UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

ENVIRONMENTAL ASSESSMENT

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO THE SECOND MODIFICATION OF THE

SPENT FUEL STORAGE POOL

PROVISIONAL OPERATING LICENSE NO. DPR-16

GPU NUCLEAR CORPORATION AND

JERSEY CENTRAL POWER AND LIGHT COMPANY

OYSTER CREEK NUCLEAR GENERATING STATION

DOCKET NO. 50-219

Dated: September 13, 1984

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1.0 INTRODUCTION

The spent fuel storage capacity of the Oyster Creek Plant was 840 fuel assemblies when the plant was licensed in 1969. This licensed capacity was increased in 1977 to 1800 fuel assemblies by reracking the spent fuel pool (SFP). This limited increase in storage capacity was in keeping with the expectation generally held in the industry that the federal government would begin accepting spent fuel for interim storage in the 1981-1982 time frame.

Commercial reprocessing of spent fuel has not developed as had been originally anticipated. In 1975 the Nuclear Regulatory Commission (NRC) directed the staff to prepare a Generic Environmental Impact Statement (GEIS, the Statement) 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 Statement 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.

1.1 Alternatives

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. In the FGEIS, consistent with long range policy, the storage of spent fuel is considered to be interim storage to be used until the issue of permanent disposal is resolved and implemented.

One spent fuel storage alternative considered in detail in the FGEIS is the expansion of onsite fuel storage capacity by modification of the existing SFPs. Applications for approximately 108 SFP capacity increases have been received and 100 have been approved. The remaining ones are still under review. 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 designs 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.

In addition to the alternative of increasing the storage capacity of the existing SFP, the FGEIS discusses in detail other spent fuel storage alternatives. 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. 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.

This Environmental Assessment (EA) addresses only the specific environmental concerns related to the proposed expansion of the Oyster Creek Station spent fuel storage capacity.

The amendment would authorize the licensee to increase the storage capacity of the SFP from the current capacity of 1800 fuel assemblies to 2600 fuel assemblies with average planar enrichments no greater than 3.01 weight percent U-235.

The environmental impacts associated with the operation of the Oyster Creek Station, as designed, were considered in the NRC's Final Environmental Statement (FES) issued in December 1974.

1.2 Need for Increased Storage Capacity

The plant now has licensed fuel storage capacity for 1800 fuel assemblies. At the present time, there are 980 spent fuel assemblies in the SFP. The licensee estimates that full-core reserve in the SFP would be lost following the 1985 refueling. Since this date is earlier than the date a federal depository should be available for spent fuel [1998-Nuclear Waste Policy Act of 1982, Sec. 302(a)(5)] additional spent fuel capacity is needed.

1.3 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. Although no plants are licensed for reprocessing fuel, the storage pool at Morris, Illinois and the storage pool at West Valley, New York are licensed to store spent fuel. The storage pool at West Valley is not full, but the licensee* is presently not accepting any additional spent fuel for storage, even from those power generating facilities that had contractual arrangements with West Valley.** 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.

*The current licensee is New York Energy Research and Development Authority.

**In fact, spent fuel is being removed from NFS and returned to various utilities.

2.0 FACILITY

The principal features of spent fuel storage at Oyster Creek, as they relate to this action, are described here as an aid in following the evaluations in subsequent sections of this EA.

2.1 Spent Fuel Pool

Spent fuel assemblies are intensely radioactive due to their fresh fission product content when initially removed from the core; also, they have a high thermal output. The SFP is designed for storage of these assemblies to allow for radioactive and thermal decay prior to shipment. Space permitting, the assemblies may be stored for longer periods, allowing continued fission product decay and thermal cooling.

The handling of spent fuel is performed within the reactor building. This employs a refueling platform for underwater fuel transport, storage racks for fuel and control rods in a storage pool, underwater fuel preparation stations, floor mounted jib cranes, and a shipping cask. Fuel and control rods transferred from the core will be stored in the fuel pool racks. The fuel pool cooling system cools, filters, and demineralizes the fuel pool water.

The fuel pool water level is monitored and high or low level is alarmed. Makeup water is available from the condensate and demineralized water transfer system. The 38 feet of water in the pool (25 feet above the fuel) provides sufficient shielding for normal building occupancy by operating personnel.

2.2 Radioactive Waste Treatment System

The plant contains waste treatment systems designed to collect and process the gaseous, liquid, and solid waste that might contain radioactive material. The waste treatment systems are evaluated in the FES dated December 1974. There will be no change in the waste treatment systems described in Section 3.5 of the FES because of the proposed modification.

3.0 RADIOLOGICAL ENVIRONMENTAL IMPACTS OF PROPOSED ACTION

3.1 Introduction

The potential radiological environmental impacts associated with the expansion of the spent fuel storage capacity were evaluated and determined to be environmentally insignificant as addressed below.

During the storage of the spent fuel under water, both volatile and non-volatile radioactive nuclides may be released to the water from the surface of the assemblies or from defects in the fuel cladding. Most of the material released from the surface of the assemblies consists of activated corrosion products such as Co-58, Co-60, Fe-59, and Mn-54 which are not volatile. The radionuclides that might be released to the water through defects in the cladding, such as Cs-134, Cs-137, Sr-89, and Sr-90 are also predominantly nonvolatile. The primary impact of such nonvolatile radioactive nuclides is their contribution to radiation levels to which workers in and near the SFP would be exposed. The volatile fission product nuclides of most concern that might be released through defects in the fuel cladding are the noble gases (xenon and krypton), tritium, and the iodine isotopes.

Experience indicates, however, that there is little radionuclide leakage from spent fuel stored in pools after the fuel has cooled for several months. The predominance of radionuclides in the SFP water appears to be radionuclides that were present in the reactor coolant system prior to refueling (which becomes mixed with water in the SFP during refueling operations) or crud dislodged from the surface of the spent fuel during transfer from the reactor core to the SFP.

During and after refueling, the SFP purification system reduces the radioactivity concentration considerably. It is theorized that most failed fuel contains small, pinhole-like perforations in the fuel cladding at the reactor operating condition of approximately 800°F. A few weeks after refueling, the spent fuel is cooled in the SFP and the fuel clad temperature becomes relatively cool, approximately 180°F. This substantial temperature reduction should reduce the rate of release of fission products from the fuel pellets and decrease the gas pressure in the gap between pellets and clad, thereby tending to retain the fission products within the gap. In addition, most of the gaseous fission products have short half-lives and decay to insignificant levels within a few months. Based on the operational reports submitted by the licensees and discussions with the operators, there has not been any significant leakage of fission products from spent fuel stored in the Morris Operation at Morris, Illinois, or at the NFS storage pool at West Valley, New York. Some spent fuel assemblies which had significant leakage while in operating reactors have been stored in these two pools. After storage in the onsite SFP, these fuel assemblies were later shipped to either Morris Operation or NFS for extended storage. Although the fuel exhibited significant leakage at reactor operating conditions, there was no significant leakage from these fuel assemblies in the offsite storage facility.

3.2 Radioactive Material Released to the Atmosphere

During the ten refueling outages which have taken place at the Oyster Creek Nuclear Generating Station a total of 1204 spent fuel assemblies were stored - an average of 120 per outage. (There are 980 assemblies currently in the SFP, and 224 assemblies at the West Valley, New York facility which are expected to be returned.) Since space must be reserved to accommodate a complete reactor core unloading (560 fuel assemblies), the useful pool capacity is 1800 - 560 = 1240 fuel assemblies.

After 1984, the fuel management plan will involve discharging an average of approximately 200 (range 188 to 220) assemblies to the SFP each fuel cycle. The fuel cycles will be from 16 to 18 months in length. The useful pool capacity will be 2600 - 560 = 2040 fuel assemblies and the storage capacity will be about 10 years. With respect to releases of gaseous materials to the atmosphere, the only radioactive gas of significance which could be attributable to storing additional fuel assemblies for a longer period of time would be 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 fuel containing cladding defects.

In the evaluation of the annual quantities of Kr-85 to be released from the SFP, it has been conservatively assumed that there is no radioactive decay of the Kr-85 prior to release; the failed fuel fraction normally used to calculate releases from fuel assemblies in the reactor core applies to fuel assemblies in the SFP; and the fuel pool is filled to capacity with spent fuel. The actual releases of Kr-85 are expected to be less than the quantities calculated since the quantities available for release will be less due to decay of Kr-85; the effective failed fuel fraction in the SFP will be lower because the fuel in the SFP is at a lower temperature than the fuel in the reactor core; and the SFP will not always be filled to capacity.

Each group of fuel assemblies removed from the core during refueling (after taking into account the number of assemblies and the average failed fuel fraction) would normally be expected to have approximately the same Kr-85 release rate characteristic over time as the other groups of spent fuel assemblies, steadily diminishing after its removal from the core. Thus, if the average failed fuel fraction in the groups of spent fuel removed is the same and the fuel pool is always filled to capacity, the average rate of release of Kr-85 from the SFP during the uniform periods between refuelings would be the same for all possible common release rate characteristics. For conservatism, a factor of 2 has been applied in the evaluation of annual releases of Kr-85 to account for possible nonuniformities in the average failed fuel fractions, in the lengths of the periods between refuelings, in the number of fuel assemblies removed per refueling, and in the Kr-85 release rate characteristics.

For simplicity of computation, the common release rate characteristic is assumed to be as follows. The group of failed fuel assemblies removed during each refueling releases all the Kr-85 contained in those assemblies at a uniform rate over the time interval until the next refueling. After that, no additional Kr-85 is released from the previously removed fuel assemblies. In other words, all the Kr-85 available for release is assumed to leak from the failed fuel before the next batch of spent fuel enters the pool.

NRC staff calculations, based on the above, show the average release of Kr-85, due to the present average of 120 fuel assemblies added to storage per annual outage, is expected to have been no more than approximately 43 Ci/yr. Under the proposed fuel management plan involving approximately 200 fuel assemblies per 17 month fuel cycle, the average Kr-85 release is expected to be no more than approximately 81 Ci/yr. The maximum dose to an individual as a result of this release is estimated to be less than 0.01 mrem/yr, which is insignificant relative to the dose from other radionuclides in effluents from the station.

Assuming that the spent fuel will be stored onsite for several years, Iodine-131 (I-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 I-131 inventory in the fuel will decay to negligible levels between refuelings.

Storing additional spent fuel assemblies is not expected to increase the bulk water temperature above the Technical Specification maximum of 125°F. 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 released 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. In addition, the station radiological effluent Technical Specifications, which are not being changed by this action, limit the total releases of gaseous activity.

3.3 Solid Radioactive Wastes

The concentration of radionuclides in the pool water is controlled by the filters and the demineralizer 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 cleanup system. The increase of radioactivity, if any, due to the proposed modification, should be minor because of the capability of the cleanup system to continuously remove radioactivity to acceptable levels.

The licensee does not expect any significant increase in the volume of solid waste generated from the SFP cleanup system due to the proposed modification. While the staff agrees with the licensee's conclusion, as a conservative estimate the staff has assumed that the amount of solid radwaste may be increased by an additional two demineralizer resin beds a year due to the increased operation of the SFP cleanup system. The annual average volume of solid wastes shipped from the Oyster Creek site during 1976 through 1980 was 54,000 cubic feet. If the storage of additional spent fuel does increase the amount of solid waste from the SFP cleanup systems by about 100 cubic feet per year, the increase in total waste volume shipped would be less than 1% and would not have any significant additional environmental impact.

The present spent fuel racks to be removed from the SFP because of the proposed modification are contaminated and will be packaged and shipped to a contractor's facility for additional decontamination and/or disposal in accordance with Federal and State regulations. The estimated volume of these wastes is 1500 cubic feet. Averaged over the lifetime of the plant, this would increase the total waste volume shipped from the facility by less than 1%. This will not have any significant additional environmental impact.

3.4 Liquid Radioactive Wastes

There should not be a significant increase in the liquid release of radionuclides from the plant as a result of the proposed modification. Since the SFP cooling and cleanup system operates 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 quantity nor activity of the floor cleanup water will change as a result of this modification. The SFP demineralizer resin removes soluble radioactive material 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. If any radioactive material is transferred from the spent resin to the sluice water, it will be removed by the liquid radwaste system for processing. 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.

3.5 Radiological Assessment

The licensee has estimated that the radiation doses incurred by workers taking part in the Oyster Creek SFP modification will be 25 person-rems. This is less than 2% of the annual average occupational radiation exposure experience of about 1300 person-rems at the plant.

The staff has completed an analysis of radiation exposure experience based on estimated source terms and assessment of public doses resulting from 38 prior SFP modifications at 37 plants.

Estimated doses to a hypothetical maximally exposed individual at the boundary of a plant site, during such modifications, have fallen within a range from 0.00004 to 0.1 millirem per year, with an average dose of 0.02 millirem per year. Similarly, estimated total doses to the population within a 50-mile radius of these plants have fallen within a range from 0.0001 to 0.1 person-rem per year, with an average population dose of 0.006 person-rem per year. Doses at these levels are essentially immeasurable.

Based on this review of historical data, the staff concludes that for the proposed SFP expansion at Oyster Creek, the additional dose to the total body that might be received by an individual at the site boundary, and by the population within a 50-mile radius would be less than or equal to 0.1 millirem and 0.1 person-rem per year, respectively. These doses are very small compared to annual exposure of individuals to natural background radiation in the United States, which varies from about 70 millirems per year to about 300 millirems per year depending on geographical location.

4.0 NONRADIOLOGICAL ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

The nonradiological impacts of the Oyster Creek station, as designed, were considered in the FES issued in December 1974. No unusual terrestrial effects are anticipated or considered likely by the staff due to the proposed action. The only nonradiological discharge altered by the fuel pool modification is the waste heat. The contribution of the thirteen-year-old and older spent fuel assembles to the total station heat discharge will be unmeasurable and negligible. The major heat source in the SFP are the assemblies taken from the reactor following shutdown. After a cooling time of about 4 years the decay heat generation rate is less than 2% of the rate at 7 days, the nominal time at which depleted fuel assemblies are transferred to the SFP.

Furthermore, since Oyster Creek uses a once-through system for condenser cooling, the total contribution of waste heat from the fuel pool is a small fraction of total station heat discharge. No increase in service water usage is proposed. The licensee does not propose any change in chemical usage or changes to the National Pollution Discharge Elimination System (NPDES) discharge permit. Therefore, the staff concludes that the Oyster Creek SFP expansion will not result in nonradiological environmental effects significantly greater or different from those already reviewed and analyzed in the FES.

5.0 SUMMARY

The FGEIS on Handling and Storage of Spent Light Water Power Reactor Fuel concluded that the environmental impact of interim storage of spent fuel was negligible and 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 licensing SFP expansion on a case-by-case basis.

For Oyster Creek the expansion of the storage capacity of the SFP 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 a 50-mile 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 to workers during the modification of the storage racks is estimated by the licensee to be 25 person-rems. This is a small fraction of the total person-rems from occupational dose at the plant. The small increase in radiation dose should not affect the licensee's ability to maintain individual occupational dose within the limits of 10 CFR Part 20, and as low as reasonably achievable.

5.1 Alternative Use of Resources:

This action does not involve use of resources not previously considered in the Final Environmental Statement dated December 1974 for the Oyster Creek Nuclear Generating Station, nor does it involve conflicting use of limited available resources requiring consideration of other alternatives.

5.2 Agencies and Persons Consulted:

The NRC staff reviewed the licensee's request and did not consult other agencies or persons.

6.0 BASIS AND CONCLUSION FOR NOT PREPARING AN ENVIRONMENTAL IMPACT STATEMENT

The staff has reviewed this proposed facility modification relative to the requirements set forth in 10 CFR Part 51. Based on this assessment, the staff concludes that there are no significant radiological or non-radiological impacts associated with the proposed action and that the issuance of the proposed license amendment will have no significant impact on the quality of the human environment. Therefore, pursuant to 10 CFR 50.31, an environmental impact statement need not be prepared for this action.

7.0 ACKNOWLEDGMENT

This environmental assessment was prepared by:

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Each group of fuel assemblies removed from the core during refueling (after taking into account the number of assemblies and the average failed fuel fraction) would normally be expected to have approximately the same Kr-85 release rate characteristic over time as the other groups of spent fuel assemblies, steadily diminishing after its removal from the core. Thus, if the average failed fuel fraction in the groups of spent fuel removed is the same and the fuel pool is always filled to capacity, the average rate of release of Kr-85 from the SFP during the uniform periods between refuelings would be the same for all possible common release rate characteristics. For conservatism, a factor of 2 has been applied in the evaluation of annual releases of Kr-85 to account for possible nonuniformities in the average failed fuel fractions, in the lengths of the periods between refuelings, in the number of fuel assemblies removed per refueling, and in the Kr-85 release rate characteristics.

For simplicity of computation, the common release rate characteristic is assumed to be as follows. The group of failed fuel assemblies removed during each refueling releases all the Kr-85 contained in those assemblies at a uniform rate over the time interval until the next refueling. After that, no additional Kr-85 is released from the previously removed fuel assemblies. In other words, all the Kr-85 available for release is assumed to leak from the failed fuel before the next batch of spent fuel enters the pool.

NRC staff calculations, based on the above, show the average release of Kr-85, due to the present average of 120 fuel assemblies added to storage per annual outage, is expected to have been no more than approximately 43 Ci/yr. Under the proposed fuel management plan involving approximately 200 fuel assemblies per 17 month fuel cycle, the average Kr-85 release is expected to be no more than approximately 81 Ci/yr. The maximum dose to an individual as a result of this release is estimated to be less than 0.01 mrem/yr, which is insignificant relative to the dose from other radionuclides in effluents from the station.

Assuming that the spent fuel will be stored onsite for several years, Iodine-131 (I-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 I-131 inventory in the fuel will decay to negligible levels between refuelings.

Storing additional spent fuel assemblies is not expected to increase the bulk water temperature above the Technical Specification maximum of 125°F. 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 released 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. In addition, the station radiological effluent Technical Specifications, which are not being changed by this action, limit the total releases of gaseous activity.

3.3 Solid Radioactive Wastes

The concentration of radionuclides in the pool water is controlled by the filters and the demineralizer 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 cleanup system. The increase of radioactivity, if any, due to the proposed modification, should be minor because of the capability of the cleanup system to continuously remove radioactivity to acceptable levels.

The licensee does not expect any significant increase in the volume of solid waste generated from the SFP cleanup system due to the proposed modification. While the staff agrees with the licensee's conclusion, as a conservative estimate the staff has assumed that the amount of solid radwaste may be increased by an additional two demineralizer resin beds a year due to the increased operation of the SFP cleanup system. The annual average volume of solid wastes shipped from the Oyster Creek site during 1976 through 1980 was 54,000 cubic feet. If the storage of additional spent fuel does increase the amount of solid waste from the SFP cleanup systems by about 100 cubic feet per year, the increase in total waste volume shipped would be less than 1% and would not have any significant additional environmental impact.

The present spent fuel racks to be removed from the SFP because of the proposed modification are contaminated and will be packaged and shipped to a contractor's facility for additional decontamination and/or disposal in accordance with Federal and State regulations. The estimated volume of these wastes is 1500 cubic feet. Averaged over the lifetime of the plant, this would increase the total waste volume shipped from the facility by less than 1%. This will not have any significant additional environmental impact.

3.4 Liquid Radioactive Wastes

There should not be a significant increase in the liquid release of radionuclides from the plant as a result of the proposed modification. Since the SFP cooling and cleanup system operates 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 quantity nor activity of the floor cleanup water will change as a result of this modification. The SFP demineralizer resin removes soluble radioactive material 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. If any radioactive material is transferred from the spent resin to the sluice water, it will be removed by the liquid radwaste system for processing. 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.

3.5 Radiological Assessment

The licensee has estimated that the radiation doses incurred by workers taking part in the Oyster Creek SFP modification will be 25 person-rems. This is less than 2% of the annual average occupational radiation exposure experience of about 1300 person-rems at the plant.

The staff has completed an analysis of radiation exposure experience based on estimated source terms and assessment of public doses resulting from 38 prior SFP modifications at 37 plants.

Estimated doses to a hypothetical maximally exposed individual at the boundary of a plant site, during such modifications, have fallen within a range from 0.00004 to 0.1 millirem per year, with an average dose of 0.02 millirem per year. Similarly, estimated total doses to the population within a 50-mile radius of these plants have fallen within a range from 0.0001 to 0.1 person-rem per year, with an average population dose of 0.006 person-rem per year. Doses at these levels are essentially immeasurable.

Based on this review of historical data, the staff concludes that for the proposed SFP expansion at Oyster Creek, the additional dose to the total body that might be received by an individual at the site boundary, and by the population within a 50-mile radius would be less than or equal to 0.1 millirem and 0.1 person-rem per year, respectively. These doses are very small compared to annual exposure of individuals to natural background radiation in the United States, which varies from about 70 millirems per year to about 300 millirems per year depending on geographical location.

4.0 NONRADIOLOGICAL ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

The nonradiological impacts of the Oyster Creek station, as designed, were considered in the FES issued in December 1974. No unusual terrestrial effects are anticipated or considered likely by the staff due to the proposed action. The only nonradiological discharge altered by the fuel pool modification is the waste heat. The contribution of the thirteen-year-old and older spent fuel assembles to the total station heat discharge will be unmeasurable and negligible. The major heat source in the SFP are the assemblies taken from the reactor following shutdown. After a cooling time of about 4 years the decay heat generation rate is less than 2% of the rate at 7 days, the nominal time at which depleted fuel assemblies are transferred to the SFP.

Furthermore, since Oyster Creek uses a once-through system for condenser cooling, the total contribution of waste heat from the fuel pool is a small fraction of total station heat discharge. No increase in service water usage is proposed. The licensee does not propose any change in chemical usage or changes to the National Pollution Discharge Elimination System (NPDES) discharge permit. Therefore, the staff concludes that the Oyster Creek SFP expansion will not result in nonradiological environmental effects significantly greater or different from those already reviewed and analyzed in the FES.

5.0 SUMMARY

The FGEIS on Handling and Storage of Spent Light Water Power Reactor Fuel concluded that the environmental impact of interim storage of spent fuel was negligible and 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 licensing SFP expansion on a case-by-case basis.

For Oyster Creek the expansion of the storage capacity of the SFP 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 a 50-mile 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 to workers during the modification of the storage racks is estimated by the licensee to be 25 person-rems. This is a small fraction of the total person-rems from occupational dose at the plant. The small increase in radiation dose should not affect the licensee's ability to maintain individual occupational dose within the limits of 10 CFR Part 20, and as low as reasonably achievable.

5.1 Alternative Use of Resources:

This action does not involve use of resources not previously considered in the Final Environmental Statement dated December 1974 for the Oyster Creek Nuclear Generating Station, nor does it involve conflicting use of limited available resources requiring consideration of other alternatives.

5.2 Agencies and Persons Consulted:

The NRC staff reviewed the licensee's request and did not consult other agencies or persons.

6.0 BASIS AND CONCLUSION FOR NOT PREPARING AN ENVIRONMENTAL IMPACT STATEMENT

The staff has reviewed this proposed facility modification relative to the requirements set forth in 10 CFR Part 51. Based on this assessment, the staff concludes that there are no significant radiological or non-radiological impacts associated with the proposed action and that the issuance of the proposed license amendment will have no significant impact on the quality of the human environment. Therefore, pursuant to 10 CFR 50.31, an environmental impact statement need not be prepared for this action.

7.0 ACKNOWLEDGMENT

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