[7590-01-P]

NUCLEAR REGULATORY COMMISSION

[NRC-2012-0284; Docket No. 50-247; License No. DPR-26]

Entergy Nuclear Operations, Inc., Entergy Nuclear Indian Point Unit 2, LLC,

Issuance of Director's Decision

Notice is hereby given that the Deputy Director, Reactor Safety Programs, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission (NRC) has issued a Director's Decision on a petition filed by the Natural Resources Defense Council, Inc., (hereafter referred to as "the petitioner"). The petition, dated April 16, 2012 (available as Agencywide Documents Access and Management System (ADAMS) Accession No. ML12108A052), concerns the operation of Indian Point Nuclear Generating Unit No. 2 (Indian Point 2), owned by Entergy Nuclear Indian Point 2, LLC, and operated by Entergy Nuclear Operations, Inc.

The petitioner requested that the NRC order the licensee for Indian Point 2 to remove the passive autocatalytic recombiners (PARs) from the containment building and replace them with electrically powered thermal hydrogen recombiners because the PAR system could have unintended ignitions in the event of a severe reactor accident, which in turn could cause a hydrogen detonation. The petitioner stated that experimental data demonstrates that Indian Point 2's two PAR units could have at least one unintended ignition on their catalytic surfaces following a severe reactor accident.

As the basis for the request, the petitioner stated, in part, that:

- The PAR systems are simple devices consisting of catalyst surfaces where spontaneous catalytic reactions occur in the presence of hydrogen and oxygen to form water vapor.

PARs are passive systems and do not need external power supplies or operator action to function. As a consequence, control room operators cannot deactivate them or remove them from service.

- The PARs at Indian Point 2 are capable of controlling hydrogen generated from the NRC's design-basis accident as described in the Indian Point 2 updated final safety analysis report. The focus of the petition regards the behavior of PARs following a severe reactor accident.

- Following a severe reactor accident, hydrogen generation rates could overwhelm the PARs at Indian Point 2. As a result, the containment atmosphere could have elevated concentrations of hydrogen gas approaching eight to 10 percent or greater.

- The petition cites data from tests, including work sponsored by the NRC at the Sandia National Laboratory's Surtsey test facility, where PARs were observed to have unintended ignitions in environments containing elevated levels of hydrogen gas (i.e., eight to 10 percent). According to the petitioner, ignitions could lead to detonations.

- The NRC has not published any documentation indicating that the issue of PAR ignitions has been studied and resolved.

- Removal of the PARs at Indian Point 2 will lead to a safer post-accident condition because a potential source of ignition would be removed. Furthermore, if the PARs are replaced by electrically powered hydrogen thermal recombiners, control-room operators would have the option of deactivating them because electrically powered hydrogen

thermal recombiners can also have unintended ignitions.

The NRC sent a copy of the proposed Director's Decision to the petitioner and the licensee for comment on March 29, 2013. The Petitioner and the licensee were asked to provide comments within 30 days on any part of the proposed Director's Decision that was considered to be erroneous or any issues in the petition that were not addressed. Comments were not received from either the Petitioner or the licensee.

The Deputy Director of the Office of Nuclear Reactor Regulation denied the petitioner's request to order the removal of the two PAR units from the Indian Point 2 containment building and replace them with electrically powered thermal hydrogen recombiners. The NRC staff has reviewed the petition and does not agree that the presence of PARs represents a sufficient risk to warrant their removal by order. Following a severe reactor accident, multiple ignition sources, besides PARs, would be present in containment to initiate combustion at lower flammability limits, which would be expected to keep hydrogen concentrations below detonable levels. Furthermore, the NRC staff believes that the presence of PARs could prove beneficial in the event of an extended station blackout.

The Director's Decision (DD-13-01) under part 2.206 of Title 10 of the *Code of Federal Regulations*, "Requests for Action under This Subpart," explains the reasons for this decision. The complete text is available in ADAMS under Accession No. ML13128A436 for inspection at the Commission's Public Document Room located at One White Flint North, Public File Area 01 F21, 11555 Rockville Pike (first floor), Rockville, Maryland, and online in the NRC library at http://www.nrc.gov/reading-rm.html.

The NRC will file a copy of the Director's Decision with the Secretary of the Commission for the Commission's review in accordance with 10 CFR 2.206. As a provision of this regulation, the Director's Decision will constitute the final action of the Commission 25 days after

the date of the Decision unless the Commission, on its own motion, institutes a review of the Director's Decision in that time.

Dated at Rockville, Maryland, this 7th day of June 2013.

FOR THE NUCLEAR REGULATORY COMMISSION.

/RA/

Jennifer L. Uhle, Deputy Director,
Reactor Safety Programs,
Office of Nuclear Reactor Regulation.

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