

UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

*cc AEC-R 179/9*

In the Matter of: )  
FLORIDA POWER CORPORATION )  
(Crystal River Unit 3 )  
Nuclear Generating Plant) )

Docket No. 50-302

REPLY BRIEF OF APPLICANT IN OPPOSITION TO  
INTERVENOR'S EXCEPTIONS TO INITIAL DECISION

I  
Introduction

On September 24, 1968 the Atomic Safety and Licensing Board (Board) in this proceeding issued its Initial Decision which authorized the issuance of a provisional construction permit to Florida Power Corporation (Applicant) to construct its Crystal River Unit 3 Nuclear Generating Plant. On October 14, 1968 the Intervenor in this proceeding, the City of Gainesville, Florida and the Gainesville Utilities Department (collectively referred to as "Gainesville"), filed its exceptions (and presumably its supporting brief) to the Initial Decision.

On June 14, 1968, Gainesville filed its Petition for Leave to Intervene and Motion to Broaden Issues", alleging that the Applicant's proposed nuclear facility could not lawfully be licensed under Section 104b of the Atomic Energy Act of 1954 as amended (Act) because it has "practical value" within the meaning of Section 102 of the Act and, therefore, could only be licensed under Section 103. It was Gainesville's stated purpose to see that any license issued to Applicant be conditioned so as to permit Gainesville to participate in the ownership and output of the facility. Gainesville further alleged that the Board was required to enlarge the issues to include

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anti-trust attes. .

Both the Applicant and the Regulatory Staff filed answers to this Petition and Motion.

On June 28, 1968 the Board issued an Order denying Gainesville's motion to broaden the issues, but granted its petition for leave to intervene, limited solely to the issue of whether the nuclear reactor facility proposed to be constructed and operated by Florida Power can be authorized pursuant to Section 104b of the Act.

In its Initial Decision the Board, upon consideration of the entire record of the evidence in this proceeding, specifically concluded that the Applicant had sustained its burden of proof as to the jurisdiction of the Board and all other matters pertinent to its Application and that the proposed Crystal River Unit 3 facility is a utilization facility involved in the conduct of research and development activities leading to the demonstration of the practical value of such facility for industrial or commercial purposes within the scope of Section 104b of the Act. On the strength of the entire record, including the evidence presented during the hearing, the Board authorized the issuance of a Provisional Construction Permit pursuant to Section 104b of the Act.

II  
Argument

In substance, the exceptions of Gainesville reflect its own self-serving interpretations of the licensing provisions of the Atomic Energy Act of 1954, as amended. The contentions of the Intervenor, with respect to its exceptions to the Initial Decision, are consistent with and repetitive of the basic contentions which it has previously made in its Petition for Leave to Intervene and Motion to Broaden Issues, and which have been

answered by the Applicant, the Staff and the Board.

In paragraph 1.a. of its exceptions, Gainesville asserts that the Applicant's proposed facility has "practical value" within the purview of Sections 102, 103 and 104b of the Act because Florida Power and its contractor, The Babcock & Wilcox Company, have expressed confidence that the facility will be economically competitive with conventional generating units. Gainesville's interpretation of "practical value" is in direct conflict with several recent Commission decisions wherein this same issue had been raised by municipal intervenors. In the Duke proceedings<sup>1/</sup> the Commission has stated:

"Inquiry into the application of Section 104 b. properly begins, of course, with the language of that section itself. Insofar as is here relevant, Section 104 b. authorizes the Commission to license thereunder . . . utilization . . . facilities involved in the conduct of research and development activities leading to the demonstration of the practical value of such facilities for industrial or commercial purposes . . . . We have already stated our view that the 'research and development' about which Section 104 b. speaks encompasses as 'development' a demonstration that will provide a basis for commercial evaluation. Such 'commercial evaluation', in terms of earlier relevant declarations, means an evaluation of the economic competitiveness of the nuclear facility with conventional power plants.

"In the context, then, of the statutory language and our construction of it, until there has been a 'demonstration of the practical value of such facilities for industrial or commercial purposes', utilization facilities which will provide a basis for commercial evaluation in connection therewith (i.e., 'leading to' such 'demonstration') may be licensed under Section 104 b. As the discussion below shows, this clearly places the Oconee reactors within the compass of Section 104 b.

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<sup>1/</sup> In the Matter of Duke Power Company, Decision, Atomic Energy Commission, January 3, 1968, 2 Atomic Energy Law Reports, Par. 11,266, Page 17,501-7.

"Our Memorandum and Order of September 8, 1967, noted that the Commission has considered on two occasions in rule making proceedings the question of whether a finding of 'practical value' should be made with respect to some type or types of light water, nuclear power reactors. We concluded in the first proceeding, following receipt and consideration of extensive public comments, the holding of a legislative-type public rule making hearing, and a careful evaluation of all relevant factors, that '/p\_7ending the completion of scaled-up plants, and the information to be obtained from their operation', there 'has not yet been sufficient demonstration of the cost of construction and operation of light water, nuclear electric plants to warrant making a statutory finding that any types of such facilities have been sufficiently developed to be of practical value'. This conclusion was reaffirmed in connection with our denial of a petition for rule making approximately one year ago.

"It is worth restating at this point the circumstances which we took into account in arriving at our rule making determinations. In conjunction with our initial determination, we outlined these circumstances as follows:

"Currently operable light water, nuclear electric plants range up to about 200 net MW(e) and are not economically competitive. In 1962 the Commission encouraged the construction of scaled-up plants by requesting authorization under the Power Demonstration program for plants in the 400-500 net MW(e) range. Operating experience, including maintenance and availability, from the plants for which Congress authorized appropriations in these intermediate sizes is not available, since none of them is completed. More recently, plants in sizes exceeding 600 net MW(e) are being designed and constructed without Government financial assistance. The Commission has examined in some detail whether the information provided by the award of contracts for the construction of scaled-up plants without Government assistance is sufficient to support, without further demonstration, a finding of practical value under the Act. Without the operating information the intermediate sized plants are expected to provide, we are not prepared to make a statutory finding on the basis of demonstrated results of the currently operable plants that plants at least three times larger than 200 net MW(e) are of practical value within the meaning of section 102.'

"We were faced with like circumstances at the time of our second rule making action and, while two of the intermediate-sized plants have now been licensed for operation, essentially the same situation as regards 'demonstration' obtains today. In this context, we think it manifest that large-scale utilization facilities, such as the

Oconee reactors, by contributing to the as yet incomplete basis for a reliable estimate of economic competitiveness, are involved in the conduct of activities encompassed by Section 104b. and, thus, are properly to be licensed thereunder.

"In their exceptions to us, the intervenors maintain that the proper standard for determining whether the type of utilization facility to be employed by the applicant has demonstrated practical value is whether or not it is being sold by the manufacturer and bought by the purchaser, without Government subsidy to either, for use in the large scale generation and sale of electrical energy in the regular course of business. From what we have previously stated, it should be clear that we cannot accept this as the basis for determining applicability of Section 104b.; nor does such an absolute standard constitute the test for a finding of 'practical value' under Section 102, although business factors of the type referred to are relevant for consideration in the latter regard.

"It is worth noting, in the above connection, that we addressed ourselves to a similar proposition in the first rule making determination regarding a finding of practical value. We there concluded, after examining the underlying data in some detail, that while certain economic evaluations governing the award of contracts for scaled-up plants not involving Government assistance provide strong indications that economic competitiveness will be achieved, we should await a reliable estimate of the economics based upon a demonstration of the technology and plant performance before making the statutory finding.

"Analytical support for the above approach is contained in the Staff Memorandum accompanying our determination. The staff there stated:

"Although the willingness of utilities and equipment companies to accept the business risks involved is an impressive indication of the probabilities of successful operation at anticipated levels, it is not alone a sufficient basis to support a statutory finding of practical value by the Commission. The manufacturers of nuclear reactors compete for the business of utilities which are considering the purchase of power plants, and are motivated to offer incentives such as warranties as to certain features in order to obtain the award of a contract. The willingness of utilities to purchase nuclear plants and of reactor manufacturers to warrant the plants is a reflection of the acceptance of what may be considered reasonable business risks, but does not necessarily constitute a sufficient assurance that the plants will in fact perform as warranted or will otherwise meet expectations.'

"In our second rule making determination, we gave further consideration to this matter when we took specific note of announcements of

new light water reactors to be constructed, the type of business arrangements being negotiated between reactor manufacturers and utilities and the fact that utilities have decided upon nuclear plants on the basis of comparative economic studies. Our determination stated that while these developments are further strong indications that economic competitiveness will be achieved we continued to believe that we should await a reliable estimate of the economics based upon a demonstration of the technology and plant performance.

"The intervenors, in their exceptions, have also sought to emphasize the experimental facet of the terms 'research and development' and to argue therefrom that the Oconee facilities do not properly fit within the statutory language. While we believe these arguments are answered by the statements already made respecting the role of economic demonstration under Section 104 b., it is appropriate further to note the following passage in the previously-referenced Staff Memorandum:

"'A substantial extrapolation of demonstrated results from currently operable plants, which range up to about 200 net MW(e), is necessary in order to determine anticipated technological and economic performance in plants currently being built and sold without Government financial assistance in size ranges of 600 net MW(e) and above. Since the gap involves an increase in reactor size by a factor of three, many technical and engineering problems must be resolved and demonstrated.'

"The initial decision has additionally enumerated a number of aspects of research and development needed to complete the design of certain components for the Oconee units. Mentioned in this regard are: 'a proposed once-through steam generator test, the control rod drive line test, self-powered in-core neutron detector tests, thermal and hydraulic programs, . . . and the fuel assembly heat transfer and fluid flow test.' We agree with the board that the foregoing, individually and in combination, evidences an experimental purpose concomitant with the purpose of economic demonstration.

"One additional observation is in order before we leave the jurisdictional question. The licensing authority under Section 103 of our Act is only applicable as respects facilities of a type which the Commission has found, in accordance with Section 102, to have been sufficiently developed to be of practical value for industrial or commercial purposes. The approach we have taken regarding the content of Section 104b. is consistent with the premise that the finding of 'practical value' under Section 102 separates the issuance of developmental licenses under Section 104b. and the issuance of commercial licenses under Section 103. This, we think, is in keeping with the scheme of the Act and is legislative history."

On Page 17 of its Initial Decision the Board accepted in substance Applicant's proposed findings of fact Nos. 25 and 26, which read:

"25. The construction and operation of the proposed facility will provide information bearing upon whether or not the type of pressurized water reactor has practical value for industrial or commercial purposes, such information relating to design and construction at an economic cost; the achievement of full power output, continuity of service and load carrying capability on electric systems, and the technical and economic operation of the nuclear fuel cycle in connection with such facility.

"26. The reactor planned for the Crystal River Unit No. 3 Nuclear Generating Plant is larger in capacity by a factor of approximately two than the largest pressurized water reactor operational today. At least until reactors of comparable size have demonstrated by operation their reliability, technical feasibility and economic competitiveness with other types of generating facilities, the Crystal River Unit No. 3 reactor must be considered 'developmental'. No evidence was adduced at the public hearing which would tend to establish that any pressurized water reactor of the type and size of the Crystal River reactor will demonstrate technical feasibility and economic competitiveness prior to planned operation of Crystal River Unit No. 3 Nuclear Generating Plant."

Contrary to Gainesville's contentions regarding a finding of "practical value", the Board has correctly summarized the Commission's views in footnote 14 on Page 16 of its Initial Decision:

"14/ In Duke Power Company, Docket Nos. 50-269, 50-270, and 50-287, Commission Decision, issued January 3, 1968, it was held that:

"...our view that the "research and development" about which Section 104 b. speaks encompasses as "development" a demonstration that will provide a basis for commercial evaluation. Such "commercial evaluation", in terms of earlier relevant declarations, means an evaluation of the economic competitiveness of the nuclear facility with conventional power plants.

"In the context, then, of the statutory language and our construction of it, until there has been a "demonstration of the

of the practical value of such facilities for industrial or commercial purposes", utilization facilities which will provide a basis for commercial evaluation in connection therewith (i.e., "leading to" such "demonstration") may be licensed under Section 104 b."

In paragraph 1.b. of its Exceptions, Gainesville is again raising the issue of whether or not the Commission must consider anti-trust matters in a Section 104b licensing proceeding. The Commission has consistently ruled against Gainesville's contentions in all recent decisions<sup>2/</sup> where this issue has been raised.

In the Vermont-Yankee proceedings, supra, the Commission dealt with these same contentions when they were made by the Massachusetts Municipal as follows:

"The Municipal's attempts to bring their interests within the purview of this proceeding turn principally on their contentions that those interests are affected by actions of the applicant and its sponsors which are alleged to be in violation of the anti-trust laws. We are being asked, in this regard, to allow them to develop these contentions in what they characterize as the 'public investigatory hearing contemplated under the Atomic Energy Act' and to take curative licensing or other action on the basis of the record developed. The Municipal's requests, however, are plainly beyond our statutory province.

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<sup>2/</sup> In the Matter of Duke Power Company, supra, footnote 1.  
In the Matter of Vermont-Yankee Nuclear Power Corporation,  
Memorandum and Order, Atomic Energy Commission, 2 Atomic  
Energy Law Reports, Par. 11,267.03  
In the Matter of Philadelphia Electric Company, Docket Nos.  
50-277 and 50-278.

"As the staff points out, proceedings to license power reactors can be conducted only under Sections 103 and 104 of our Act. Section 103 governs the licensing of power reactors of a type which the Commission has found to be of 'practical value' pursuant to Section 102 of the Act. In connection with such licensing, Section 105c. of the Act prescribes certain steps to be taken by the Commission with respect to antitrust considerations. Included therein, is Commission notification to the Attorney General of the proposed license and its terms and conditions and the receipt of advice from the latter official as to whether 'the proposed license would tend to create or maintain a situation inconsistent with the antitrust laws'. As its terms make clear, however, Section 105c. is not applicable to licensing proceedings under Section 104b.

"In a proceeding for the issuance of a license under Section 104b. of the Act, which the instant proceeding properly is (see below), the Commission's substantive regulatory authority is limited, as earlier stated, to matters of radiological health and safety and common defense and security. The Commission, in such a proceeding, lacks the authority to deny or condition a permit or license on the basis that it would tend to create or maintain a situation inconsistent with the antitrust laws. We believe this is clear from the distinction which the Act draws between proceedings under Section 103 and Section 104b. as respects consideration of antitrust matters, and from a reading of the legislative history of those provisions of the Act which bear on Commission consideration of antitrust matters in facility licensing. That history shows a deliberate limitation in the 1954 Act of the broader antitrust authority in licensing matters which had been contained in Section 7(c) of the Atomic Energy Act of 1946.

"It might further be noted, that our construction of the 1954 Act in the subject regard, is reflected in the long-standing AEC regulations implementing the Act's reactor licensing provisions. Those regulations set forth the requirements of Section 105c. as part of the 'additional standards' applicable to issuance of licenses under Section 103, and state that, in such licensing, 'L d Tue account will be taken of the advice provided by the Attorney General pursuant to subsection 105c. of the Act'. These 'additional standards' have no counterpart in the standards applicable to licensing under Section 104. See, 10 CFR Section 50.42; and compare, 10 CFR Sections 50.40 and 50.41.

"While the Commission lacks the authority to deny or condition a Section 104b. license on the basis that it would tend to create or maintain a situation inconsistent with the antitrust laws, organizations which receive licenses under that section are not relieved from the operation of the antitrust laws. Section 105a. of our Act explicitly declares that nothing contained in the Act shall relieve any person from the operation of the various antitrust statutes specified therein. Moreover, under Section 105b. of the Act, the Commission is required to report promptly to the Attorney General any information it may have with respect to any utilization of special nuclear material or atomic energy which appears to violate or to tend toward the violation of the antitrust laws enumerated in Section 105a. or to restrict free competition in private enterprise.

"It was, perhaps, Section 105b. which the Municipals had in mind in asking that the issues specified for hearing be enlarged so that testimony, evidence, and recommended findings respecting antitrust considerations 'may be reported to the Attorney General for his use in the dispatch of his statutory responsibilities'. We would only state in response, that while the AEC endeavors to comply fully with both the letter and spirit of Section 105b., we cannot view its provisions as a warrant to use our licensing proceedings to develop evidence on matters unrelated to the issues properly within our jurisdiction solely so that we may assist the Attorney General in his law enforcement responsibilities."

Gainesville's contentions asserting that the Commission must consider anti-trust matters in a Section 104b licensing proceeding are clearly erroneous and contrary to the Commission's interpretation of the Atomic Energy Act of 1954, as amended.

Paragraph 2 of Gainesville's Exceptions to the Initial Decision is nothing more than a restatement of its "practical value" assertion. Paragraph 2 contains nothing more than Gainesville's own conclusions which are unsupported by any evidence in this proceeding and which are based upon its own interpretation of the terms "practical value" and "research and development" as used in the Act and in the Commission Rules and Regulations. In

fact, to support its conclusions, Gainesville has gone outside the record and improperly attempts to inject into the proceeding irrelevant and immaterial matter purportedly pertaining to electric generating costs in New England. The Applicant has filed a separate motion to strike this extraneous material from Gainesville's Exceptions.

In paragraph 3 of its Exceptions Gainesville has incorrectly characterized the iodine removal requirements necessary to meet 10 CFR 100 criteria for Applicant's Crystal River site as a research and development program. The research and development program proposed by the Applicant with regard to iodine removal is the chemical spray system utilizing alkaline sodium thiosulphate and borated water. It is the proposed method for removing iodine, and not the necessity to remove it in order to meet 10 CFR 100 criteria, that constitutes one of Applicant's proposed research and development programs. The Board in its Initial Decision specifically found the Applicant's proposed chemical spray system for iodine removal a research and development item within the purview of the Act and the Commission's Rules and Regulations.

Gainesville takes exceptions in paragraph 4 of its Exceptions to the Board's acceptance of Applicant's proposed research and development programs for the core thermal and hydraulic designs. Gainesville claims that the record of this proceeding does not support the Board's finding. Gainesville apparently is not familiar with the Staff's Safety Evaluation which constituted its direct testimony at the public hearing. It follows page 276 of the Transcript. Contrary to Gainesville's assertion of a lack of evidence to support the Board's finding, the Staff states on Page 59 of its Safety Evaluation:

"The applicant has proposed scaled flow distribution

tests on the vessel and internals and rod bundle tests to determine local mixing and flow effects as discussed in Section 3.4 of this report. This further experimental and analytical work must be done to determine the limiting heat fluxes at various positions within the fuel bundle if the design is to be based on the B&W heat transfer data." (Emphasis supplied.)

In Section 3.4 (Thermal and hydraulic Design) of its Safety Evaluation, the Staff stated on Pages 16 and 17:

"Axially nonuniform bundle tests, similar in geometry to the proposed design, are being run as part of the research and development program at B&W and the results of these tests will be applied to the final thermal design. We believe that the allowable design heat flux should be designated as a research and development item if the design is to be based on the B&W heat transfer data. On the basis of the preliminary research results submitted it appears that B&W will be able to justify the chosen physical parameters and design limits on the basis of its program of rod bundle burnout tests. . . .

"Since the B&W design has four inlet loops and only two outlet pipes, the coolant distribution within the reactor vessel must therefore be investigated and the associated pressure drops established. The applicant has stated that a research and development program is underway to measure flow distribution in the core, fluid mixing in the vessel and core, and the distribution of pressure drop within the vessel. These tests will be conducted on a 1/6 scale model of the vessel and internals. In addition, flow distribution, pressure drop, and mixing data will be obtained with a full scale fuel bundle test assembly and on various models of reactor flow cells.

"We have reviewed the development program as described above and believe that there is reasonable assurance that the scale-model testing and the full-scale fuel bundle testing will provide the information necessary for approval of the design at the operating license review stage."

A more detailed documentation of data supporting the correctness of the Board's characterization of the core thermal and hydraulic design as research and development may be found in Applicant's PSAR, Section 3.2.3 - Thermal and Hydraulic Design and Evaluation - Pages 3-32 to 3-68,

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H. C. Dance  
CO:III

In accordance with our discussion of the status of the Zion decision, and the apparent similarities to the Crystal River hearing, copies of the exceptions filed by the staff, the applicant, and the intervenors to the initial decision for Crystal River are enclosed.

Enclosures:

As stated

Original signed by  
H. R. Denton

bcc: H. D. Thornburg, CO:III w/o encl

H. R. Denton  
CO:HQ

10/23/68

OFFICE ►	CO:TSB						
SURNAME ►	HRDenton:gk						
DATE ►	10/23/68						