

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Appeal Board

In the Matter of :
OFFSHORE POWER SYSTEMS : Docket No. STN 50-437
(Manufacturing License for :
Floating Nuclear Power Plants) :



NATURAL RESOURCES DEFENSE COUNCIL REQUEST
FOR DIRECTED CERTIFICATION

As the Appeal Board is aware, this proceeding is essentially suspended pending resolution by the Commission of the issues raised in ALAB-489 and ALAB-500. During this suspension period, NRDC seeks to resolve the legality of the ASLB decision rejecting as a challenge to the NRC regulations the following contention:

The Staff has failed to find any even potentially acceptable estuarine or riverine site for an FNP, has identified serious real problems with such sites, has been advised by EPA that no estuarine, riverine or barrier island sites would be acceptable for an FNP and has therefore insufficient basis for concluding that the FNPs can with reasonable assurance be sited at shoreline sites. In effect, the Staff has attempted to justify a programmatic and generic finding of acceptability without having sufficient evidence upon which to base that finding -- a programmatic conclusion without programmatic findings. The following provide the bases for this and in all but one instance contain detailed reference to defects in the draft FES Addendum II, which, regrettably, were not corrected or modified in any significant way in the final FES Addendum II:

1. NRDC Comments on Draft Addendum to FES Part II (4/27/78), including the June 9, 1978, letter to Mr. Knighton;

2. Letter to Knighton from EPA dated May 1, 1978, pp. 1-2;
3. Letter to Knighton from EPA dated May 8, 1978, and attachment thereto (pp. 1-2);
4. Letter to Knighton from EPA dated July 5, 1978, pp. 1-2;
5. State of New Jersey Coastal Management Program - Bay and Ocean Shore Segment (May 1978), Draft Environmental Impact Statement (United States Department of Commerce (NOAA - Office of Coastal Zone Management)) - Section 7.4 (Energy Use Policies), Subsection 7.4.13, pp. 145-46.

If a license is issued and this contention is eventually determined to be admissible, it will necessitate a re-opened hearing and either a stay of the manufacturing license (an allegedly substantial detriment to Applicant) or the license will continue thus increasing sunk costs and making a final cost/benefit balance less likely to result in denial of the license.

NRDC sought from the licensing board a request for reconsideration or alternatively an order of certification with respect to its denial of the NRDC contention. That request was denied by order of the licensing board filed November 13, 1978. The questions to be certified, which are intended to raise the validity of the denial of the contention, are set forth on p. 5 of our September 15, 1978, Request for Reconsideration Or In The Alternative For Certification. A copy of those questions is Attachment A to this brief.

I. The NRDC Contention Should Be Admitted

The NRDC contention has its origin in the fact that OPS has sought permission to manufacture floating nuclear plants (FNPs) for siting either offshore or inshore at estuarine, riverine and barrier island sites. The Staff in FES II has concluded that (Final Addendum to Final Environmental Statement, Part II, NUREG-0056, p. viii):

the eight floating nuclear power plants proposed for manufacture can, with a reasonable degree of assurance, be sited and operated as electric generating stations at offshore or shoreline sites.

The Environmental Protection Agency has advised the NRC that (letter of May 8, 1978, to George W. Knighton, NRC, from Joseph M. McCabe, EPA, p. 2 of enclosed comments):¹

The five EPA Regional Offices having jurisdiction for the entire Atlantic and Gulf Coast areas have stated that the potential estuarine and barrier island sites located in their regions would not be environmentally acceptable sites. Our regional offices have indicated that future EIS's prepared for specific FNP sites in their appropriate regions will be determined unsatisfactory from the standpoint of environmental quality should estuarine or barrier island locations be proposed. In conclusion, and in view of EPA's Section 404(b) and Section 316(a) and (b) criteria under the Clean Water Act, we believe the fundamental technical and procedural problems associated with siting FNP's in estuaries are too difficult to overcome.

^{1/} The document quoted above and three other EPA letters addressing in part the same subject are Attachment B to this request. The August 11, 1978, letter (p. 2) extends EPA opposition to inshore siting to include riverine sites.

Thus the issue presented is whether it is permissible for the NRC to make a finding at this time approving the hypothetical siting of FNPs at some inshore site and use the alleged benefits of such siting to justify approval of the manufacturing license. An option not pursued by the NRC but one which we urge is that approval for the manufacture of FNPs for certain classes of sites should be limited to the number of FNPs which it can now be reasonably assured will be able to be acceptably sited at such sites. Without such a limitation and as a result of the sunk cost rule, the manufactured FNPs could be approved for siting where the environmental disadvantages would be outweighed only by the presence of the sunk costs.²

--- In this case the EPA judgment regarding the unacceptability of all estuarine, riverine or barrier island sites is a crucial determination. The EPA judgments in areas of their expertise are accorded special and binding effect by the NRC. Section 511(c)(2) of the Federal Water Pollution Control Act; New England Coalition on Nuclear Power v. Nuclear Regulatory Commission, ___ F.2d ___

2/ In its November 13 Order, fn. 1, the ASLB missed the point of our argument. The existence of an already built FNP will be used by the NRC in the cost/benefit analysis for the proposed siting of the FNP as a benefit which outweighs environmental disadvantages of the site. It will bias alternative site reviews also if the preferable alternate site is one at which a floating nuclear facility could not be sited but some other nuclear or central generating facility could be sited. If the hypothetical site concept, when coupled with the sunk cost doctrine, results in such early irretrievable commitment of resources, then the scheme of Appendix M to separate site review from manufacturing approval would fail because it would violate the NEPA mandate that a major irretrievable commitment of resources be preceded by a complete environmental analysis of the action being taken. Thus to save the Appendix M scheme, it is necessary to read the term "hypothetical" to require that there be evidence that at least as many hypothetical sites as FNPs are reasonably expected to exist.

(1st Cir. 1978). Although the EPA judgment is admittedly a generic one and made in the context of a policy statement by EPA, it is nonetheless required to be treated as hard evidence by the NRC. Northern States Power Co. et al., ALAB-455, 7 NRC 41, appeal pending in the U.S. Court of Appeals for the District of Columbia Circuit sub nom. State of Minnesota, By the Minn. Pollution Control Agency, et al. v. NRC, et al. (Nos. 78-1269 and 78-2032).

Of course, for purposes of the admission of the NRDC contention, it is not necessary to prove that the contention will ultimately prevail. It is sufficient for the Board to find that the contention has been clearly articulated and has an articulated and rational basis. Mississippi Power and Light (Grand Gulf), ALAB-130, 6 AEC 423, 426; Northern States Power Co. (Prairie Island), CLI-73-12, 6 AEC 241, 242. Nonetheless the licensing board rejected the NRDC contention on the merits without providing adequate opportunity for NRDC to brief the merits. See NRDC Motion For Leave To File A Response And For Extension Of Time (September 8, 1978), denied as moot October 6, 1978.

The Licensing Board rejection of the contention is based upon the conclusion that it violates § 2.758 because Paragraph 3 of Appendix M to Part 50 contemplates an analysis of construction and operation of the FNP only at "hypothetical site or sites having characteristics that fall within the postulated site parameters." To conclude, as the ASLB, that this language allows manufacturing reactors to be sited at hypothetical sites which do not exist is a gross distortion of logic and the regulation. In promulgating

Appendix M. the Commission had in mind only ocean sites and not estuarine, riverine or barrier island sites (38 Fed. Reg. 30251, November 2, 1973):

The amendments which follow contemplate the manufacture of several nuclear power reactors of standard design at an industrial location. The reactors thus manufactured will eventually be located and operated at utility sites. Some of these sites may be ocean sites, created by the construction of breakwaters, at which previously manufactured barge-mounted reactors could be installed and operated.

Because of the size of the ocean, the Commission may have assumed that finding hypothetical sites which met postulated site parameters would not be a problem. The inshore siting proposed by OPS and the Staff is far different. First, although not included by the Staff, at least one postulated site parameter should be tentative EPA approval of the kind of site. Appendix M does not limit the postulated site parameters and the details of such parameters is certainly an issue open to litigation in the proceeding. Second, hypothetical is not the equivalent of fanciful. A hypothetical question in cross-examination must have some foundation in facts in the record. Similarly the hypothetical FNP site must have some factual basis in the record. To date, all we have is an unchallenged statement by EPA that no inshore sites will be acceptable. Third, the Staff in FES II does not merely analyze the hypothetical inshore site but gives conditional approval to it. What is occurring is the bootstrapping of a proposal to site FNPs at hypothetical sites into a Staff approval

of such hypothetical sites based on the Staff ignoring the real world unacceptability of the site because the siting is only hypothetical. Viewed from the perspective of Kleppe v. Sierra Club, 427 U.S. 390 (1976), the Staff is not able to speak to inshore siting because it is not a concrete proposal for action -- EPA's rejection of such siting negates the proposed action. Finally, at least implicit in the concept of hypothetical is that it could be real. The EPA position makes all inshore siting impossible and destroys the hypothetical. If the potential that the hypothetical site be a real site is not present, the Appendix M license would be used to authorize building nuclear plants to be hypothetically sited in National Parks, on Wild and Scenic Rivers, in the homes of endangered species or in any other environmentally unavailable site. The Staff is abusing the hypothetical concept in Appendix M to substitute its judgment that inshore siting for FNPs is acceptable for the EPA judgment that it is not. The Staff, having successfully argued that it must defer to EPA on water matters (New England Coalition on Nuclear Power v. Nuclear Regulatory Commission, supra), must now accept both edges of that sword.

II. The Board Should Direct Certification

The fact that a contention has been wrongly rejected has not been a sufficient basis for granting certification. The standard, as articulated in this case (Appeal Board Order, April 19, 1978, p. 2), is that there be:

an important legal question, not previously decided by this Board or the Commission, which if not promptly resolved may result in unusual delay and injury to the public interest.

The requested certification in this case relates to the denial of the admission of a contention based upon a first impression interpretation of the meaning of Paragraph 3 of Appendix M. The possible increase in requests for manufacturing approvals for FNPs or other standardized plants makes it important to clarify this legal issue at an early date. In addition, for this case it is extremely relevant to know whether FNPs may be built to be sited at inshore sites. Without the availability of inshore siting, the number of plants proposed to be built may be drastically reduced -- or even eliminated.

In a broader context, this case represents an important application of the doctrine articulated in both the St. Lucie and Pilgrim proceedings regarding the duty of the Staff to evaluate real and not fanciful sites in its NEPA review. In Florida Power and Light (St. Lucie No. 2), LBP-77-27, 5 NRC 1038, 1044 (1976), affirmed ALAB-435, 6 NRC 541, 543-44, the Staff alternate site analysis focused on a hypothetical rather than a real alternative site, and the licensing board held:

We have no doubt, however, that NEPA's "rule of reason" contemplates the taking of such minimal steps as may be necessary to assure a real and practical factual knowledge of the matters to be evaluated. And these "minimal steps" consist of the evaluators doing all of that directed to those ends which, at least, can readily and easily be accomplished in the circumstances in which they work. We are not able to conclude that the elaborately constructed alternate sites evaluation "methodology" employed by the Staff met that standard. Actual inspection of particular alternate sites could readily and easily have been performed by the Staff and was called for in the circumstance of this case. (Emphasis added.)

In Boston Edison Co. (Pilgrim No. 2), ALAB-479, 7 NRC 774, the Appeal Board rejected the Staff analysis of alternate sites because it was overly generalized. In the instant case NRDC raises the issue of whether the analysis of the proposed action itself may be based upon even less concrete facts than the analysis of alternatives. If not, then the FNP proposed inshore siting must be based upon substantial evidence that inshore siting is reasonably available. If reasonable availability is a standard by which alternatives are tested, surely it is a standard by which the proposed action must be tested.

The question of "unusual delay and injury to the public interest" is a less precise standard. Frequent denials of requested certification by intervenors with respect to rejected contentions suggest that the kind of showing required may be inappropriate for an intervenor. The intervenor seeks to add a contention which if accepted will usually delay the hearing, although the purpose of the contention is not delay but resolution of an important issue resulting in denial or modification

of the license requested. The denial of the contention harms the intervenor and the public primarily to the extent the contention is valid. When an applicant appeals admission of a contention or challenges any decision to explore an issue, it claims that the exploration of the issue will delay the hearings and cost a lot of money. That allegation frequently carries the day if the "important legal question" test is met.

Intervenors must usually rely upon the harm which will ensue if they are vindicated after the hearing is completed. Prior to the sunk cost doctrine, an intervenor had little to rely upon except delay to the applicant if the hearing were reopened and the license suspended. Now, we believe the application of the sunk cost doctrine, the immediate effectiveness rule, and the difficulty of obtaining a stay make the injury to an intervenor of having a basic contention rejected far clearer. We are not aware of any case where the Appeal Board has essentially accorded this combination of circumstances the status of irreparable injury which it accords the applicant's allegation of the cost of delay, but surely the time has come for such recognition. To illustrate the concept of sunk costs graphically, Attachment C is a copy of the OPS Newsletter for May/June 1974 detailing how costs are sunk prior to NRC approval. Of course in the ensuing years much more has been spent and will be spent in the future.

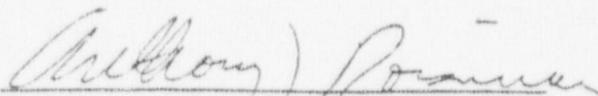
Finally, as we noted at the outset, this case is now in a period of suspension and will remain in this period for an indefinite time. Applicant has announced that it will not only pursue

the Class 9 accident on the present legal challenge but will also seek to challenge on the merits the Staff imposition of Class 9 accident mitigation measures. See Motion to Plead a Matter in Controversy and Establish a Discovery and Hearing Schedule for Such Matter (September 5, 1978). At the July 27, 1978, Conference, Applicant advised that it would not provide certain data requested by the Staff on the Class 9 mitigation mechanisms until it was established both legally and substantively that such mitigation was required in this case. At the same Conference, the Staff advised that it would not complete the FES Addendum III until it had the data. By Order dated August 2, 1978, the licensing board established the date for briefing NRDC's one admitted legal contention on the adequacy of the NEPA review 30 days after publication of the FES III. In short, this hearing will not be concluded for a long time. No party will be disadvantaged if the validity of the rejection of the NRDC contention is litigated while we wait.

Conclusion

For the reasons stated, we believe there is reason to believe the licensing board erred in rejecting the NRDC contention and that unless directed certification is granted NRDC will be severely prejudiced and no other party will be prejudiced.

Respectfully submitted,



Anthony Z. Roisman
Natural Resources Defense Council
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(202) 737-5000

Dated: November 30, 1978

QUESTIONS FOR WHICH CERTIFICATION IS REQUESTED

1. May a party contend in an Appendix M proceeding that approval of a manufacturing license and a finding that there is reasonable assurance that FNPs can be sited in a certain category of sites are not permissible where there are no possible sites within the identified category?

2. In promulgating Paragraph 3 of 10 C.F.R. Part 50, Appendix M, did the Commission consider whether "hypothetical site or sites having characteristics that fall within the postulated site parameters" could include non-existent sites and, if not, does the non-existence of such sites constitute "special circumstances" within the meaning of 10 C.F.R. § 2.758?

3. Where the opposition to a contention is based upon its legal invalidity, as opposed to its procedural deficiency, should the contending party at least be provided with a reasonable opportunity to reply to the answer?

4. Prior to rejecting a contention as a challenge to a Commission regulation, should the contending party be provided an opportunity to demonstrate that "special circumstances" exist warranting application of the provisions of 10 C.F.R. § 2.758?



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

8 MAY 1978

OFFICE OF THE
ADMINISTRATOR

Mr. George W. Knighton
Chief, Environmental Projects Branch
Division of Site Safety & Environmental
Analysis
Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Knighton:

With this letter we are transmitting our detailed comments on the Draft Addendum to the FES on Floating Nuclear Power Plants -- Part II as mentioned in our letter to you of May 1, 1978 (see attached).

As was discussed in that letter, we find the siting of FNP's in estuarine areas as well as on nearshore barrier islands to be unacceptable alternatives to offshore siting.

This letter concludes EPA's review on this draft addendum. We appreciate the opportunity to comment and are willing to discuss any of these comments at your convenience. Please contact Florence Munter of my staff if you have any questions.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Joe M. McCabe".

Joseph M. McCabe
Acting Director
Office of Federal Activities (A-104)

Enclosure

ATTACHMENT B

Detailed Comments on the Draft
Addendum to the FES on Floating Nuclear
Power Plants -- Part II

Dredging and Placement of FNPS

The environmental impacts which would ensue from dredging large areas (possibly over 7,000,000 cubic feet of dredged material) for the access channel and placement of an FNP would be considerable. These environmental impacts include degradation of water quality as well as changing the physical features of an ecosystem. Specifically, the impacts include:

- the effects of resuspension of sediment particles, possibly some laden with toxic metals, pesticides, and organohalogens;
- ° interruption of littoral currents;
- ° artificial sedimentation of areas subject to current changes;
- ° erosion and deposition changes on nearby beaches;
- ° loss of productivity in estuarine and wetland areas;
- ° destruction of barrier islands;
- ° destruction of shoal areas, mangrove swamps, and wetlands.

These impacts threaten long term and potentially irretrievable degradation of some of our most productive natural resources.

Although extraordinary mitigative measures are suggested to safeguard these valuable resource areas, we believe estuarine and barrier island ecosystems are so susceptible to the physical stresses accompanying FNP construction and operation, that they should be withdrawn from consideration by NRC as FNP siting alternatives.

Conclusion

The five EPA Regional Offices having jurisdiction for the entire Atlantic and Gulf Coast areas have stated that the potential estuarine and barrier island sites located in their regions would not be environmentally acceptable sites. Our regional offices have indicated that future EIS's prepared for specific FNP sites in their appropriate regions will be determined unsatisfactory from the standpoint of environmental quality should estuarine or barrier island locations be proposed. In conclusion, and in view of EPA's Section 404(b) and Section 316(a) and (b) criteria under the Clean Water Act, we believe the fundamental technical and procedural problems associated with siting FNP's in estuaries are too difficult to overcome.

We would also like to have the following radiological comments considered in the final updating of the addendum.

Radiological Impact

The draft addendum states that the radiological impact of a nuclear power plant at a given site is dependent only on the source terms and dispersion after release; hence, the radiological impacts of a LBP and FNP are similar. It should be noted that radiological impact also depends on the recipients of the radiation, population distribution, ecological make-up and land use of the area. These factors are necessary for an adequate assessment of radiological impact.

The dose estimates in section 2.5.5.1, do not indicate where to find the parameters used in calculating these doses. A reference, or brief discussion of these parameters, would support the population doses stated in this section; also, the most critical pathways for the estuarine-sited FNP. Some necessary parameters are: distance from the plant to a population area, population distribution, dispersion model used as well as water and land use models.

In comparing the dose commitments to maximally exposed individuals from liquid effluents for once-through cooling and closed-cycle cooling systems, the addendum states that although the initial radionuclide concentration from cooling tower blowdown is higher, good mixing in an estuary

will result in the same population dose commitment. EPA believes that such a dependence on estuary dilution should be considered very carefully because sediment uptake and dilution patterns would change once access canals, and finally, discharge structures are constructed in an estuary.

No quantitative population dose commitments are given for liquid effluents. A statement is made that the dose commitments might be two orders of magnitude different, depending upon the cooling system, but no estimates are given to apply the range of the two orders of magnitude. The final addendum should discuss all of these points and present complete dose and dose commitment estimates, along with ranges of estimates for various assumptions.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

26 JUN 1978

OFFICE OF THE
ADMINISTRATOR

Mr. A.P. Zechella, President
Offshore Power Systems
3000 Arlington Expressway
Box 8000
Jacksonville, Florida 32211

Dear Mr. Zechella:

I have been asked to respond to your letter of June 9, 1978 to Administrator Costle concerning EPA's recent comments on the Nuclear Regulatory Commission's draft addendum to the final EIS on Floating Nuclear Power Plants (Part II).

As you have noted in your letter, EPA has recommended to the Nuclear Regulatory Commission (NRC) that any floating nuclear power plant (FNP) siting in estuarine areas as well as on or near barrier islands be eliminated as an option prior to the granting of a license to manufacture eight FNP's. EPA believes estuaries and barrier islands, specifically wetland areas, are very productive ecosystems which are highly sensitive to physical changes.

EPA has reviewed and commented on the NRC's environmental impact statement in accordance with our responsibilities under Section 307 of the Clean Air Act. This Act requires the Administrator of EPA to review and comment on any major Federal action. In addition, Section 102 of the National Environmental Policy Act (NEPA) states that "Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved."

As you may be aware, EPA, along with the U.S. Army Corps of Engineers, has an active role in the issuance of dredge and fill permits (Section 404 of the Clean Water Act, formally the FWPCA), and we have an advisory role in the Corps' issuance of a permit to alter or obstruct any navigable water of the U.S. (Section 10 of the River and Harbor Act of 1899). Both of these permit processes provide that particular consideration be given to wetlands and water quality.

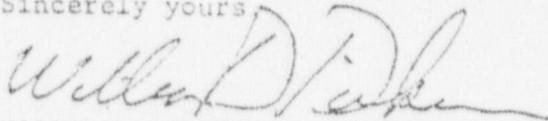
EPA has further responsibilities in accordance with Section 316(a) and (b) of the Clean Water Act regarding criteria to be applied in the issuance of a permit under the National Pollutant Discharge Elimination System (NPDES).

In view of our regulatory responsibilities, EPA's comments on NRC's draft addendum, specific to the siting of FNP's, were to alert the NRC that sites other than estuaries and barrier islands should be considered for the placement of FNP's. From the evidence available, EPA believes that the environmental impacts of locating an FNP in an estuary or near a barrier island cannot be effectively mitigated. Other alternative sites (alongshore, inshore, and nearshore) should be investigated as these sites may possibly suffer less environmental damage. Furthermore, EPA has a wetlands policy which states our Agency's intent to preserve and protect wetland resources from potential irreversible damage. Specifically, this policy guides EPA in protecting wetlands from adverse effects from dredging or filling practices, siltation, and the discharge of toxic materials ensuing from construction activities; and to "prevent violation of applicable water quality standards" from these activities. In carrying out this policy, EPA has a responsibility to advise applicants for water quality permits, or in this case the NRC, that the most environmentally acceptable alternative to siting FNP's in estuaries and near barrier islands should be selected in an effort to minimize destruction of some of our most valuable resources.

We believe EPA has not violated NEPA, nor its statutory authority; to the contrary, the Agency has carried out its statutory responsibilities by commenting on the NRC EIS within our areas of jurisdiction and expertise.

If you have any questions or would like to discuss this matter further, please let us know.

Sincerely yours,



William D. Dickerson
Acting Director
Office of Federal Activities (A-104)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

11 AUG 1978

OFFICE OF THE
ADMINISTRATOR

Mr. Daniel R. Muller
Acting Director, Site Safety &
Environmental Analysis Division
Office of Nuclear Regulatory Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Muller:

Enclosed are the Environmental Protection Agency's detailed comments on the Nuclear Regulatory Commission's revised draft environmental impact statement related to the Manufacture of Floating Nuclear Power Plants -- Part III. These comments expand upon and supplement our letter of July 5, 1978, which discussed our major concerns and conclusions.

If you or your staff have any questions concerning our comments, please contact Florence Munter (755-0770) of my staff.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "William D. Dickerson".

William D. Dickerson
Acting Director
Office of Federal Activities (A-104)

Enclosure

EPA's comments on the Revised Draft Environmental Impact Statement related to the manufacture of Floating Nuclear Power Plants (FNP's) -- Part III (NUREG-0127) May 1978

Our review of NUREG-0127 resulted in the following major conclusions:

1. The NRC staff has not provided an analysis of the effectiveness of the source interdictive measures that are proposed to be included as conditions of the license to manufacture. The effectiveness of these measures should be evaluated in the final EIS.

2. The comparison of the airborne source terms for ice condenser and non-ice condenser containments is based on unreferenced studies. Documentation should be made available to support the NRC staff's findings.

3. The riverine siting option, which we understood to have been eliminated from consideration in the addendum to Part II of the EIS, is discussed as a viable option in Part III. If riverine siting is an option the applicant intends to pursue, then NRC should include an analysis of this option in Part II which discusses siting impacts and considerations. As stated previously, we believe that riverine and estuarine areas (as well as barrier islands) are environmentally unsatisfactory siting alternatives.

General Comments

Source Interdiction

The NRC staff has proposed two conditions for issuance of a license to manufacture which would increase the potential to interdict the liquid pathway at the source in the event of a core-melt accident. These are: a) the replacement of the concrete pad under the reactor vessel with a material that will delay a melt-through, and b) modification of estuarine and riverine sites to contain any radioactive material that could be released from a core-melt accident. The NRC staff has not noted the available assessments which would indicate how these conditions may be met or, more importantly, how effective any interdictive material may be in reducing the liquid pathway and in protecting the environment. We recommend that the NRC staff provide an analysis in the final environmental impact statement indicating the state-of-the-art and the effectiveness of the proposals.

Documentation of Accident Analysis

The EIS refers to ongoing research (pages 2-4 and 3-45) that has contributed to the accident analysis in the EIS. Preliminary results are given, but no documents or references are provided. The EIS should describe the ongoing research, identify the results to date, and give current references and the schedule for documenting any findings. Any conclusions formed in this EIS should be contingent upon the possible outcome of such research.

River Sites

In Part II (Addendum to the EIS), the NRC staff stated that riverine siting had been excluded by the applicant and that therefore, the EIS had focused on open ocean and estuarine shore siting options as well as offshore estuarine areas. However, in Part III, it appears that riverine sites are still being considered with the possibility that these sites might be utilized if the potential consequences of a core-melt accident could be reduced. Independent of the safety related issues, EPA believes the environmental impacts from normal construction and operation of FNP's in rivers contribute to the undesirability of using river sites.

Specific Comments

Page 3-13 - The statement indicates that the distance of a floating plant from the shore by two or three miles does not markedly affect the health related impacts from the air pathway due to a core-melt accident. We agree that this may be true for long term health effects but we believe that the severity of immediate impacts from an accident would be less at a site farther offshore because of the greater plant distance from a population center.

Page 3-13 - Table 3-1 and Table 3.4-4 are inconsistent with regard to atmospheric releases for the "expected" accident scenarios.

Page 3-29 - For the source interdiction measures, the staff stated that the direct costs of interdiction for near shore siting would be identical to those for open ocean siting. If the condition of the license (as is suggested in this

draft EIS) is to modify the shore zone to insure timely source interdiction, how will the implementation of this condition compare to the cost of open ocean source interdiction? The analysis presented in the final EIS should clarify this issue.

Page 3-31 - NRC has noted in the EIS that there may be sites for LBP's (land based plants) that are susceptible to severe liquid pathway contamination in the event of a core-melt accident. We recommend that further discussion be provided in the final EIS to indicate the range of potential consequences of LBP's located very close to water bodies and that the discussion include a comparison with potential FNP accidents.

Page 3-31 - The use of "expected" consequences on page 3-31 and other places in the statement should be carefully explained to avoid misleading the reader. We suggest that the terms used to describe a particular kind of accident be defined and that a footnote be added explaining that "expected" or "most probable accident" consequences do not necessarily indicate the full range of potential consequences that exist.

Page 3-46 - The assessments of source interdiction measures at FNPs should be referenced to indicate the engineering feasibility of delaying a core-melt-through for one week at a moderate cost of "less than one million dollars." Any developmental and/or testing costs should also be noted and included in the cost estimates.

Page 4-3 - The first paragraph presents the impacts associated with the siting and operation of FNPs. The third paragraph indicates that these impacts are "relatively mild" and that these impacts would occur in relatively small areas compared to the general area affected. Such a conclusion is inconsistent with the NRC finding (in Part II and in the summary of Part III) that "dredging and disposal of dredged material related to the construction of access channels and the protective basin or lagoon for a FNP, and the maintenance of those areas, can have significant potential for adverse environmental impact" (page xiii, Part III.).

Page 4-3 - The last sentence states that loss of life by acute fatalities is not predicted for the liquid pathway from a core-melt accident but that there could be substantial environmental contamination. However, we note that environmental contamination could lead to chronic exposure, resulting in adverse health impacts, including an early death for some individuals.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

28 AUG 1978

OFFICE OF THE
ADMINISTRATOR

Mr. Harold R. Denton
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Denton:

The Environmental Protection Agency has reviewed the final addendum to the environmental impact statement (EIS) related to the manufacture of Floating Nuclear Power Plants -- Part II.

In general, we believe that the analysis of site impacts is adequate but does not support the conclusions presented. The summary and conclusions presented by the staff in the addendum to Part II are the same as those presented in the final EIS to Part II; namely that from the staff's analysis of the proposed action "the eight floating nuclear power plants proposed for manufacture can, with a reasonable degree of assurance, be sited and operated as electric generating stations either at offshore or shoreline sites." The staff has designated shoreline sites to include estuaries and barrier islands. EPA does not believe that estuarine and barrier island sites can be reasonably assured. On the contrary, we believe that the analysis provided in the addendum supports our conclusion that the fundamental technical problems associated with siting floating nuclear power plants (FNP's) in estuaries and near barrier islands would be too difficult to overcome.

Furthermore, these siting alternatives appear to fail EPA's and the Corps of Engineers 404(b) criteria which provide guidance for evaluating proposed discharges of dredged and/or fill material. Specifically, one of the criteria for permitting discharges in wetlands states:

the activity associated with the fill must have direct access or proximity to, or be located in, the water resources in order to fulfill its basic purpose, or that other site

or construction alternatives are not practicable;*

Since 404 permits are necessary, this in itself indicates a very low probability of locating in these areas. There are also water quality criteria that must be satisfied before an NPDES permit can be issued by our Agency (Section 316(a) & (b) of the Clean Water Act).

The EIS analysis shows that environmental impacts from estuarine and barrier island siting could cause extensive, and long term damage to and loss of some of the nation's most productive natural resources. Although the analysis suggests that viable mitigative techniques are available, these have not been discussed in any detail nor, in our opinion, have they been demonstrated as being effective. Specifically, the analysis has not shown that there are:

1. demonstrated techniques for restoring the bathymetric characteristics of the dredged areas;
2. demonstrated techniques for restoring hydrological characteristics of the estuary and barrier island ecosystem, including such factors as the circulation patterns, salinity gradients, and the transport and deposition of sediment (without the continual need for maintenance dredging);
3. demonstrated techniques for re-establishing original plant communities and wildlife habitat to self-sufficiency (without the added problems associated with the continual need of fertilization or repeated planting) in areas where wetlands have been disturbed or destroyed;
4. demonstrated techniques for re-populating and establishing brackish/marine water areas with original marine species, including diadromous species;
5. demonstrated techniques for re-establishing barrier island natural processes such as "dune building," beach "retreating," and overwash and inlet development.

Our concern for the applicant's ability to successfully mitigate such impacts is based on past experience with mitigation attempts. For example, construction activities

*Section 404(b) of the Clean Water Act, Part 230.5(b)8ii(a).

(such as erecting breakwaters) seldom act in concert with beach dynamics. Rather, such activities generally require further construction and continual maintenance, resulting in repeated habitat destruction and reductions in the diversity of coastal species. In particular, we note that recent studies have shown past efforts to stabilize retreating shorelines and prevent beach erosion, as well as dune migration, have caused more problems than these efforts have solved.* Further, it is well documented that a particular loss of wetlands (from construction activities) in one ecosystem can have further detrimental effects on water quality on the nearby downstream coastline.

In our discussion with you on August 8, 1978, you indicated that the staff's final conclusions and summary of the proposed action, including siting considerations, will be presented in the final EIS on Part III and that the staff is in the process of preparing recommended conditions of the manufacturing license which will also be included in Part III. Since the NRC's final conclusions concerning siting of FNP's are unknown at this time, EPA is reserving final judgement on this action until Part III is reviewed.

In preparing the recommendations for inclusion in Part III, we strongly urge NRC to re-evaluate the conclusions concerning estuarine and barrier island siting. Because the EIS analysis shows that estuarine and barrier island siting will be very difficult, if possible at all, we believe that the decision to license should be based on the availability of sites in areas other than estuaries and barrier islands. As a consequence of this, we do not believe these siting options should be included in the cost/benefit analysis (Part III). The cost/benefit analysis should consider only the most probable siting alternatives.

As was discussed in our letter of January 26, 1977, which commented on the final EIS related to FNP's -- Part II (copy enclosed), one of EPA's primary concerns with Part II was that an adequate generic environmental assessment had not been provided for the placement of floating nuclear power plants. Since Part III will encompass the sum of the conclusions from Part II and III, we believe NRC should indicate the status of their effort to collect environmental impact information on the overall use of the FNP technology.

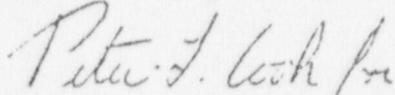
*Paul J. Godfrey, "Barrier Beaches of the East Coast," Oceanus 19(5), 1976.

If some of this general assessment information is available, it should be included in Part III. We believe that this information is necessary in order to fully assess both the long term and cumulative effects of the proposed action as well as any future applications to manufacture FNP's.

Finally, as a point of information, we do not believe the NRC staff has correctly represented EPA's position with the reference to presently coastal-sited land plants (p. 6-16 of the addendum). As stated previously, there are a number of coastal plants where larval entrainment mortality is a problem. EPA remains concerned about this as well as other water quality impacts associated with coastal plants sited near estuaries.

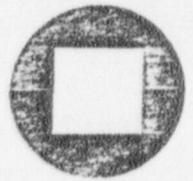
We appreciated the opportunity to discuss these issues with you at an early time in the decision-making process. If you or your staff would like to discuss these comments further, please contact Florence Munter of my staff (755-0770).

Sincerely yours,



William D. Dickerson
Acting Director
Office of Federal Activities (A-104)

Enclosure



ATTACHMENT C

Newsletter

MARKETING DEPARTMENT

JACKSONVILLE, FLORIDA

MAY/JUNE, 1974 • NO. 15

MARKETING NOTES

By Joe Stadelman



The Jacksonville Electric Authority's Letter of Intent for two floating nuclear plants has been extended to July 2 in order to permit continuation of contract negotiations. In early June, the JEA approved a resolution to contract with the Atomic Energy Commission for delivery of nuclear fuel enriching services between July 1, 1980 and June 30, 1981. Also approved was a resolution to contract with Westinghouse Electric Corporation to fabricate the nuclear fuel assemblies. The execution of the fuel contract at this time will save Jacksonville some million dollars in escalating costs.

Discussions with utility executives at the recent EEI Conference in New York City confirm many of the OPS contentions about the benefits of the standardized Floating Nuclear Plant manufactured in a facility remote from the ultimate site. Particularly significant were: (a) comparison of the escalating construction manhours per KW of a land-based plant which in at least one instance jumped from a range of 10-12 to a 16-18 estimate at present time, (b) the cost of land-based nuclear plants may well reach \$900 per KW by the mid-1980's, (c) the capital cost of a coal-fired plant with its inherent environmental problems, is now approaching that of a nuclear plant, and (d) the delivered cost of low sulfur coal on the east coast is fast reaching the cost of oil which in turn will most likely continue to rise.

The FNP model was exhibited at the June American Nuclear Society meeting in Philadelphia as part of their Technical Information Exchange (TIE) Program. A second TIE exhibit will be held in Washington D. C. in October and the model will also be on display at that session. The Washington Conference will be held concurrently with the 1974 Annual Conference of the Atomic Industrial Forum.

GRAVING DOCK CONTRACT AWARDED

Offshore Power Systems awarded a letter contract in June for the construction of the graving dock and slipway for its manufacturing facility on Blount Island. The award was made to Kiewit-Tidewater, a joint venture of Peter Kiewit (Nebraska) and the Tidewater Construction Company (Virginia).

Referred to as the heart of the 900 acre manufacturing site, the graving dock and slipway which measure 400 feet by approximately 1200 feet, represent a capital expenditure of over \$40 million, which will be the largest commitment by OPS on the island.

The award was one of several made by Offshore Power Systems during the past few weeks which included placements of contracts for five other buildings valued at over \$5 million. These encompassed the Quality Control Administration Building, the

Maintenance Facility, the Central Warehouse, the Quality Control Welding School and the Steel Fabrication Shop

STEEL PANELS FOR FNP'S ON ORDER

The first Floating Nuclear Plants moved closer to reality this month as Offshore Power Systems awarded a letter contract to American Bridge Division of U.S. Steel for the steel panels that will form the platforms for Atlantic 1 and 2. The Contract represents an order of \$37 million.

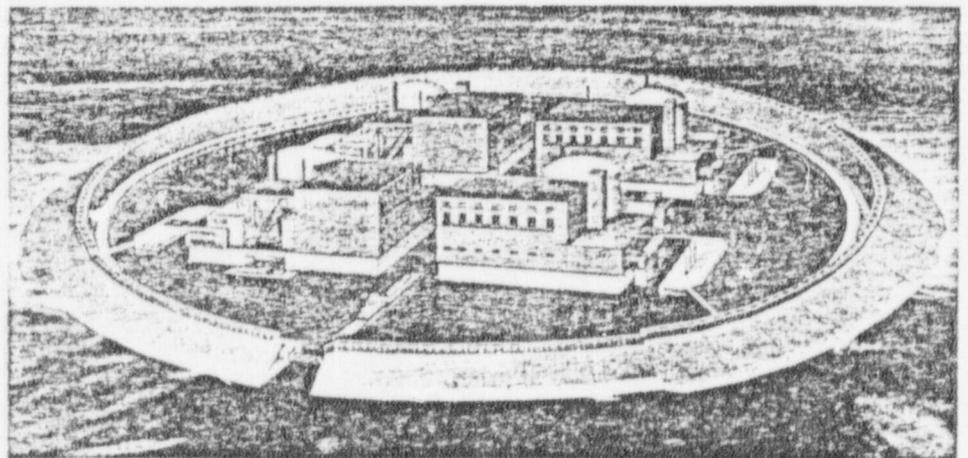
The initial shipment of the steel panels is scheduled for receipt in November of 1975. Atlantic 1 which will go on the assembly line at the manufacturing facility at the end of 1975, will be delivered to Public Service Electric and Gas Company in July of 1979. Atlantic 2 is scheduled for delivery the following year.

SITE WORK PROGRESSES

The pace of construction stepped up considerably in the May-June period on Blount Island, highlighted by the erection of structural steel for the first building - the 60 x 300 foot QC Welding Laboratory which will be completed this fall.

Excavation for the Quality Control Administration Building was accomplished and erection of steel was scheduled to begin in late June. Foundations for the Pipe Shop, Maintenance Facility and Warehouse are also scheduled for this month.

(Continued on Page 3)



Floating Nuclear Plant Energy Park . . . An artist's concept depicts four Floating Nuclear Plants, capable of generating a total of 4600 megawatts of power, within a single breakwater. The four-in-a-breakwater concept which would provide enough electrical energy for a city of well over 2 million people, represents a considerable savings in site development costs and time.

OFFSHORE POWER SYSTEMS—A HISTORY OF PROGRESS

1970

August - At the request of Public Service Electric and Gas Company (PSE&G) of New Jersey, Westinghouse Electric Corporation begins studies on the conceptual design and feasibility of the Floating Nuclear Plant (FNP).

December - Study team preliminary report presented to Westinghouse Management saying concept feasible.

1971

April 1 - Westinghouse forms the Special Project Division to develop the concept of the FNP. PSE&G and five other utilities form a joint study group to provide general guidance and consultation on design criteria.

June - Newport News assigns personnel to Pittsburgh team.

August (10) - Westinghouse and Tenneco, Inc., announce plans to jointly build FNP's for offshore installation.

September - The group of six utilities presents the overall concept of the FNP to some twenty federal agencies, thereby initiating government liaison efforts on the new project.

November - The Westinghouse Special Project Division begins discussions with Atomic Energy Commission (AEC) regulatory staffs regarding the licensing process for the FNP.

December - A preliminary proposal for FNP's is submitted by Westinghouse to Public Service Electric and Gas.

1972

February - PSE&G signs a letter of intent for two FNP's.

March (13) - The New Jersey Ocean Sanctuary Bill, providing for the protection of the State's coastal waterways within the three-mile limit, is introduced in the State Assembly.

April (20) - The boards of directors of Westinghouse and Tenneco authorize the formation of the joint venture, to be called Offshore Power Systems (OPS).

May (1) - A Preliminary Design Report on the FNP is submitted to the AEC.

May (25) - Jacksonville, Florida, is selected as the site for the OPS manufacturing facility and announced in Jacksonville.

August (1) - Official opening of new OPS headquarters. OPS personnel begin moving to their new six-story headquarters building at 8000 Arlington Expressway in Jacksonville.

September (18) - The first contract is signed with PSE&G for two FNP's (Atlantic 1 and 2) to be sited off the New Jersey coast, about 12 miles northeast of Atlantic City. The \$750 million contract is the largest single equipment order in the history of the electric utility industry.

November - OPS is advised by the ACRS that the FNP concept is feasible. The AEC Regulatory Staff and Coast Guard had also written favorable letters.

November (20) - The New Jersey Ocean Sanctuary Bill is passed by the State Assembly.

December - Surveying and soil investigations begin on Blount Island in the St. Johns River, the proposed site of the OPS manufacturing facility.

1973

January (23) - OPS files its application for a license to manufacture eight FNP's with the AEC. The application includes a comprehensive report on the environmental effects of the manufacturing facility.

April (25) - The AEC publishes regulations providing for the granting of a manufacturing license for multiple standardized nuclear plants and authorizes the licensed manufacture of a nuclear power reactor at a site different from that of its ultimate operation.

April (26) - The New Jersey Ocean Sanctuary Bill is defeated by the State Senate.

May - An agreement is approved and signed by the Jacksonville Port Authority by which OPS may purchase two tracts of land on Blount Island.

July (5) - The AEC docketed for comprehensive technical review OPS's application for a license to manufacture eight FNP's.

August (1) - PSE&G begins initial testing of breakwater and plant scale models of Atlantic 1 and 2 at the University of Florida's Gainesville campus. The wave action and ship collision tests will proceed for about 18 months.

September - An extensive educational and vocational training program begins in the high schools and junior colleges in the Jacksonville area in preparation for the more than 10,000 employees needed at full production at the OPS manufacturing facility.

September (4) - The Army Corps of Engineers issues a Dredge and Fill Permit to the Jacksonville Port Authority authorizing the start of construction on Blount Island. The Florida Audubon Society is granted a temporary restraining order that

suspends and conditionally revokes the COE Permit.

October (2) - The Jacksonville Electric Authority signs a letter of intent to purchase two FNP's for operation in 1982 and 1984 at a still-to-be determined site off the Northeast Florida coast.

October (15) - The Corps of Engineers holds a public hearing on its issuance of the Dredge and Fill Permit to the Jacksonville Port Authority.

November (8) - PSE&G exercises its option to purchase two additional FNP's for operation in 1985 and 1986.

November - An order for the world's largest crane is placed with Krupp Industries of West Germany for the OPS manufacturing facility.

December (19) - PSE&G files a Site Construction Permit Application with the AEC.

1974

January (10) - Site development work begins on Blount Island.

January (29) - The U.S. District Court Judge Charles R. Scott dismisses the Florida Audubon Society restraining order.

February - PSE&G's application to construct the first FNP site is docketed for detailed technical review by the AEC.

March (22) - The Florida Audubon Society withdraws its appeal of the U.S. District Court ruling of January 29 as well as its pending petition with the AEC opposing the granting of a license to manufacture FNP's.

June - OPS awards Letter Contract to Kiewit-Tidewater for construction of the Graving Dock and Slipway for its manufacturing facility on Blount Island.

EXPECTED DATES:

July 1975 - The AEC issues a license to OPS for the manufacture of eight FNP's.

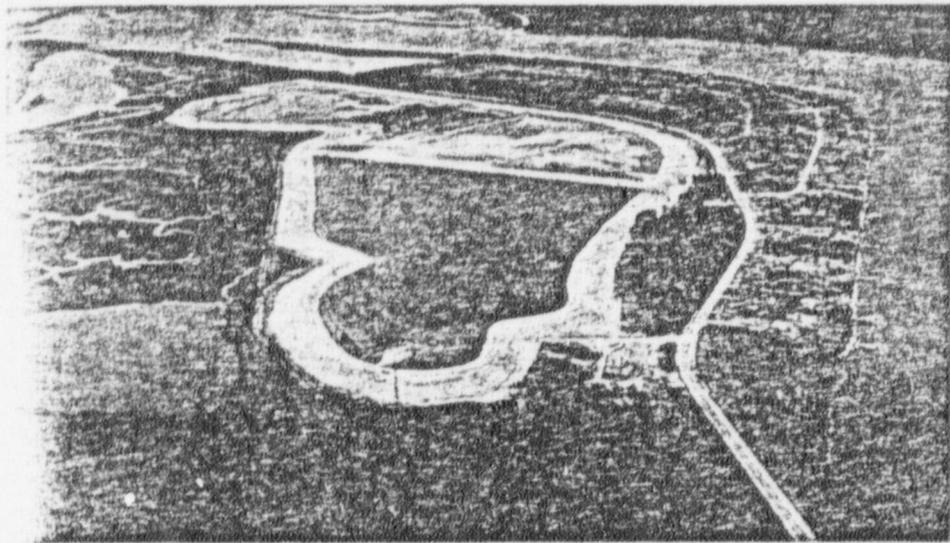
December 1975 - The AEC issues approval to PSE&G for the start of breakwater construction at the site of the first two FNP's off the New Jersey Coast.

November 1975 - Initial operations begin at the OPS manufacturing facility.

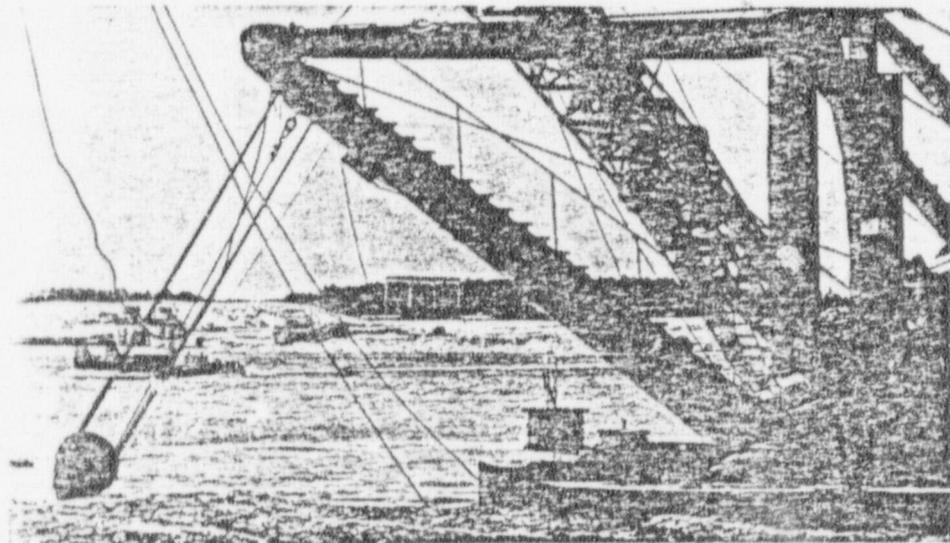
August 1976 - PSE&G begins construction of the breakwater for Atlantic 1 and 2.

July 1979 - The first FNP is ready for delivery to PSE&G.

1980 - the first FNP begins operation.



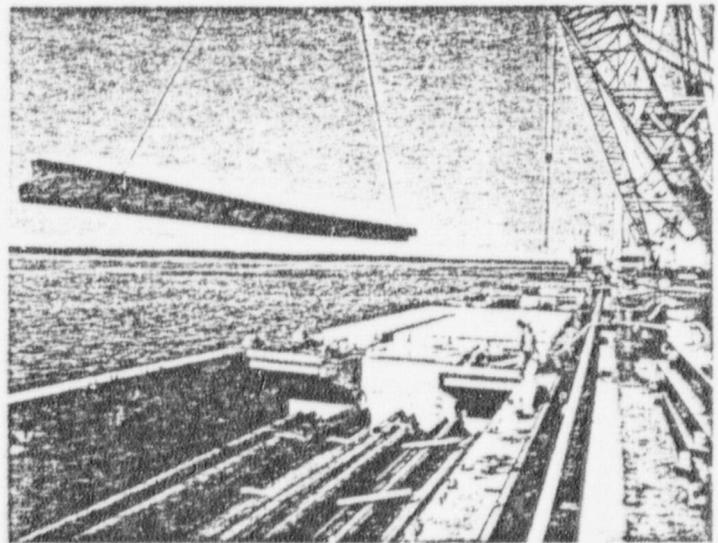
Aerial view of Dayson Spoil Area receiving muck from the large dredge BT-51.



Dredge at work in channel silhouettes the structural steel of Welding Laboratory.



Steel workers assemble the structure of the Welding Laboratory - the first building to be erected at the manufacturing site.



Sheet steel pilings for the permanent bulkhead in the construction slip are unloaded from barges.

SITE WORK PROGRESSES

(Continued from Page 1)

Earlier in June, some 1400 tons of sheet steel pilings were unloaded from barges at the Jacksonville Port Authority's wharf on Blount Island. The material will be used to form the permanent bulkhead in the construction slip within the manufacturing site. The steel, manufactured in Belgium, was initially unloaded in Savannah, Georgia in five LASH (lighter aboard ship barges) and brought by tug to Blount Island. The barges were shipped to this country already containing the steel on board ship.

BOTH DREDGES AT WORK

On May 1, the second dredge BT-51 arrived at the site, and at 9:00 A.M. on May 19 started demucking the channel, pumping the spoil to the Dayson area. By the end of May, the Bobby James had dredged over 830,000 cubic yards of muck to spoil area "C" while the BT-51 had deposited 275,000 cubic yards to Dayson, the combined total going well past the million cubic yards of spoil.

Earthwork on the Island continued at a rapid pace with a total of over one and a half million cubic yards leveled and placed in dike areas by June 1.

To maintain the pace and schedule, over 150 contractor people are at work on the island utilizing 120 pieces of equipment which include scrapers, bulldozers, trucks, graders, draglines, barges, tugs, dredges and boats.

All aspects of the operation - building foundations, site preparation, dredging, structural steel erection - were essentially on schedule as the second half of the year began.

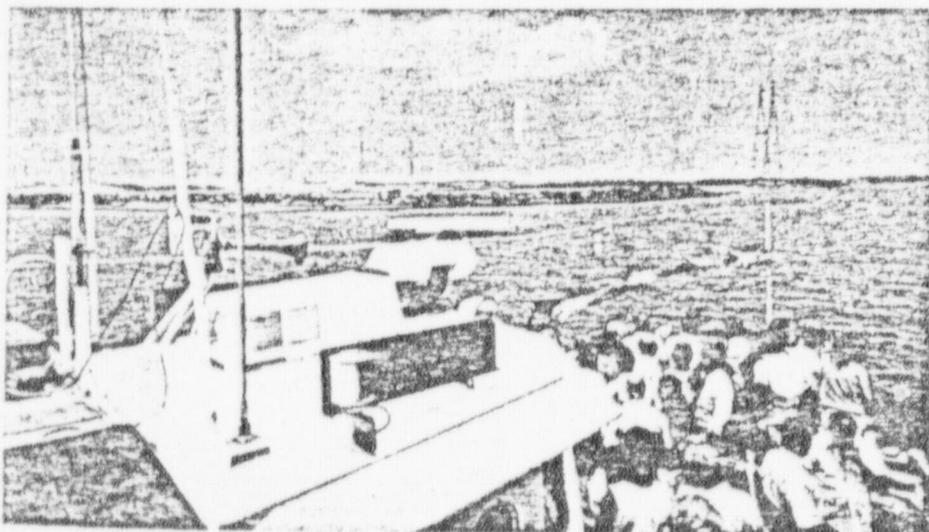
OPS SPONSORS BOAT TOUR OF BLOUNT ISLAND FOR FLORIDA MUNICIPAL UTILITIES ASSOCIATION



State Utilities Representatives board boat for afternoon cruise to OPS manufacturing site.



During the trip to Blount Island, guests study 3D model of manufacturing facility on display on upper deck.



Viewers crowd on bow as boat approaches Blount Island for close-up sight of facility activity.

As part of a three day Conference held by the Florida Municipal Utilities Association (FMUA) in Jacksonville on June 5-7, Offshore Power Systems hosted an afternoon boat tour of the Blount Island site for the attending members representing utilities throughout the State. Jim Turner, Vice President of Operations, using the boat's PA system, described the activities on the Island where site preparation, dredging and the structural steel for the Welding Laboratory were in evidence.

Over two hundred and fifty guests including local dignitaries, were on board to witness the progress activity at the manufacturing facility site. On one deck of the boat, the 3-dimensional model of the completed facility was on display for comparison to the site's present status.

Earlier in the day, the FMUA members heard Joe Stadelman, Vice President of Marketing, present "The Role of the Floating Nuclear Plant in Meeting Florida's Energy Needs".

Stadelman outlined the many problems facing the Utilities: the growing scarcity of suitable land sites, increasing costs of fossil fuels that are diminishing in availability, and environmental aspects such as fresh water supplies, and then went on to relate the important role the FNP will play in Florida's future.

The proposed Jacksonville Electric Authority's two unit site and the possibility of a four unit site were reviewed. JEA has solicited other FMUA members for the purchase of electricity. In answer to questions from the floor, Stadelman pointed out that economics dictated that a single major generation source be used for pooled purchasing of power rather than constructing small 50 to 100 megawatt plants throughout the state. Reference was made to the success of similar collective purchasing in the Northeast, such as the New England ventures.

The economics of fossil fuel vs nuclear plants was also discussed. Stadelman predicted the cost of fuel oil could reach \$20 a barrel by 1985. The FNP breaks even with \$3.50 to \$4.00 per bbl oil.

Concluding, the OPS Vice President stated, "The nuclear electric economy is the only direction we have to go and the Floating Nuclear Plant represents the lowest cost nuclear generation with the least environmental risk."

A copy of Mr. Stadelman's paper is available upon request.

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