UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

October 19, 1981

Honorable Nunzio J. Palladino
Chairman
U. S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: REPORT ON MANUFACTURING LICENSE FOR THE FLOATING NUCLEAR PLANT

Dear Dr. Palladino:

During its 258th meeting, October 15-17, 1981, the Advisory Committee on Reactor Safeguards completed its review of the application of Offshore Power Systems (OPS) for a license to manufacture eight standardized Floating Nuclear Plant (FNP) units at a facility located on Blount Island in Jacksonville, Florida. The Committee had most recently commented on this application in a letter to the Executive Director for Operations, dated April 16, 1980 addressing the installation of a core ladle in the FNP. The Committee had earlier commented on other aspects of this application in Interim Reports (December 10, 1975, and June 7, 1976) and in letters pertaining to the Platform Mounted Nuclear Plant (November 15, 1972), the Atlantic Generating Station (October 18, 1973), and the Liquid Pathway Generic Study (November 18, 1976 and May 9, 1978). The Committee also had the benefit of the documents listed.

At a Subcommittee meeting held on October 13, 1981, the NRC Staff indicated that there were no outstanding issues that needed to be resolved prior to issuance of a manufacturing license. However, the NRC Staff has identified many issues, most of which are generic, that will require further evaluation before issuance of a Final Design Approval. In the main, these issues pertain to accident situations and include protection of the reactor pressure vessel during transients, hydrogen control and subcompartment differential pressure analysis within containment, automatic initiation of and indication of flow in the auxiliary feedwater system, and the upgrading of emergency support facilities. All such items should be resolved to the satisfaction of the NRC Staff. The Committee wishes to be kept informed.

OPS has committed to do a detailed Probabilistic Risk Assessment (PRA) on the plant. This assessment is to be similar to the NRC Interim Reliability Evaluation Program (IREP) and will be designed to determine and quantify accident sequences that are dominant contributors to the potential for core damage. OPS plans to conduct uncertainty and sensitivity studies as part of this assessment and to use the results to identify changes to be implemented in the final FNP design. We endorse this approach. However, we believe it

is important that OPS recognize the limitations of current PRA techniques and that, where necessary, they be prepared to address certain of the unresolved issues using other methods.

We are encouraged to note changes made in the proposed design of the containment vessel, particularly with respect to the substantial increase in the design pressure. This represents, in our opinion, a significant increase in the ability of the FNP to withstand a major accident involving large releases and subsequent combustion of hydrogen. We note also that, while OPS has elected to use a distributed ignition system in the FNP, they will perform a study to evaluate other possible means of hydrogen control.

We note the following NRC Staff comments concerning limitations on the siting of the FNP units. In Part III of the Final Environmental Statement, the Staff concluded that "... there is a reasonable degree of assurance that the eight plants proposed for manufacture can, with suitable modifications, be sited and operated as electric generating stations at yet to be specified sites in the offshore and shore zone waters of the Atlantic Ocean and the Gulf of Mexico." The NRC Staff stated also that applicants wishing to site and operate such plants in other locations such as rivers, estuaries, or near barrier islands would "... have to demonstrate appropriate mitigation actions that would provide both an acceptable level of environmental impact as well as an acceptable level of core-melt accident risk." We expect to consider these issues when specific applications are reviewed.

Subject to the above comments, and to recommendations in previous Committee reports, the Advisory Committee on Reactor Safeguards believes that the Floating Nuclear Plant units can be manufactured with reasonable assurance that they can be sited and operated without undue risk to the health and safety of the public.

Sincerely,

J. Carson Mark
Chairman

References:

1. Offshore Power Systems, "Plant Design Report," Volumes 1-8 dated May 1973 and Amendments 1-28.
2. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to Offshore Power Systems FNP (1-8)," Supplements 2, 3, 4, by the Office of Nuclear Reactor Regulation, NUREG-0054, dated October 1976, February 1980, and September 1981, respectively.
3. U.S. Nuclear Regulatory Commission, "Final Environmental Statement Related to the Manufacture of Floating Nuclear Power Plants by Offshore Power Systems," Part III, USNRC Report NUREG-0502, dated December 1978.
4. Letter from P. B. Haga, Offshore Power Systems, to E. Adensam, NRC, on Containment Design Pressure, dated September 17, 1981.