GPU NUCLEAR

GPU Nuclear, Inc.
U.S. Route #9 South
Post Office Box 388
Forked River, NJ 08731-0388
Tel 609-971-4000

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U. S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Washington, DC 20555

Subject: Oyster Creek Nuclear Generating Station
Facility License No. DPR-16
Docket No. 50-219
Response to Request for Additional Information re:
Proposed License Amendment for Spent Fuel Pool Expansion

The attachment to this letter provides our response to the request for additional information contained in the NRC letter dated November 12, 1999.

Should further information be required, please contact Mr. Paul F. Czaya of our Nuclear Safety and Licensing Department at 609-971-4139.

Very truly yours,

Sander Levin
Acting Director
Oyster Creek

Attachment

c: Administrator, USNRC Region I
USNRC Resident Inspector
Oyster Creek USNRC Project Manager

A001

PDR ADOCK 05000219

Attachment

1. In your submittal, you state that "Radiation levels in zones surrounding the pool are not expected to be affected significantly. Existing shielding around the fuel (water, stainless steel pool liner, and concrete wall) provides more than adequate protection, despite the slightly closer approach of the new racks to the wall of the pool." Discuss the calculation methodology used to draw the above conclusion, and provide the general (mean) increase in dose rates and the maximum dose rate increase (and locations) in, around and under the pool in accessible areas. You should describe how the dose rates will differ both during storage and movement of spent fuel.

Response

The calculation methodology for determining radiation dose rates in accessible areas external to the concrete pool wall utilized the ORIGEN-S and QAD codes. ORIGEN-S was used to compute the gamma radiation source terms from the spent fuel. QAD (a three-dimensional point kernel shielding code with buildup factors) was used to track the gamma radiation through water and steel walls of the storage cells and the concrete shield walls.

The area of potential increase in radiation level due to the installation of the additional spent fuel storage racks is the north sector of the spent fuel pool. This is the location of the new fuel racks indicated in Figure 1-1 of the Licensing Report (Holtec Report HI-981983) attached to our June 18, 1999 license amendment request. The increase in radiation levels inside the spent fuel pool has not been calculated. The only impact an increase in radiation levels would have inside the pool is on divers. The radiation protection of divers, although their use is not expected, during the rack installation process is addressed in response to question 2. The new racks will not be utilized until the installation is complete, therefore, there will be no increase in radiation levels at the time of installation. Subsequent to installation of the new spent fuel storage racks, any use of divers will be addressed, based upon the circumstances for their need, at that time.

The calculated dose rate at the external surface of the shield wall is 0.55 mr/hr. The general area dose rate would be less than this value absent other radiation sources. A recent survey indicated a maximum contact dose rate on the external surface of the north side shield wall of 0.4 mr/hr with other readings at 0.2 mr/hr or less on the 95-foot elevation of the reactor building. This area is essentially an occasionally used personnel corridor with no other significant radiation sources. At the 75-foot elevation contact dose rates at the shield wall were less than 2 mr/hr in the northeast sector. This area is directly adjacent to a high radiation area on the north side of the fuel pool shield wall where the radiation source is dominated by fuel pool cooling system components. The calculated dose rate of 0.55 mr/hr falls within the limits that would permit 10 hours/week occupancy

(FSAR Table 12.3-1) and is only slightly above the dose rate for unrestricted access allowed outside of controlled areas.

The area beneath the pool (at the ceiling level in the shutdown cooling system room) was conservatively calculated to be 10.4 mr/hr and falls in the range that would allow up to 5 hours occupancy per week. The shutdown cooling system room is currently a high radiation area. Shutdown cooling system components are the primary sources of radiation. Increased fuel storage will have a negligible effect on radiation levels in this area.

2. You note that there may be an emergent need to use divers during the rack installation project. Provide a description of any sources of high radiation that may be in the SFP during potential diving operations at any time during the installation process. Discuss what precautions (such as use of TV monitoring, tethers, etc.) will be used to ensure that the diver will maintain a safe distance from any high radiation sources in the SFP. Describe how you plan to monitor the doses received by the divers during the reracking operation (e.g., use of dosimetry, alarming dosimeters, remote readout radiation detectors). The NRC staff finds the information, methods and guidance (pertinent to diving) in Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas in Nuclear Power Plants," June 1983, acceptable for controlling diving operations.

Response

GPU Nuclear does not intend to employ divers during the installation of the new fuel racks. However, if there were an unusual circumstance that would dictate a need for diving operations, GPUN would implement procedures that meet the intent of Appendix A to Regulatory Guide 8.38 for the control of all diving operations.

3. Describe any surveys that will be performed (from the pool rim or by divers in the pool) to map dose rates in the SFP, or to check for contamination of material, equipment, or divers upon removal from the pool.

Response

Detailed radiation surveys will be performed in the spent fuel pool work area of the reactor building at the 119-foot elevation. The area of the spent fuel storage pool (SFSP) rim and/or hand railings will be surveyed to establish the general area radiation levels that workers will be exposed to during rack installation activities. Additional dose rates will be taken at contact around the spent fuel storage pool surface, rim and hand railings to identify any hot spots that might exist. This is done prior to work in the area to minimize dose to workers by either removing or shielding items.

Smear/swipe surveys will be taken at the work area of the SFSP around the rim and on the hand railings to identify surface contamination levels. Decontamination of the area may be warranted to help keep worker dose ALARA.

All equipment and/or materials used in the SFSP during rack installation will be rinsed off and wiped down upon removal from the pool. Radiological control technicians will perform radiation and smear surveys on all equipment and material removed from the SFSP.

In the event divers are employed during rack installation, detailed radiation surveys will be performed in the area of the dive and the immediate area around the dive area. The survey will be performed using two independent survey instruments that are in calibration and have been response checked with a known radiation source. Dose rates will be taken at different heights inside the fuel pool and any item that reads 1 Rem/hr or greater shall be identified as to what and where and documented on the survey map. Thermoluminescent dosimeters (TLD) will be placed inside the spent fuel pool as close to the work area as practical to verify the direct dose rates taken with the use of underwater instruments. The diver will also be provided with a survey instrument, trained in the use of the instrument and perform confirmatory surveys of the dive area.