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NL-17-017

February 09, 2017

U.S. Nuclear Regulatory Commission
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SUBJECT: Comments on Proposed Director's Decision for 10 CFR 2.206 Petition on Indian Point Baffle Former Bolts Filed by the Union of Concerned Scientists
Docket Nos. 50-247 and 50-286 (License Nos. DPR-26 and DPR-64)

REFERENCES:
1) USNRC Letter, "Proposed Director's Decision Under 10 CFR 2.206" (January 11, 2017) (ML16320A269)
2) UCS 10 CFR 2.206 Petition Seeking Three Enforcement Actions Regarding Baffle-Former Bolt Degradation at the Indian Point Energy Center (June 30, 2016) (ML16187A186)
3) UCS Letter, "Scope Reductions for 10 CFR 2.206 Petition on Baffle Bolt Degradation at Indian Point" (January 10, 2017) (ML17011A012)

Dear Sir or Madam:

By letter dated January 11, 2017 (Reference 1), the Nuclear Regulatory Commission ("NRC") provided to Entergy Nuclear Operations, Inc. ("Entergy") the NRC Staff's Proposed Director's Decision on the Union of Concerned Scientists' ("UCS") June 30, 2016 10 CFR 2.206 enforcement petition ("Petition") related to the identification of degraded baffle-former bolts ("BFB") at Indian Point Nuclear Generating Unit 2 ("IP2") (Reference 2). The NRC requested that Entergy provide comments, within 30-days of the proposed decision, on any portions of the decision it believes are incorrect or any issues in the Petition that were not fully addressed. This letter provides Entergy's comments and clarifications on the Proposed Decision.

The UCS Petition originally requested that NRC take three enforcement actions against Entergy related to IP2 and IP3. But as noted by NRC, on January 10, 2017, UCS withdrew the first two requested enforcement actions (Reference 3). As to enforcement action 1, seeking an Order requiring installation of an upflow modification on Unit 2 during its next refueling outage, UCS referenced the recently announced agreement to reduce the operating life of IP2 and IP3 and related commitments in that agreement to conduct enhanced inspections of BFB at both IP2 and IP3. As noted by UCS, "the inspections should protect against degradation during the shortened period of reactor operations specified in the agreement." NRC's proposed Director's Decision, however, included responses to all three requested enforcement actions to document the regulatory basis for the staff's decision making.

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Entergy believes that the Proposed Director's Decision provides a complete and generally accurate basis for denying the requested enforcement actions. Entergy, however, wishes to clarify certain NRC statements regarding Entergy's planned corrective actions related to BFB degradation at IP2 and IP3. Specifically, in response to requested enforcement action 1, NRC states that "Entergy has committed to inspect BFBs and reconfigure the reactor core flow from downflow to upflow during the next refueling outage at Indian Point Unit No. 2." NRC noted that these corrective actions may be modified based on the results of the failure analysis of the BFBs and future industry developments. NRC also noted that Entergy may choose to modify or delete these commitments in accordance with Entergy's Corrective Action Program. As discussed further below, Entergy no longer plans to install the upflow modification at IP2 or IP3 and, instead, will conduct enhanced inspections of BFBs at IP2 and IP3 during future refueling outages.

As a corrective action to the BFB degradation identified at IP2 during the 2016 refueling outage, eight BFBs removed from the IP2 baffle structure during the 2016 outage were examined by the Westinghouse hot lab testing facility. The Westinghouse fractography examinations indicated that the cause of the IP2 baffle bolt failures was a complex combination of Intergranular Stress Corrosion Cracking, fatigue caused by cyclical loads, and ductile tearing/overload when the flaw reached a size where the remaining bolt ligament was insufficient to carry the remaining load. While the time from crack initiation to final bolt failure could not be precisely established, based on the oxides detected on the fracture surfaces, it is likely that the time period between crack initiation and final bolt failure occurred over several operating cycles. As a result of these findings and other industry operating experience, Entergy has implemented the following corrective actions:

- The IP3 baffle bolt inspections previously scheduled to be performed in 3R20 (Spring 2019) will be performed in 3R19 (Spring 2017). Visual and UT inspections on 100% of all accessible baffle former bolts, and a visual inspection of the accessible baffle-edge bolts and baffle former assembly, will be performed in 3R19.
- Entergy will perform a UT inspection of 100% of the original bolts at IP2 and IP3 during each of the subsequent refueling outages if any of the original bolts are required to remain structurally capable of carrying their design load to ensure structural integrity of the baffle structure during all design conditions.
- Entergy will also perform a general visual inspection to identify anomalies in the baffle structure at IP2 and IP3 during each subsequent refueling outage.
- Entergy will perform a UT inspection of inservice replaced (new) bolts if the general visual inspections identify degraded new bolts.
- Entergy will replace all bolts with indications that are needed to remain structurally capable of carrying their design load to ensure structural integrity of the baffle structure during all design conditions. Additional "good" or anti-cluster bolts will also be replaced to ensure that sufficient margin is maintained to accommodate the same failure rate until the next inspection as the failure rate identified during the current refueling outage.

The above corrective actions have been incorporated into the IP2 and IP3 Reactor Vessel Internals Aging Management Program and Inspection Plan and documented in Entergy's corrective action program.

Entergy believes that these planned corrective actions establish a reasonable and technically appropriate approach for managing aging of BFBs at IP2 and IP3 through end-of-life, and

therefore it no longer plans to install the upflow modification at either IP2 or IP3. Entergy will also document this revised corrective action in accordance with its Corrective Action Program.

As noted above, UCS withdrew its requested enforcement action related to the upflow modification, based on its conclusion that "the inspections should protect against degradation during the shortened period of reactor operations specified in the agreement." Accordingly, no further action is required by NRC related to its Proposed Director's Decision.

There are no new commitments being made in this submittal.

Should you have any questions concerning this report, please contact Mr. Robert W. Walpole, Licensing Manager, at (914) 254-6710.

Sincerely,

AJV/mm

cc: Mr. Daniel H. Dorman, Regional Administrator, Region I, NRC
Ms. Jane Marshall, Acting Branch Chief, NRR/DLR, NRC
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