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Big Rock Point Nuclear Plant 10269 US-31 North Charlevoix, MI 49720 Kenneth P. Powers Site General Manager

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Nuclear Regulatory Commission Document Control Desk Washington, DC 20555 - 0001

DOCKET 50-155 - LICENSE DPR-6 - BIG ROCK POINT PLANT -CRITICALITY ACCIDENT REQUIREMENTS

On December 14, 1998, the U.S. Nuclear Regulatory Commission amended its regulations to give licensees of light-water nuclear power reactors greater flexibility in meeting the requirements that licensees authorized to possess more than a small amount of special nuclear material (SNM) maintain a criticality monitoring system in each area in which the material is handled, used, or stored.

Pursuant to 50.68(a) of the Rule, Big Rock Point has elected to comply with the following requirements in 50.68(b) in lieu of maintaining a monitoring system capable of detecting a criticality as described in 10 CFR70.24

(1) Plant procedures shall prohibit the handling and storage at any one time of more fuel assemblies than have been determined to be safely subcritical under the most adverse moderation conditions feasible by unborated water.

Method: Big Rock Point Defueled Technical Specifications, Updated Final Hazards Safety Analysis, and plant procedures incorporate this requirement.

(2) The estimated ratio of neutron production to neutron absorption and leakage (keffective) of the fresh fuel in the fresh fuel storage racks shall be calculated assuming the racks are loaded with fuel of the maximum fuel assembly reactivity and flooded with unborated water and must not exceed 0.95, at a 95 percent probability, 95 percent confidence level. This evaluation need not be performed if administrative controls and/or design features prevent such flooding or if fresh fuel storage racks are not used.

Method: Consumers Energy Company notified the Nuclear Regulatory Commission (NRC) by letters dated June 18, and June 26, 1997, of its intentions to permanently cease operations of the Big Rock Point Nuclear Plant by August 30, 1997. On August 29, 1997, the plant was shutdown as certified. On September 22, 1997, a letter pursuant to 10 CFR Part 50.82(a)(1)(ii) was forwarded to the Commission, certifying that the fuel has been removed from the reactor vessel and placed in the spent fuel pool for storage. In accordance with 10 CFR 50.82(a)(2), upon docketing of the certifications for permanent cessation of operations and permanent removal of fuel from the reactor vessel, the 10 CFR Part 50 license no longer authorizes operation of the reactor or emplacement or retention of fuel into the reactor vessel. Therefore, since new, or "fresh" fuel is no longer stored or handled at the facility, the evaluation will not be performed.

(3) If optimum moderation of fresh fuel in the fresh fuel storage racks occurs when the racks are assumed to be loaded with fuel of the maximum fuel assembly reactivity and filled with low density hydrogenous fluid, the k-effective corresponding to this optimum moderation must not exceed 0.98, at a 95 percent probability, 95 percent confidence level. This evaluation need not be performed if administrative controls and/or design features prevent such moderation or if fresh fuel storage racks are not used.

Method: Since new, or "fresh" fuel is no longer stored or handled at the facility, the evaluation will not be performed (see (3) above).

(4) If no credit for soluble boron is taken, the k-effective of the spent fuel storage racks loaded with fuel of the maximum fuel assembly reactivity must not exceed 0.95, at a 95 percent probability, 95 percent confidence level, if flooded with unborated water. If credit is taken for soluble boron, the k-effective of the spent fuel storage racks loaded with fuel of the maximum fuel assembly reactivity must not exceed 0.95, at a 95 percent probability, 95 percent confidence level, if flooded with fuel of the maximum fuel assembly reactivity must not exceed 0.95, at a 95 percent probability, 95 percent confidence level, if flooded with borated water, and the k-effective must remain below 1.0 (subcritical), at a 95 percent confidence level, if flooded with unborated water.

Method: Spent fuel is stored in spent fuel storage racks which are designed and shall be maintained with sufficient center-to-center distance between stored fuel assemblies to ensure a k_{eff} less than or equal to 0.95 when the racks are flooded with unborated water.

The fuel loading per axial centimeter of any assembly placed in the Spent Fuel Pool shall be less than or equal to a maximum of 28.3 grams of U^{235} or equivalent.

Fuel inspection stations, if installed, shall be designed and maintained with sufficient center-to-center distance between fuel assemblies placed in the inspection stations to ensure a k_{eff} less than or equal to 0.95 when flooded with unborated water.

Reference: Updated Final Hazards Summary Report Section 9.1.2.1.1

(5) The quantity of SNM, other than nuclear fuel stored onsite, is less than the quantity necessary for a critical mass.

Method: The amount of non-fuel SNM at the facility has been verified to be less than the SNM contained in one fuel bundle. Therefore the quantity necessary for a critical mass does not exist at the facility.

(6) Radiation monitors are provided in storage and associated handling areas when fuel is present to detect excessive radiation levels and to initiate appropriate safety actions.

Method: Radiation levels in the area of the Spent Fuel Pool shall normally be monitored by two gamma radiation monitors, each with a locally and remotely audible alarm set at not less than 5 millirems per hour and not more than 20 millirems per hour. At least one monitor is required to be OPERABLE. The monitors shall have remote indication and the capability of recording data.

Reference: Defueled Technical Specifications: 3.1.1.d

(7) The maximum nominal U-235 enrichment of the fresh fuel assemblies is limited to five (5.0) percent by weight.

Method: Fresh fuel assemblies are no longer stored or handled at the facility.

(8) The FSAR is amended no later than the next update which 10 CFR 50.71(e) of this part requires, indicating that the licensee has chosen to comply with 10 CFR 50.68(b).

Method: The next required update of the facility's Updated Final Hazards Summary Report is February, 2000. The update will include a statement that Big Rock Point has chosen to comply with 50.68(b).

In summary, Big Rock Point has certified its decommissioning status with the NRC and therefore will only be working with spent fuel pool and dry cask fuel configuration considerations. New fuel and reactor loading configurations no longer apply.

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cc: Administrator, Region III NRC Reactor Decommissioning Inspector - BRP NRR Project Manager - OWFN, USNRC