June 23, 2017

MEMORANDUM TO: Mohammed A. Shuaibi, Deputy Director
Division of Reactor Safety
Region III

FROM: Kathryn M. Brock, Deputy Director ***/RA/***
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNIT NOS. 1 AND 2 – NRR POSITION ON NCV 05000315/2014005-03; 05000316/2014005-03; RADIOLOGICAL IMPACT OF THE REMOVAL OF THE AUXILIARY SHIELD BLOCKS ON THE CONTAINMENT ACCIDENT SHIELD POST LBLOCA

On March 17, 2017, a teleconference was held between the U.S. Nuclear Regulatory Commission (NRC) Office of Nuclear Reactor Regulation (NRR) and NRC Region III regarding the corrective actions performed by Indiana Michigan Power Company (I&M, the licensee), in response to a non-cited violation (NCV) against Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix B, Criterion 3, "Design Control," which requires that design changes be subject to design control measures commensurate with those applied to the original design. The NCV was issued in an inspection report dated February 10, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15042A380). The violation was identified by NRC inspectors for the licensee's inadequate radiological review of permanently removing auxiliary missile blocks (AMBs) from the Donald C. Cook Nuclear Plant (CNP), Unit Nos. 1 and Unit 2, containment accident shields. The inspection report stated that "by permanently removing the AMBs, the licensee failed to provide for safe radiation levels outside the containment building following a maximum design-basis accident." The removal of the AMBs was performed under 10 CFR 50.59, and the regional inspectors have determined that the licensee correctly followed the NRC-approved 10 CFR 50.59 process. In response to the NCV, the licensee took several corrective actions, which included improving evacuation procedures and adding postings to the access points. However, the licensee does not consider restoration of the AMBs, or installation of equivalent shielding, to be required for regulatory compliance.

In order to evaluate the adequacy of the licensee's corrective actions, the NRC staff in Region III requested that NRR provide clarification of the requirements for protecting occupational workers from radiation exposure during a design basis accident. During the March 17, 2017 call, the staff agreed that the request could be summarized as follows: Clarify the occupational dose requirements for personnel evacuating from non-vital areas during a design basis accident at CNP.

Requirements for accident shielding are located in 10 CFR 50.34(f)(2)(vii), which references NUREG 0737, "Clarification of TMI Action Plan Requirements," II.B.2. Section II.B.2 of NUREG 0737, requires that each licensee perform shielding design review of the spaces that may contain highly radioactive materials as a result of an accident. The design review should

identify the location of vital areas in which occupancy may be limited by post-accident radiation levels, and provide for adequate access to these vital areas. NUREG 0737 defines a vital area as “any area which will or may require occupancy to permit an operator to aid in the mitigation of or recovery from an accident.”

At CNP, the areas of the plant affected by the removed AMBs are the areas outside of the equipment access hatches for each unit. The licensee calculated that without the AMBs, radiation levels outside of the equipment access hatches would result in lethal doses to individuals in a very short period of time in the event of a postulated design basis accident. However, access to this area would not be required to mitigate the design basis accident. Therefore, this area is not considered a vital area, and the requirements of 10 CFR 50.34(f)(2)(vii) do not apply.

The inspection report dated February 10, 2015, states that the removal of the AMBs was inconsistent with the requirements of 10 CFR 20.1101, Radiation Protection Programs. The inspection report specifically references 10 CFR 20.1101(b), which requires that each licensee use procedures and engineering controls to achieve occupational doses and doses to the public that are as low as reasonably achievable. However, as stated in the 1992 Statements of Consideration (56 FR 23387), compliance with 10 CFR 20.1101 does not require that radiation doses be an absolute minimum, nor that all possible methods have been used to reduce exposure. Additionally, there is no requirement for the licensee to demonstrate radiation doses are ALARA during the extremely unlikely event of a reactor accident. Therefore, 10 CFR 20.1101 is not applicable in this case.

In summary, the licensee is not required to limit the dose to occupational workers in non-vital areas during design basis accidents. There is no regulation related to radiation exposure that would require restoration of the AMBs or installation of equivalent shielding at CNP.

Docket Nos. 50-315 and 50-316

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