florida and Citrus County your intention to construct and operate the Crystal River Plant, Unit 3?

A Yes.

We served copies of all materials filed with the Atomic Energy Commission on the Chairman of the Citrus County Board of County Commissioners, as required by the regulations. In addition, we have personally delivered or mailed one or more copies of our Application and Preliminary Safety Analysis Report to the Governor of the State of Florida, the Attorney General of the State of Florida, the Florida Public Service Commission, the Chief Health Officer of the State Board of Health, the Florida Development Commission, and to the Director of the State Board of Conservation.

We have made available copies of our Application and PSAR in Division and District Offices surrounding Crystal

St. Petersburg. We have personally met with the local Chambers of Commerce, civic organizations, and placed periodic news releases in local newspapers so that the public might be made aware from time to time of the progress of our licensing activities.

Q Mr. Rodgers, bearing in mind that the ultimate responsibility for the Crystal River Plant Unit 3 rests with Florida Power Corporation, have you satisfied yourself, as an officer of the Company and as Nuclear Project Manager, that the Crystal River Plant Unit 3 can be constructed without undue risk to the health and safety of the public, and that its construction would not be inimical to the common defense ad security of the United States?

A Yes, I have.

end

into evidence its Summary Description of Application. This document will be sponsored by Mr. J. T. Rodgers, the applicant's chief technical witness.

BY MR. EVERTZ:

Q Mr. Rodgers, I show you a document entitled "Summary Description of Application," consisting of 31 pages of text with Appendices.

The first Appendix, Appendix A, is a list of references to the Preliminary Safety Analysis Report; the second, Appendix B, being a group of figures; the third, Appendix C, consisting of several statements setting forth the educational and professional qualifications of a panel of technical witnesses listed on page 2 of the document.

I ask you if this document was reviewed and discussed with the applicant's staff and with applicant's consultants and thereupon prepared by you and under your direction and supervision?

A Yes, it was, with the exception of Appendix C.

Q Are the statements contained in this document entitled "Summary Description of Application, excluding Appendix C, true to the best of your knowledge and belief?

A Yes.

Q I now ask you whether or not you will here and now give from the witness stand the same statements as are

excluding Appendix C, and which you have just testified that you prepared or which was prepared under your direction and supervision?

A Yes.

MR. EVERTZ: Mr. Chairman, the applicant's Summary Description of Application, with the exclusion of Appendix C, has been identified and sponsored by this witness. At this time, the applicant requests the document entitled "Summary Description of Application," except for Appendix C which will be sponsored by the panel of expert witnesses, be marked for identification as Applicant's Exhibit B, and ask that it be incorporated into the record of the proceedings as if read, pursuant to the provisions of Rule [illegible] and Subsection E of Section 2 of Appendix A to Part 2 of the Commission's rules and regulations.

I request that this document be permitted to constitute the direct testimony of this witness in addition to that previously given by him, and that it now be received into evidence.

CHAIRMAN JENSCH: Mr. Evertz, would it serve your purpose equally well if this were marked as an exhibit and not have it incorporated within the transcript, but treated as an exhibit, as an appendix to his oral testimony that he has given?

of the Commission that this document is permitted to constitute the direct testimony of the witness.

CHAIRMAN JENSCH: It will be so understood. It is a question as to form that I have in mind.

I understood from your statement that you wanted it incorporated in the transcript as if read, which is quite a lengthy process. If you want to handle it as an exhibit, it would still constitute the evidence of the witness.

MR. EVERTZ: That is correct, sir. We do not propose to read it verbatim.

CHAIRMAN JENSCH: Very well.

I wonder if identification by numbers would be equally satisfactory. I think we have always used Joint Exhibit A for the Joint Exhibit of the applicant and the staff, and then sometimes used numerical.

Would it be satisfactory to your arrangement to use Applicant's Exhibit No. 1?

MR. EVERTZ: We would have no objection to that.

CHAIRMAN JENSCH: The document to which applicant's Counsel has referred will be marked for identification as Applicant's Exhibit No. 1.

(The document was marked Applicant's Exhibit No. 1 for identification.)

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Staff?

MR. HADLOCK: No objection.

CHAIRMAN JENSCH: State of Florida?

MR. TURNBULL: No objection.

CHAIRMAN JENSCH: City of Gainesville?

MR. FAIRMAN: No objection.

CHAIRMAN JENSCH: Applicant's Exhibit No. 1 is received in evidence, excluding Appendix C to which applicant's Counsel referred as being excluded in the offer.

MR. EVERTZ: Mr. Chairman, perhaps at this time it would be appropriate to make one correction in Applicant's Summary Description of Application.

CHAIRMAN JENSCH: Proceed.

MR. EVERTZ: On page 2, line 9, Mr. Roland's title is now Senior Power Engineer. And also in Appendix C-1, line 3 and line 9, Mr. Roland's title should also be changed from Mechanical Engineer to Senior Power Engineer.

CHAIRMAN JENSCH: It will be so understood. The corrections are made in Applicant's Exhibit No. 1. And if you have delivered copies to the Reporter, will you kindly make those corrections for the record.

MR. DUNN: Yes, sir.

CHAIRMAN JENSCH: Thank you.

marked for identification,

was received in evidence.)

(The Summary Description of Application follows:)

(Document handed to the Board.)

CHAIRMAN JENSCH: Thank you.

Staff Counsel has handed me two copies.

Will you proceed, Mr. Long? What was the page to which you referred?

MR. LONG: Page 6.

CHAIRMAN JENSCH: Thank you.

MR. LONG: The third line from the bottom of the page, the last word should read "survey" rather than "service". It should read "The U. S. Geological Survey."

CHAIRMAN JENSCH: Will Staff Counsel undertake to make the correction in the official documents?

MR. HADLOCK: Yes, sir.

Mr. Long, Mr. Ross, Mr. Howe, and Mr. Burley, I ask you whether you adopt this document as your testimony and the testimony of the regulatory staff in this proceeding?

(Chorus of "Yes".)

MR. HADLOCK: Mr. Chairman, I now move that this document be incorporated in the record at this point as if read, as the testimony of the AEC regulatory staff.

CHAIRMAN JENSCH: What is your preference as to having it marked as an exhibit or included within the transcript? I think the practice can vary either way. We can ask the applicant if he would like to have his Summary Description

as Exhibit No. 1, and I think the staff practice has been to put this one in the transcript. If there is no objection we will proceed according to the latter program if that is agreeable.

MR.HADLOCK: We have furnished copies to the Reporter for that purpose, Mr. Chairman.

CHAIRMAN JENSCH: Any objection by the applicant?

MR. DUNN: No, there is no objection, Mr. Chairman.

CHAIRMAN JENSCH: The State of Florida?

MR. TURNBULL: No objection.

CHAIRMAN JENSCH: The City of Gainesville?

MR. FAIRMAN: No objection.

CHAIRMAN JENSCH: The request is granted and the Safety Evaluation to which Staff Counsel referred may be incorporated into the testimony as if read as the testimony of the witnesses as identified.

(The Safety Evaluation follows:)

MR. HADLOCK: Mr. Chairman, we also have distributed to the Board and the other parties in this proceeding the document entitled "Testimony of Charles A. Lovejoy, Office of the Comptroller, AEC."

I have discussed with the parties the proposal which I made at the pre-hearing conference, namely, to incorporate this document in the record as the testimony of Mr. Lovejoy without the necessity of bringing Mr. Lovejoy to Crystal River to sponsor his testimony.

Each of the parties has indicated that they are willing to stipulate to that procedure.

In accordance with the indication of the Board at the pre-hearing conference at which you indicated if I did not hear from you that you would not require Mr. Lovejoy to be here, we have not brought him, and I would therefore offer this testimony now as the testimony of Mr. Charles Lovejoy and ask that it be incorporated in the record at this point as if read.

CHAIRMAN JENSCH: The Board adheres to the position given at the pre-hearing conference and the parties having agreed to waive the presentation or presence of Charles Lovejoy, the request of Staff Counsel is granted and the prepared statement as the testimony of Charles Lovejoy, Office of the Comptroller of the Atomic Energy Commission, may be incorporated into the record as if read at this point.

(The testimony of Mr. Lovejoy follows:)

MR. HADLOCK: We have no further direct testimony, Mr. Chairman.

CHAIRMAN JENSCH: What is the wish of the parties in reference to presentation of evidence by the State of Florida, or the City of Gainesville before proceeding with cross-examination?

MR. TURNBULL: I have nothing further to present, sir.

CHAIRMAN JENSCH: The City of Gainesville?

MR. FAIRMAN: The City of Gainesville has no direct testimony.

CHAIRMAN JENSCH: All persons are therefore available for cross-examination.

Do you have enough copies of your document, Mr. Dunn, so it can be incorporated into the transcript?

MR. DUNN: Yes, sir, twenty copies have been furnished to the Reporter and we request that it be treated the same way as the staff's.

CHAIRMAN JENSCH: The request is granted. It will be marked Applicant's Exhibit No. 1 and included in the transcript as the testimony of the applicant's witnesses.

Are all the witnesses available for cross-examination? If so, does the staff desire to cross-examine applicant's witnesses?

MR. HADLOCK: Mr. Chairman, we have no questions of

applicant's witnesses.

I might state for the record that the staff has asked Mr. Rodgers and these other witnesses many questions over the past eleven months in the course of our review, and we have pretty well exhausted any questions we had, and have concluded thatthe facility can be constructed and operated without undue risk to the public health and safety. And accordingly, we have no questions of the panel.

CHAIRMAN JENSCH: The record shows, as I recall it, in Joint Exhibit A, the particular questions that the Staff propounded to the Applicant and the answers from the applicant; is that correct?

MR. HADLOCK: Yes, sir.

Many of the questions which the staff propounded resulted in amendments to the application. Mr. Ross has indicated some of the changes that were made as a result and our questions have been all resolved at this point.

CHAIRMAN JENSCH: The State of Florida?

MR. TURNBULL: Nothing, sir.

CHAIRMAN JENSCH: City of Gainesville?

MR. FAIRMAN: Yes, Mr. Examiner, I would like to address a few questions to Mr. Rodgers.

CHAIRMAN JENSCH: Proceed.

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CROSS-EXAMINATION

BY MR. FAIRMAN:

Q Mr. Rodgers, on page 3 of your testimony you refer to engineering and construction management necessary to assure timely installation of all the generating facilities.

Can you describe to me what constitutes "timely installation" or the elements thereof? What considerations are in your mind?

CHAIRMAN JENSCH: Excuse me, Mr. Fairman. Would you identify-- Is it the Summary Description to which you refer?

MR. FAIRMAN: No, it is in his prepared testimony.

CHAIRMAN JENSCH: At page 3?

MR. FAIRMAN: Page 3, the answer in the middle of the page, and I am referring specifically to lines 13 and 14.

CHAIRMAN JENSCH: I have it. Thank you.

Would you proceed?

MR. RODGERS: I believe you asked specifically what "timely installation" meant. Is this true? You asked what specifically "timely installation" meant?

BY MR. FAIRMAN:

Q Yes, dealing with the management decisions as to installation of units, you discussed timeliness here, and I am just inquiring as to what are the elements that constitute the judgments that go into timeliness.

MR. ROGERS: The timeliness of the unit itself is dictated by system load studies, projections if you will, forecasts, of our system load growth as conducted by another department of our company. These imply needed additional generating units or generating installations if you will with respect to size as well as timeliness.

This is given to us in this department as a date on which they expect to have a unit in operation for the provision of establishing this sort of need or satisfying this load need.

Q Do I understand from not your reply but from the general character of your prepared testimony that you are responsible for the operation of this nuclear plant and its installation; is that correct?

MR. RODGERS: I am responsible for its installation & preliminary operation as Nuclear Project Manager. I would say some responsibility for its operation from a nuclear standpoint but not as far as systems operation per se is concerned.

Q Is it not true that you advised the Commisison on the 25th of March that the second of the two nuclear units was not to be considered as part of this application and was withdrawn?

MR. RODGERS: This is correct.

Q And at that time you said that this did not get -- that is, the second unit -- did not constitute prudent

investment.

I have here this letter of March 25th directed to Peter Morris, signed by you, which is a matter of public record --

MR. RODGERS: Yes, sir, I am familiar with it.

Q -- and I would like to offer it at least for identification purposes at this point.

CHAIRMAN JENSCH: Will you identify the letter furthe

MR. FAIRMAN: It is dated March 25th, addressed to Peter A. Morris, Director, Division of Reactor Licensing, and signed by Mr. J. P. Rodgers, Nuclear Project Engineer, Florida Power Corporation.

MR. HADLOCK: Mr. Chairman, that letter is a part of Joint Exhibit A.

CHAIRMAN JENSCH: Will that suffice for your purpose

MR. FAIRMAN: Yes, sir.

CHAIRMAN JENSCH: You withdraw your request?

MR. FAIRMAN: Yes, sir, I withdraw it.

CHAIRMAN JENSCH: Very well.

BY MR. FAIRMAN:

Q In this letter you refer to "prudent investment." I gather from this that the withdrawal of the second unit was in your judgment imprudent -- that is, the second unit, if it had been continued as a part of this project, would have been imprudent?

MR. DUNN: Mr. Chairman, I object to this question. The witness has already informed this intervenor that the matter of planning for the loan requirements is beyond his scope of responsibility.

MR. FAIRMAN: Mr. Examiner, he apparently is invested with authority to make these conclusions and express them to the Commission, and I am simply trying to investigate this "prudent investment" that Mr. Rodgers talks about, and so does Mr. Loader.

I think that this exhibit may be a basis for me to discuss it.

CHAIRMAN JENSCH: May I see a copy of this letter? You are directing your inquiry directly to the letter; is that correct?

MR. FAIRMAN: Yes.

(Document handed to the Board.)

CHAIRMAN JENSCH: I will return this copy of the letter.

MR. FAIRMAN: You may have it.

CHAIRMAN JENSCH: Does any party desire to examine this? This purports to be a copy of a letter from Florida Power Corporation, ST. Petersburg, Florida, to Dr. Peter A. Morris dated March 25th, 1968, and signed by J. T. Rodgers. If any party desires to review this before we give consideration to it, they may so do.

Does the applicant desire to see it?

MR. DUNN: We're familiar with it.

MR. HADLOCK: We have a copy, sir.

MR. DUNN: Mr. Chairman, I object to the question on the grounds that it is irrelevant and immaterial, and the reason for this objection is the fact that the reasons why or the business judgment exercised by the applicant in choosing to build a nuclear facility or not to build one as opposed to a conventional generating plant are immaterial and irrelevant. Such information has no bearing on any issue over which the AEC has jurisdiction in this proceeding, and I cite you the Duke decision.

MR. FAIRMAN: Mr. Examiner, I was not deliberately making an effort here to discuss the character of the unit. I was simply talking about the fact that originally the application dealt with two units, and the statement was made that in the light of prudent investment, it was to be withdrawn -- the second unit. Unit No. 4 was to be withdrawn from the application.

My question simply is to find out what underlies the kind of decisions that constitute "prudent investment" when we are dealing with an application under 104(b).

MR. DUNN: Mr. Chairman, the applicant has withdrawn that second unit. The area that he wants to get into is within the jurisdiction of another Federal agency, namely, the

Federal Power Commission, and I challenge the propriety of the question on the fact that this does not come within any issues announced by this Board for this hearing.

CHAIRMAN JENSCH: The Board will give consideration to this request. We have not had an afternoon recess.

This letter-- Is this correct, that this letter is a part of the jointly sponsored evidence by both the applicant and the staff; is that correct?

MR. DUNN: That is correct, sir.

CHAIRMAN JENSCH: You have offered this letter and it is included within the evidence you had included as Joint Exhibit A; is that correct?

MR. DUNN: That's correct.

CHAIRMAN JENSCH: Very well, at this point we will recess to reconvene in this room at 4:10.

End 19

(Recess.)

CHAIRMAN JENSCH: Please come to order.

The Board has given consideration to the question propounded, and the objection is overuled. The witness may answer the question.

Do you desire to have the question read?

MR. RODGERS: Yes, sir.

(Whereupon the reporter read from the record as requested.)

MR. RODGERS: Mr. Chairman, we are referring to line 17 in the same paragraph. I stated that I was responsible for the licensing of this unit. Along with this responsibility goes the designated responsibility for meeting with the Director of Reactor Licensing, Dr. Morris. And this letter did suggest this. I communicated with Dr. Morris and conveyed to him the management decision by Florida Power Corporation which was approved by our company board of directors prior to its submittal to Dr. Morris. As to whether the lack of investment is imprudent, or whether it is prudent because we didn't invest, I have no knowledge of this one way or another. I did not participate in that matter.

BY MR. FAIRMAN:

Q I asked the question of you simply because you were the author of the letter. Perhaps this question would be better asked of Mr. Loader. I was putting this question to

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you inasmuch as I assumed your responsibility covered at least recommendations as to actions taken.

CHAIRMAN JENSCH: What is the pending question?

MR. FAIRMAN: Perhaps I should rephrase it, Mr. Examiner.

CHAIRMAN JENSCH: Proceed.

BY MR.FAIRMAN:

Q The concern that I have here, or the interest that I have here is that there is in connection with this application financial testimony as well as this testmony of--

CHAIRMAN JENSCH: Some people are having a little difficulty hearing you. And I wonder if in view of the number of people who are in the room if you could stand and maybe hold the microphone closer to you, or somehow place it closer to you. Several people have raised their arms in the back of the room.

MR. FAIRMAN: I will endeavor to talk louder. It's a little difficult to talk and read in this position.

CHAIRMAN JENSCH: That's why I thought you might stand up; that you might be able to do it better.

BY MR. FAIRMAN:

Q The question basically is this: that this application is being offered to the Commission for their consideration, and among the things that have to be shown are financial qualifications and responsible decision-making. And this letter seems to indicate that some of this has gone on,

particularly with reference to prudent investment. And I just would like to be enlightened as to what this is.

CHAIRMAN JENSCH: What is the question?

MR. FAIRMAN: How Mr. Rodgers, or someone in the company capable of answering this, can define for me "prudent investment within the terms of a 104(b) application.

MR. DUNN: Mr. Chairman, we are not familiar with any requirement of Section 104(b) to prove that anything is a prudent investment. That is purely Florida statutory law.

MR. FAIRMAN: I will continue, Mr. Chairman.

CHAIRMAN JENSCH: The question is withdrawn?

MR. FAIRMAN: Yes, I will withdraw the question.

CHAIRMAN JENSCH: Proceed, please.

BY MR. FAIRMAN:

Q On page 4 of your testimony, Mr. Rodgers, you discuss the evolution of B&W's experience, and refer to the Duke and the Metropolitan Edison units. Do you know what the in-service dates for those units are?

MR. RODGERS: No, sir, I do not.

Q Mr. Thomas, do you know?

MR. THOMAS: No. I do not know the in-service dates at this time.

Q Do you know what they are expected to be? Is it safe to say that, in any event, they will precede the in-service

date for Unit No. 3 of Crystal River?

CHAIRMAN JENSCH: Which question do you want him to answer?

MR. FAIRMAN: I really would like to establish what these in-service dates are relative to the date of operation of the Crystal River plant. I don't need the exact dates. I thought that someone over there would be able to describe the dates within a relative time, if these units in the evolution of B&W's experience will precede the operation of the Crystal River No. 3 plant.

CHAIRMAN JENSCH: Considering all those several matters, is this for Mr. Thomas? Or, Mr. Thomas, will you undertake consideration of those questions?

MR. THOMAS: Yes.

I am assuming this refers to Oconee Units 1, 2, and 3. as listed in line 6 on page 4; in which case it is expected, at the present time, that Oconee Unit No. 1 should reach operation in the year 1971. I understand that Units 2 and 3 are to follow in approximately one-year intervals.

MR. FAIRMAN: Thank you, sir.

BY MR. FAIRMAN:

Q On page 8 of your testimony, Mr. Rodgers, the answer in the middle of the page, specifically lines 7 and 8, you are talking about an engineering team. I understand either you have been a part of that time, or that team is now under

your supervision and performs site studies and unit evaluations. Can you enlighten me as to what constitutes unit evaluations?

MR. RODGERS: Yes, sir. As a part of this particular responsibility that we have, this was information by our planning department. There are a number of alternatives which obviously we have to face. These are all combined in what we call here "unit evaluations." They are either design criteria, such things as fuel supplies, unit sizes, specifically unit operating economics expected during the life of the plant.

Q So a nuclear unit within that scope of responsibility is treated in much the same manner as any other addition to your system?

MR. RODGERS: I would like to answer that without sounding facetious; but the magnitude of the unit itself in the licensing activity does not allow that it be treated the same. As we get into evaluation of the numbers--we are dealing with numbers--we are dealing with criteria for evaluation parameters that are identical.

Is this anywhere near what you are referring to?

Q You say the criteria are identical in terms of your system operations; is that what you mean?

MR. RODGERS: Well, when we are evaluating one unit versus another we evaluate a criteria, namely, size. And

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we would evaluate criteria, namely, heat balance, or heat rate expected, plant heat rates. These are the same type of numbers for any kind of a steam plant.

Q And it was this evaluation, then, which led you to select B&W's design?

A There was much that preceded this, but there was an evaluation of competitive bids that led us to a recommendation for this, yes.

Q By "bids" are you referring only to the dollar amounts?

MR. RODGERS: In this particular case we tried to refer everything back to dollars. With respect to Crystal River Unit No. 3 there were some experience involved here with the B&W company which we felt would favor the B&W company. However the dollars that were involved -- they were the low bidder on a competitive basis.

Q And it was your experience from other kinds of unit design that this experience -- this is, of course, the first nuclear unit on your system; but I take it from your answer that you have other B&W equipment.

MR. RODGERS: Are you asking me that?

Q Yes. You talk about your "experience" with these people.

MR. RODGERS: The answer is Yes.

Q On page 12 of your testimony, lines 19 through 21,

you state that it is a prime requirement that this plant operate continuously to supply reliable electrical power to the company's customers in Florida.

You are satisfied that this plant is going to do that?

MR. RODGERS: I have every reason to believe that it will, sir.

Q Could this have been the basis for Mr. Loader's answer, that no other alternatives were considered?

MR. RODGERS: I'm sorry, but I don't believe I can answer this question.

Q All right.

When you talk about "continuously supply," do you have in mind some plant capacity factor, some plant factor?

MR. RODGERS: The evaluation that we ran was based on a number of plant capacity factors, yes, sir, because the economics of a unit do differ in terms of generating costs with plant capacity factors.

Q You say you use different ones. This was used in connection with your evaluation of the equipment. Why were different ones used?

MR. RODGERS: Primarily because the system planning department possibly has some capability that says that they cannot predict forty years in the future as to exactly how we are going to operate this unit, so we have to make some

predictions, error predictions, or banded predictions, or whatever definition that you would choose to call this. But we just can't predict that accurately. So we use several alternative predictions of capacity factors. We used several alternate capacity factors.

Q What was the range of these figures?

MR. RODGERS: The top range was running continuously 100 percent of the time with only down-time for refueling. The minimum range I don't recall offhand. It was ridiculously low. From a system stand point you couldn't operate if you stayed down in this area. I'm notsure that I recall exactly what it is. It was 50 percent, or somewhere in that neighborhood.

Q Now I wouldlike to have you refer, if you would, to Volume 4, Supplement 1, Question 1.2

0211 I am getting technically somewhat over my head here.

Supplement No. 1, Question 1.2, page 1.2-1.

CHAIRMAN JENSCH: Mr. Fairman, would it be possible to read the question so we may have it in the record at this time?

MR. FAIRMAN: I do not have a copy of that. I examined this is in the public document room.

CHAIRMAN JENSCH: Do you have the question before you, Mr. Rodgers? If so, would you read it?

MR. RODGERS: The question was: "Identify those

items that will eventually be classified as technical specifications that now affect plant design."

BY MR. FAIRMAN:

Q Answer No. 4 is the one I am interested in.

MR. RODGERS: Answer No. 4 is: "Integrated neutron flux. The reactor vessel is the only reactor coolant system component exposed to a significant level of neutron irradiation. The potential radiation at the end of reactor service life from fast neutrons (E 1.0 Mev) as computed to be a maximum of 3.0 times 10^{19} neutrons per cm^2 over a 40-year life with a unit capacity factor of 80 percent."

Is this what you refer to?

Q Yes. This is where I found reference to "capacity factor." And I would like to know from your site evaluation whether the dictates of your needs in terms of this unit design used numbers in excess of this for other evaluation purposes; and, if so, what they were?

MR. RODGERS: 80 percent.

Q 80 percent?

MR. RODGERS: Eight-oh.

Q And this is an average 40-year plant factor? Did it begin at 95, or something like that, and average out over 40 years?

MR. RODGERS: No. I can arrive at 80 percent by running for one year and staying at 80 percent, and staying

shut down for the rest of the plant life.

Q And this is a 40-year period we're talking about.

MR. RODGERS: It's a 40-year period.

Q That was the time of the license application. That was the period of time used in answer to this question.

MR. RODGERS: Forty years; yes.

Q My real interest is the capacity factor. Now if it was a lifetime, a 40-year lifetime capacity factor of 80 percent, surely that impplies there are some significantly higher plant factors during the first ten and fifteen years of plant operation.

MR. RODGERS: Yes, in fact it is just what you said It's an implied thing because, as I stated before, we only can go as high as we can operate the unit and leave some time for refueling and maintenance, so the number that we have is actually the 80 percent calculation over the life of the unit and it is equivalent to that average.

Q Would the system planning people be satisfied with an 80 percent factor?

MR. RODGERS: All I can say, sir, is that if we can operate our system on an 80 percent average capacity factor daily that we would be extremely happy, yes.

MR. FAIRMAN: Thank you.

CHAIRMAN JENSCH: Mr. Fairman, this is approximatel the time of our recess. Would it be convenient to interrupt

your examination at this point?

MR. FAIRMAN: I would be perfectly willing to have you do so.

CHAIRMAN JENSCH: We have some commitments we would like to complete.

Is there a suggestion for a time for reconvening in the morning? Does anybody have witnesses who travel that make it inconvenient to come before ten o'clock?

MR. FAIRMAN: Mr. Exmainer, I think I can perhaps within 15 or 20 minutes finish my examination. I have a couple of questions which I would like to ask the B&W people.

CHAIRMAN JENSCH: Well, I am trying to complete some inquiries that have to be made.

MR. FAIRMAN: By way of estimating how much time we need tomorrow --

CHAIRMAN JENSCH: Well, there has been no request for an earlier time so at this time, let us recess to reconvene in this room at ten o'clock.

(Whereupon, at 4:35 p.m., the hearing in the above-entitled matter was recessed to reconvene at 10:00 a.m. the following day.)

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