ENVIRONMENTAL ASSESSMENT

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO THE EXPANSION OF THE SPENT FUEL POOL

FACILITY OPERATING LICENSE NO. DPR-67

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE PLANT, UNIT NO. 1

DOCKET NO. 50-335

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1.0 INTRODUCTION

1.1 Description of Proposed Action

By letter dated June 12, 1987, the Florida Power and Light Company (FP&L or the licensee) requested an amendment to Facility Operating License No. DPR-67 for the St. Lucie Plant, Unit No. 1 to allow the expansion of the capacity of the spent fuel pool. Further information was provided by letters dated September 8, 1987, October 20, 1987 (L-87-422, L-87-424, and L-87-425), December 21, 1987, December 22, 1987 and December 23, 1987 (L-87-535, L-87-536, and L-87-537).

The amendment would specifically authorize the licensee to increase the capacity of the spent fuel pool from the current capacity of 728 fuel assemblies to the proposed capacity of 1706 fuel assemblies. The proposed expansion would be achieved by removing the current spent fuel racks from the pool and replacing them with new racks (i.e., reracking), in which the cells for the spent fuel assemblies are more closely spaced. Both the current fuel storage arrangement and the proposed arrangement would make use of free-standing racks. The new racks will also contain a neutron absorber in the form of Boraflex.

1.2 Need for Increased Storage Capacity

In March 1978, FP&L received a license amendment (Number 22) to increase its spent fuel storage capacity from 310 to 728 fuel assemblies. Since that time, spent fuel has been added to the pool during refueling outages. The racks in the pool are insufficient to maintain a full core offload capability (217 fuel assemblies) at this time. In addition, if the spent fuel pool is not expanded before the next scheduled outage, estimated for the summer of 1988, it will be unsafe to expand the pool without removing some fuel beforehand. Reracking the pool after the next outage (without removing some fuel from the pool) would cause the licensee to violate present technical specifications to the extent that loads in excess of 2000 pounds would have to be carried over spent fuel. Therefore, FP&L has proposed to further expand its existing spent fuel storage capacity to 1706 fuel assemblies, which is projected to provide storage capacity until the year 2008, assuming full core offload capability.

The Nuclear Waste Policy Act of 1982 provided for limited away-from-reactor storage, and stipulated that a spent fuel repository would be available by 1998. Since the Act does not require a repository before this date, it is not clear whether there will be any place to ship spent fuel in the 1980's or early-to-mid-1990's. Therefore, in the interim FP&L needs to provide more storage capacity.

1.3 Alternatives

Commercial reprocessing of spent fuel has not developed as had been originally anticipated. In 1975, the Nuclear Regulatory Commission directed its staff to prepare a Generic Environmental Impact Statement (GEIS) on spent fuel storage. The Commission directed the staff to analyze alternatives for the handling and storage of spent light water power reactor fuel with particular emphasis on developing long-range policy. The GEIS was to consider alternative methods of spent fuel storage, as well as the possible restriction or termination of the generation of spent fuel through nuclear power plant shutdown.

A "Final Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel" (NUREG-0575), Volumes 1-3 (the FGEIS) was issued by the NRC in August 1979. The finding of the FGEIS is that the environmental impact costs of interim storage are essentially negligible, regardless of where such spent fuel is stored. A comparison of the impact costs of various alternatives reflects the advantage of continued generation of nuclear power versus its replacement by coal-fired power generation. Continued nuclear generation of power versus its replacement by oil-fired generation provides an even greater economic advantage. In the bounding case considered in the FGEIS, that of shutting down the reactor when the existing spent fuel storage capacity is filled, the cost of replacing nuclear stations before the end of their normal lifetime makes this alternative uneconomical. The storage of spent fuel as evaluated in NUREG-0575 is considered to be an interim action, not a final solution to permanent disposal.

One spent fuel storage alternative considered in detail in the FEGIS is the expansion of the onsite fuel storage capacity by modification of the existing spent fuel pools. Applications for more than 100 spent fuel pool expansions have been received and have been approved or are under review by the NRC. The finding in each case has been that the environmental impact of such increased storage capacity is negligible. However, since there are variations in storage design and limitations caused by the spent fuel already stored in some of the pools, the FGEIS recommends that licensing reviews be done on a case-by-case basis to resolve plant-specific concerns.

The continuing validity and site specific applicability of the conclusions in the NUREG-0575 have been confirmed in the Environmental Assessments for the Surry and H. B. Robinson Plants independent spent fuel storage installations.

The licensee has considered several alternatives to the proposed action of the spent fuel pool expansion. The staff has evaluated these and certain other alternatives with respect to the need for the proposed action as discussed in Section 1.2 of this assessment. The following alternatives were considered:

(1) Shipment of spent fuel to a permanent federal fuel storage/disposal facility.

(2) Shipment of fuel to a reprocessing facility.

(3) Shipment of fuel to another utility or site for storage.

(4) Reduction of spent fuel generation.

(5) Construction of a new independent spent fuel storage installation (ISFSI).

(6) No action taken.

Each of these alternatives is discussed below.

1. Shipment of Spent Fuel to a Permanent Federal Fuel Storage/Disposal Facility

Shipment to a permanent federal fuel storage disposal facility is a preferred alternative to increasing the onsite spent fuel storage capacity. The licensee has made contractual arrangements whereby spent nuclear fuel and/or high level nuclear waste will be accepted and disposed of by the U.S. Department of Energy (DOE). DOE is developing a repository under the Nuclear Waste Policy Act (NWPA) of 1982. However, the facility is not likely to be ready to receive spent fuel until the year 2003, at the earliest. Therefore, this alternative does not meet the near-term storage needs of FP&L for the St. Lucie Plant, Unit No. 1.

As an interim measure, shipment to a Monitored Retrievable Storage (MRS) facility is another preferred alternative to increasing the onsite spent fuel storage capacity. DOE, under the NWPA, has recently submitted its MRS proposal to Congress. Because Congress has not authorized an MRS and because one is not projected to be available until 1998, this alternative does not meet the near-term storage needs for the St. Lucie Plant, Unit No. 1.

Under NWPA, the federal government has the responsibility to provide not more than 1900 metric tons capacity for the interim storage of spent fuel. The impacts of storing fuel at a Federal Interim Storage (FIS) facility fall within those already assessed by the NRC in NUREG-0575. In passing NWPA, Congress found that the owners and operators of nuclear power stations have the primary responsibility for providing interim storage of spent nuclear fuel. In accordance with the NWPA and 10 CFR Part 53, shipping of spent fuel to a FIS facility is considered a last resort alternative. Therefore, because FP&L has been diligently pursuing this application for the SFP expansion at this time, the alternative of shipment of spent fuel to a FIS is not considered reasonable.

2. Shipment of Fuel to a Reprocessing Facility

Reprocessing of spent fuel from the St. Lucie Plant, Unit No. 1 is not viable because presently there is no operating commercial reprocessing facility in the United States, nor is there the prospect for one in the foreseeable future.

3. Shipment of Fuel to Another Utility or Site For Storage

The shipment of spent fuel from the St. Lucie Plant, Unit No. 1 to the storage facility of another utility company could provide short-term relief for the St. Lucie Plant storage capacity problem. However, the NWPA and 10 CFR Part 53 clearly place the responsibility for the interim storage of spent nuclear fuel with each owner or operator of nuclear power plant. Moreover, transshipment of spent fuel to and its storage at another site would entail potential environmental impacts greater than those associated with the proposed increased storage at the St. Lucie site. Therefore, this is not considered a practical or reasonable alternative.

FP&L also owns and operates the Turkey Point Plant. The storage capacity of the Turkey Point spent fuel pools is reserved for the needs of the two operating reactors onsite and is unavailable for future storage of St. Lucie spent fuel. Therefore, the Turkey Point spent fuel pools are not an acceptable alternative.

FP&L also owns and operates the St. Lucie Plant, Unit No. 2, which is located adjacent to the St. Lucie Plant, Unit No. 1. The spent fuel pool for the St. Lucie Plant, Unit No. 2 is separate from the spent fuel pool for the St. Lucie Plant, Unit No. 1. By application dated July 2, 1986, FP&L requested NRC's approval to transfer fuel from the Unit No. 1 spent fuel pool to the Unit No. 2 spent fuel pool. The Unit No. 2 spent fuel pool is relatively new and has a large unused capacity at this time. FP&L would transfer the fuel from Unit No. 1 only if (1) there is a need to offload the Unit No. 1 reactor core, or (2) the Unit No. 1 rerack occurs after the next refueling outage, scheduled for the summer of 1988. The staff believes that the transfer of fuel may have a near-term benefit, but does not represent the intermediate-term solution as far as the St. Lucie Plant site is concerned. In essence, if spent fuel from Unit No. 1 was transferred and kept in storage at Unit No. 2, the Unit No. 2 pool would need to be reracked sooner than presently anticipated.

4. Reduction of Spent Fuel Generation

Improved usage of fuel in the reactor and/or operation at a reduced power level would extend the life of the fuel in the reactor. In the case of extended burnup of fuel assemblies, the fuel cycle would be extended and fewer offloads would take place. However, the current storage capacity would still be exhausted prior to 1998, as discussed in Section 1.2. Operation at reduced power would not make effective use of available resources, thus causing economic penalties.

5. Construction of A New Independent Spent Fuel Storage Installation

Additional storage capacity could be developed by building a new, independent spent fuel storage installation (ISFSI), similar either to the existing pool or a dry cask storage installation. The NRC staff has generically assessed the impacts of the pool alternative and found, as reported in NUREG-0575, that "the storage of LWR spent fuels in water pools has an insignificant impact on the environment." A generic assessment for the dry cask alternative has not been made by the staff. However, assessments for the dry cask ISFSI at the Surry Power Station and the dry modular concrete ISFSI at the H.B. Robinson Steam Electric Plant Unit 2 resulted in Findings of No Significant Impact. While these alternatives are environmentally acceptable, such a new storage facility, either on the St. Lucie site or at a location offsite, would require new site-specific design and construction, including equipment for the transfer of spent fuel. NRC review, evaluation and licensing of such a facility would also be required. This entire effort is not likely to be completed in time to meet the need for additional capacity as discussed in Section 1.2. Furthermore, such construction would not utilize the existing expansion capabilities of the existing pools and thus would waste resources.

6. No Action Taken

If no action were taken, i.e., the spent fuel pool storage capacity remains at 728 locations, the storage capacity would become exhausted in the very near future and St. Lucie Plant, Unit No. 1 would have to be shut down. Such termination of operations would result in no further generation of spent fuel, thereby eliminating the need for increased spent fuel storage capacity. The impacts of terminating the generation of spent fuel by ceasing the operation of

existing nuclear power plants (i.e., ceasing generation of electric power) when their spent fuel pools become filled was evaluated in NUREG-0575 and found to be undesirable. This alternative would be a waste of an available resource, the St. Lucie Plant, Unit No. 1 itself, and is not considered viable.

In summary, the only long-term alternative which could provide an alternative solution to the FP&L spent fuel storage capacity problem is the construction of a new independent spent fuel storage installation at the St. Lucie site or at a location away from the site. Construction of such an additional spent fuel storage facility could provide long-term increased storage capacity for St. Lucie, Unit No. 1. However, this alternative cannot be implemented in a timely manner to meet the need for additional capacity for the St. Lucie Plant, Unit No. 1.

The only near-term alternative which could provide a solution to the FP&L spent fuel storage capacity problem is the transfer of fuel from Unit No. 1 to Unit No. 2. However, this alternative is short-sighted and does not fully address the need for additional site storage capacity.

1.4 Fuel Reprocessing History

Currently, spent fuel is not being reprocessed on a commercial basis in the United States. The Nuclear Fuel Services (NFS) plant at West Valley, New York, was shut down in 1972 for alterations and expansion. In September 1976, NFS informed the Commission that it was withdrawing from the nuclear fuel reprocessing business. The Allied General Nuclear Services (AGNS) proposed plant in Barnwell, South Carolina, is not licensed to operate. The General Electric Company (GE) Morris Operation (formerly Midwest Recovery Plant) in Morris, Illinois, is in a decommissioned condition.

On April 17, 1977, President Carter issued a policy statement on commercial reprocessing of spent nuclear fuel which effectively eliminated reprocessing as part of the relatively near-term nuclear fuel cycle.

Although no plants are licensed for reprocessing fuel, the storage pools at Morris and at West Valley are licensed to store spent fuel. The storage pool at West Valley is not full, but the licensee (the current licensee is New York Energy Research and Development Authority) is presently not accepting any additional spent fuel for storage, even from those power generating facilities that had contractual arrangements with West Valley. (In fact, spent fuel is being removed from NFS and returned to its owners). On May 4, 1982, the license held by GE for spent fuel storage activities at its Morris operation was renewed for another 20 years; however, GE is committed to accept only limited quantities of additional spent fuel for storage at this facility from Cooper and San Onofre Unit 1.

2.0 RADIOACTIVE WASTES

St. Lucie, Unit No. 1 contains radioactive waste treatment systems designed to collect and process the gaseous, liquid, and solid waste that might contain radioactive material. The radioactive waste treatment systems are evaluated in the Final Environmental Statement (FES) dated June 1973 (US NRC 1973). There will be no change in the waste treatment systems described in the FES because of the proposed spent fuel pool (SFP) rerack.

2.1 Radioactive Material Released to the Atmosphere

With respect to releases of gaseous materials to the atmosphere, the only radioactive gas of significance which could be attributable to storing additional spent fuel assemblies for a longer period of time is the noble gas radionuclide Krypton-85 (Kr-85). Experience has demonstrated that after spent fuel has decayed 4 to 6 months, there is no longer a significant release of fission products, including Kr-85, from stored spent fuel containing cladding defects. To determine the average annual release of Kr-85, we assumed that all of the Kr-85 released from any defective fuel discharged to the SFP would be released prior to the next refueling. Enlarging the storage capacity of the SFP has no effect on the calculated average annual quantities of Kr-85 released to the atmosphere each year. There may be some small change in the calculated quantities due to a change in the fuel burnup; this is expected to be a small fraction of the calculated annual quantities. However, for the purpose of estimating potential radiation doses to the members of the public due to the proposed increased storage of spent fuel assemblies, the NRC staff has conservatively assumed an additional release of 125 Ci/year of Kr-85 (US NRC 1985).

Iodine-131 releases from spent fuel assemblies to the SFP water will not be significantly increased because of the expansion of the fuel storage capacity since the Iodine-131 inventory in the fuel will decay to negligible levels between refuelings.

Most of the tritium in the SFP water results from activation of boron and lithium in the primary coolant and this will not be affected by the proposed changes. A relatively small amount of tritium is contributed during reactor operation by fissioning of reactor fuel and subsequent diffusion of tritium through the fuel and fuel cladding. Tritium release from the fuel essentially occurs while the fuel is hot, that is, during operations, and to a limited extent, shortly after shutdown. Thus, expanding the SFP capacity will not significantly increase the tritium activity in the SFP.

Storing additional spent fuel assemblies is not expected to increase the bulk water temperature during normal refueling above the value used in the design analysis. Therefore, it is not expected that there will be any significant change in the annual release of tritium or iodine as a result of the proposed modifications from that previously evaluated in the FES. Most airborne releases of tritium and iodine result from evaporation of reactor coolant, which contains tritium and iodine in higher concentrations than the SFP. Therefore, even if there were a higher evaporation rate from the SFP, the increase in tritium and iodine releases from the plant, as a result of the increase in stored spent fuel, would be small compared to the amount normally released from the plant and that which was previously evaluated in the FES. The SFP exhaust system must be operating and discharging through both HEPA and charcoal filters whenever spent fuel is stored in the SFP and when fuel is either being moved or other loads are being carried over the SFP (TS 3.9.12). In addition, the station Radiological Effluent Technical Specifications, which are not being changed by this action, limit the total releases of gaseous activity.

2.2 Solid Radioactive Wastes

The concentration of radionuclides in the pool water is controlled by the SFP cleanup system and by decay of short-lived isotopes. The activity is highest during refueling operations when reactor coolant water is introduced into the pool, and decreases as the pool water is processed through the SFP cleanup system. The increase, if any, of radioactivity due to the proposed modification should be minor because of the capability of the cleanup system to continuously remove radioactivity in the SFP water to acceptable levels.

We do not expect any significant increase in the amount of solid waste generated from the SFP cleanup due to the proposed modification. The expected increase in total waste volume shipped from the St. Lucie Units is less than 1% and would not have any significant additional environmental impact.

The licensee plans to send the existing racks to a licensed radiative waste processing facility. The racks will be decontaminated to the maximum extent possible. Remaining portions of the racks and contaminated waste generated from decontamination will be buried at a licensed radioactive waste burial site. Averaged over the lifetime of the station, the racks would increase the total waste volume shipped from the station by less than 1%. This will not have any significant additional environmental impact.

2.3 Radioactive Material Released to Receiving Waters

There should not be a significant increase in the liquid release of radionuclides from the plant as a result of the proposed modifications. Since the SFP cooling and cleanup systems operate as a closed system, only water originating from cleanup of SFP floors and resin sluice water need be considered as potential sources of radioactivity.

It is expected that neither the flow rate nor the radionuclide concentration of the floor cleanup water will change as a result of these modifications. The SFP demineralizer resin removes soluble radioactive materials from the SFP water. These resins are periodically sluiced with water to the spent resin storage tank. The amount of radioactivity on the SFP demineralizer resin may increase slightly due to the additional spent fuel in the pool, but the soluble radioactive material should be retained on the resins. Radioactive material that might be transferred from the spent resin to the sluice water will be effectively removed by the liquid radwaste system. After processing in the liquid radwaste system, the amount of radioactivity released to the environment as a result of the proposed modification would be negligible.

3.0 RADIOLOGICAL IMPACT ASSESSMENT

This section contains the staff's estimates of the impacts on the public from the proposed SFP modification. Major sources of radioactivity and principal environmental pathways were considered in preparing this section.

The section also contains the staff's evaluation of the estimates of the additional radiological impacts on the plant workers from the proposed operation of the modified SFP.

3.1 Public Radiation Exposure

The principal source of radiation doses to individual members of the general public from releases from the SFP is exposure to Kr-85 releases from the SFP during subsequent fuel storage.

The staff has estimated the doses to individual members of the public as well as the population as a whole in the area surrounding St. Lucie Unit No. 1 by conservatively assuming a release of 125 Ci of Kr-85 due to the proposed increased storage of spent fuel assemblies and using the calculational methods presented in Regulatory Guide 1.109. The staff estimated the total body and organ doses for the direct radiation exposure pathway from the Kr-85 plume shine for individual members of the general public of all ages at the worst site boundary location 7.5 miles SSW of the plant resulting from the assumed additional release of airborne Kr-85. The individual member of the public was conservatively assumed to occupy the site boundary with the worst atmospheric dispersion characteristics continuously for a whole year. An atmospheric dispersion factor, X/Q, of 4×10^{-6} sec/m^3 (US NRC 1973) was used in these estimates.

The additional total body dose that might be received from the assumed release of Kr-85 by an individual at the worst site boundary location and the estimated dose to the total body of the population within the 80 kilometer radius of the plant is less than 0.1 mrem/yr and 0.1 person-rem/yr, respectively. These doses are small compared to the fluctuations in the annual dose this population receives from exposure to background radiation. The population dose due to the SFP modification represents an increase of less than 0.1 percent of the population dose evaluated in the FES for the release of noble gases from the normal operation of St. Lucie, Unit No. 1.

By comparison, every year the sample population of about 3,300,000 persons will receive a cumulative total body dose of more than 370,000 person-rems from natural background radiation of about 0.11 rem per year per person (US EPA 1972). Thus, the additional total body dose to the population from the SFP modification is estimated to be less than 0.0001% of the annual dose due to natural background. On this basis, the staff concludes that the doses to individuals in unrestricted areas and to the population within 80 kilometers due to the assumed additional airborne Kr-85 releases annually from the SFP modification would not be environmentally significant.

In summary, the estimated doses due to exposure of individuals and the population to radioactive materials associated with the spent fuel pool modification are not significant.

3.2 Occupational Exposure

The occupational exposure for the proposed modification of the SFP is estimated by the licensee to be less than 15 person-rems, based on the licensee's detailed breakdown of occupational dose for each phase of the operation. This dose is less than 3% of the average annual occupational dose of 600 person-rems per unit per year for operating pressurized water reactors in the United States. The small increase in radiation dose should not affect the licensee's ability to maintain individual occupational doses within the limits of 10 CFR Part 20, and

is as low as is reasonably achievable. Normal radiation control procedures (NUREG-0800, US NRC 1981) and Regulatory Guide 8.8 (US NRC 1978) will preclude any significant occupational radiation exposures.

Based on present and projected operations in the SFP area, we estimate that the proposed operation of the modified SFP should add only a small fraction to the total annual occupational radiation dose at St. Lucie, Unit No. 1.

Thus, we conclude that the proposed storage of spent fuel in the modified SFP will not result in any significant increase in doses received by workers.

3.3 Conclusions

Based on its review of the proposed expansion of the SFP at St. Lucie, Unit No. 1, the staff concludes that:

1. The estimated additional radiation doses to the general public are:

   a. much less than those incurred during normal operation of St. Lucie, Unit No. 1 Nuclear Power Station,

   b very small in comparison to the dose members of the public receive each year from exposure to natural background radiation.

2. The licensee has taken appropriate steps to ensure that occupational dose will be maintained as low as is reasonably achievable and within the limits of 10 CFR Part 20.

On the basis of the foregoing evaluation, it is concluded that there would be no significant additional environmental radiological impact attributable to the proposed reracking and modification to increase the spent fuel storage capacity at the St. Lucie, Unit No. 1 Nuclear Power Plant.

We have concluded, based on the considerations discussed above, that there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, with regard to radiation doses to the public and plant workers.

4.0 NON-RADIOLOGICAL IMPACT

The licensee plans to dispose of the current fuel storage racks by transferring them to a waste processing facility where they will be decontaminated to the maximum extent possible. Remaining portions of the racks and contaminated waste generated from decontamination will be buried at a licensed radioactive waste burial site. The disposal of the St. Lucie Plant, Unit No. 1 racks will not require any unusual processing and handling and thus will not involve any significant environmental impact.

The new spent fuel racks will be fabricated by a fabricator in Camden, New Jersey. They will be shipped by truck to the St. Lucie Plant for installation in the pool. This is not expected to impact terrestrial resources not previously disturbed during the original construction.

The only nonradiological effluent affected by the spent fuel pool expansion is the additional waste heat rejected from the plant. The total increase in heat load rejected to the environment through the cooling systems due to the increased spent fuel storage over the current rejected heat load is 1.7×10^6 BTU/hour. This represents an increase of approximately 0.03 percent of the total heat rejected to the environment. Thus, the increase in rejected heat will have negligible impact on the environment. No impact on aquatic biota is anticipated.

The licensee has not proposed any change in the use or discharge of chemicals in conjunction with the expansion of the fuel pool. The proposed fuel pool expansion will not require any change to the NPDES permit.

Therefore, the staff concludes that the nonradiological environmental impacts of expanding the spent fuel pool will be insignificant.

5.0 SEVERE ACCIDENT CONSIDERATIONS

The staff, in its related Safety Evaluation to be published at a later date, has addressed both the safety and environmental aspects of a fuel handling accident, an event which bounds the potential adverse consequences of accident attributable to operation of a spent fuel pool with high density racks. A fuel handling accident may be viewed as a "reasonably foreseeable" design basis event which the pool and its associated structures, systems, and components (including the racks) are designed and constructed to prevent. The environmental impacts of the accident were found not to be significant.

The staff has considered accidents whose consequences might exceed a fuel handling accident, that is, beyond design basis events. The most widely considered accident, which was investigated by an NRC contractor, involves a structural failure of a spent fuel pool resulting in a rapid loss of all contained cooling water, subsequently followed by fuel heatup and zirconium cladding fire. The details of this severe accident are contained in NUREG/CR-4982 entitled "Severe Accidents in Spent Fuel Pools in Support of Generic Safety Issue 82."

The staff believes that the probability of this type of accident occurring is extremely low. This belief is based upon the Commission's requirements for the design and construction of spent fuel pools and their contents (e.g., racks), and adherence to approved industry codes and standards. For example, in the St. Lucie case, the pool itself is an integral part of the fuel handling building, which is designed to Seismic Category I standards. The foundation mat and walls are massive, comprised of reinforced concrete. The spent fuel storage racks are seismic Category I equipment required to remain functional during and after a safe shutdown earthquake. In addition, the racks are extremely strong in the structural sense in maintaining proper spacing of the fuel assemblies. The water cooling system is extremely reliable; in the highly unlikely event of a total cooling system failure, makeup water sources are available. These are but a few of the considerations used by the staff in assessing the adequacy of the rerack.

The staff acknowledges that if the severe accident occurred as described above, the environmental impacts could be significant; however, this event is highly unlikely and is not reasonably foreseeable, in light of the above design discussion of the spent fuel pool system and racks. Therefore, further discussion of a severe accident impact is not warranted, and the staff concludes that an environmental impact statement need not be prepared.

6.0 SUMMARY

The Final Generic Environmental Impact Statement (FGEIS) on Handling and Storage of Spent Light Water Power Reactor Fuel concluded that the cost of the various alternatives reflects the advantage of continued generation of nuclear power with the accompanying spent fuel storage. Because of the differences in SFP designs, the FGEIS recommended environmental evaluation of SFP expansions on a case-by-case basis.

For the St. Lucie Plant, Unit No. 1, the expansion of the storage capacity of the spent fuel pool will not create any significant additional radiological effects or measurable non-radiological environmental impacts. The additional whole body dose that might be received by an individual at the site boundary is less than 0.1 millirem per year; the estimated dose to the population within an 80 kilometer radius is estimated to be less than 0.1 person-rem per year. These doses are small compared to the fluctuations in the annual dose this population receives from exposure to background radiation. The occupational radiation dose for the proposed operation of the expanded spent fuel pool is estimated by the staff to be less than three percent of the total annual occupational radiation exposure for a facility of this type. The small increase in radiation dose should not affect the licensee's ability to maintain individual occupational dose at the St. Lucie Plant, Unit No. 1 within the limits of 10 CFR Part 20, and as low as is reasonably achievable.

The only nonradiological effluent affected by the SFP expansion is the additional waste heat rejected. The increase in total plant waste heat is insignificant. Thus, there is no significant environmental impact attributable to the waste heat from the plant due to the SFP expansion.

6.1 Alternative Use of Resources

This action does not involve the use of resources not previously considered in connection with the Nuclear Regulatory Commission's Final Environmental Statement, dated June 1973, related to St. Lucie Plant, Unit No. 1.

6.2 Agencies and Persons Consulted

The NRC staff reviewed the licensee's request. No other agencies or persons were consulted.

7.0 BASIS AND CONCLUSIONS FOR NOT PREPARING AN ENVIRONMENTAL IMPACT STATEMENT

The staff has reviewed the proposed spent fuel pool modification to the St. Lucie Plant, Unit No. 1 relative to the requirements set forth in 10 CFR Part 51. Based upon the environmental assessment, the staff has concluded that there are no significant radiological or nonradiological impacts associated with the

proposed action and that the proposed license amendment will not have a significant effect on the quality of the human environment. Therefore, the Commission has determined, pursuant to 10 CFR 51.31, not to prepare an environmental impact statement for the proposed amendment.

8.0 REFERENCES

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