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10 CFR 2.202
EA-12-049

NL-19-073

October 22, 2019

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: Request for Relaxation of Order Modifying Licenses with Regard to
Requirements for Mitigation Strategies for Beyond-Design-Basis External Events
(Order Number EA-12-049)

Indian Point Nuclear Generating Units 2 and 3
NRC Docket Nos. 50-247 and 50-286
Renewed Facility Operating License Nos. DPR-26 and DPR-64

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued Order EA-12-049 (Reference 1) to all power reactor licensees. The Order was effective immediately and directed Entergy Nuclear Operations, Inc. (Entergy) to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool (SFP) cooling capabilities following a Beyond-Design-Basis External Event (BDBEE) at Indian Point Nuclear Generating Units 2 and 3 (IP2 and IP3, respectively). The specific requirements for compliance with the Order are contained in Attachment 2 of Reference 1.

In accordance with the implementation schedule specified in Section IV of the Order, IP3 achieved full compliance with the Order on March 24, 2015 and IP2 achieved full compliance on June 14, 2016. In References 2 and 3, Entergy provided the respective IP3 and IP2 required reports of full compliance with Order EA-12-049. Enclosure 2 of Reference 3 provided the associated Indian Point Energy Center (IPEC) Final Integrated Plan describing the IP2 and IP3 strategies for mitigating a simultaneous loss of all alternating current (AC) power and loss of normal access to the ultimate heat sink resulting from a BDBEE by providing adequate capability to maintain or restore core cooling, containment, and SFP cooling capabilities.

In Reference 4, the NRC provided the results of their review of the strategies and equipment provided for IP2 and IP3 to maintain or restore core cooling, containment, and SFP cooling capabilities following a BDBEE. In the Reference 4 safety evaluation, the NRC concluded that the licensee (Entergy) has developed guidance to maintain or restore core cooling, SFP cooling, and containment following a BDBEE which, if implemented appropriately, should adequately address the requirements of Order EA-12-049. As documented in the Reference 5 inspection report, the NRC examined Entergy's established guidelines and implementing procedures for

the BDBEE mitigation strategies for IP2 and IP3 and verified that Entergy was in compliance with Order EA-12-049 upon completion of the inspection.

In Reference 6, Entergy notified the NRC that it has decided to permanently cease power operations of IP2 by April 30, 2020 and IP3 by April 30, 2021.

The purpose of this letter is to request relaxation of the requirements of Order EA-12-049 that were imposed on IP2 and IP3 to maintain or restore core cooling and containment capabilities following a BDBEE. The relaxation of these requirements would become effective upon each unit's docketing of the Title 10 of the Code of Federal Regulations (10 CFR) 50.82(a)(1) certifications for permanent cessation of operations and permanent removal of fuel from the reactor vessel. The Enclosure to this letter provides the good cause justification for this request.

Entergy requests review and approval of this request by May 15, 2020.

If you have any questions or require additional information, please contact Ms. Mahvash Mirzai, Acting Manager, Regulatory Assurance, at (914) 254-7714.

There are no new regulatory commitments made in this letter.

I declare under penalty of perjury that the foregoing is true and correct. Executed on October 22, 2019.

Respectfully,

A handwritten signature in blue ink, appearing to read "Ron Gaston", with a stylized flourish at the end.

Ron Gaston

RWG/cdm

Enclosure: Request for Relaxation of Provisions of Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)

- References:
1. NRC Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," (ADAMS Accession No. ML12054A735), dated March 12, 2012
 2. Entergy Nuclear Operations, Inc. (Entergy) letter to U.S. Nuclear Regulatory Commission (NRC), "Notification of Full Compliance with Order EA-12-049, 'Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events,' and Order EA-12-051 'Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation' (TAC Nos. MF0745 and MF0738), Indian Point Unit Number 3, Docket No. 50-286, License No. DPR-64," (Letter No. NL-15-059) (ADAMS Accession No. ML15149A140), dated May 20, 2015
 3. Entergy letter to NRC, "Notification of Full Compliance with Order EA-12-049, 'Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events,' and Order EA-12-051 'Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation' (TAC Nos. MF0744 and MF0737), Indian Point Unit Number 2, Docket No. 50-247, License No. DPR-26," (Letter No. NL-16-089) (ADAMS Accession No. ML16235A292), dated August 12, 2016
 4. NRC letter to Entergy, "Indian Point Nuclear Generating Unit Nos. 2 and 3 – Safety Evaluation Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Pool Instrumentation Related to Order EA-12-049 and EA-12-051 (CAC Nos. MF0737, MF0738, MF0744, and MF0745)," (ADAMS Accession No. ML17065A171), dated March 27, 2017
 5. NRC letter to Entergy, "Indian Point Nuclear Generating – Temporary Instruction 2515/191 Inspection Report 05000247/2017010 and 05000286/2017010," (ADAMS Accession No. ML18031A358), dated January 31, 2018
 6. Entergy letter to NRC, "Notification of Permanent Cessation of Power Operations," (Letter No. NL-17-021) (ADAMS Accession No. ML17044A004), dated February 8, 2017

cc: Director, Office of Nuclear Reactor Regulation
NRC Senior Project Manager, NRC NRR DORL
Regional Administrator, NRC Region I
NRC Senior Resident Inspector, Indian Point Energy Center
President and CEO, NYSEERDA
New York State (NYS) Public Service Commission

Enclosure

NL-19-073

**Request for Relaxation of Provisions of Commission Order Modifying Licenses
with Regard to Requirements for Mitigation Strategies for
Beyond-Design-Basis External Events (Order Number EA-12-049)**

I. Request for Relaxation of Order

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," (Reference 1) to all power reactor licensees. The Order was effective immediately and directed Entergy Nuclear Operations, Inc. (Entergy) to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool (SFP) cooling capabilities following a beyond-design-basis external event (BDBEE) at Indian Point Nuclear Generating Units 2 and 3 (IP2 and IP3, respectively). Section IV of the Order required that Entergy submit to the NRC for review an overall integrated plan by February 28, 2013 describing how compliance with the requirements of the Order will be achieved. Reference 2 provided the required overall integrated plan for IP2 and IP3.

Full compliance with Order EA-12-049 was achieved for IP3 on March 24, 2015 and IP2 achieved full compliance on June 14, 2016. In References 3 and 4, Entergy provided the respective IP3 and IP2 required reports of full compliance with the Order, documenting the bases for compliance. Enclosure 2 of Reference 4 provided the associated Indian Point Energy Center (IPEC) Final Integrated Plan describing the IP2 and IP3 strategies for mitigating a simultaneous loss of all alternating current (AC) power and loss of normal access to the ultimate heat sink resulting from a BDBEE by providing adequate capability to maintain or restore core cooling, containment, and SFP cooling capabilities.

In Reference 5, the NRC provided the results of their review of the IP2 and IP3 strategies, equipment, and resources for mitigating BDBEEs in order to maintain or restore core cooling, containment, and SFP cooling capabilities. In the Reference 5 safety evaluation, the NRC concluded that the licensee (Entergy) has developed guidance to maintain or restore core cooling, SFP cooling, and containment following a BDBEE which, if implemented appropriately, should adequately address the requirements of Order EA-12-049.. As documented in the Reference 6 inspection report, the NRC examined Entergy's established guidelines and implementing procedures for the BDBEE mitigation strategies for IP2 and IP3, and verified that the appropriate elements of the mitigation strategies for BDBEEs had been satisfactorily implemented and determined that Entergy was in compliance with Order EA-12-049 upon completion of the inspection.

In Reference 7, Entergy notified the NRC that it has decided to permanently cease power operations of IP2 by April 30, 2020 and IP3 by April 30, 2021.

In accordance with Section IV of Order EA-12-049, Entergy hereby requests that the NRC relax the requirements of the Order that were imposed on IP2 and IP3 to maintain or restore core cooling and containment capabilities following a BDBEE. Relaxation of these requirements would become effective upon each unit's docketing of the Title 10 of the Code of Federal Regulations (10 CFR) 50.82(a)(1) certifications for permanent cessation of operations and permanent removal of fuel from the reactor vessel.

II. Basis for Relaxation Request

Section IV of Order EA-12-049 (Reference 1) provides the NRC Director of the Office of Nuclear Reactor Regulation the authority to relax or rescind any or all of the conditions of the Order upon demonstration by the licensee of good cause.

By letter dated February 8, 2017 (Reference 7), Entergy notified the NRC of the decision to permanently cease power operations of IP2 by April 30, 2020 and IP3 by April 30, 2021.

Section III of Order EA-12-049 states that the Commission determined that all power reactor licensees and construction permit holders must develop, implement, and maintain guidance and strategies to restore or maintain core cooling, containment, and SFP cooling capabilities in the event of a BDBEE. This statement forms the basis of the Order and reflects the need to effectively deploy limited resources to mitigate very low frequency events with the potential to challenge both the reactor and SFP.

Permanent cessation of operations at IP2 and IP3 will occur at the end of each unit's current operating cycle, and no later than April 30, 2020 and April 30, 2021, respectively. It is estimated that all fuel in the reactor will be relocated to each unit's SFP within approximately 11 days of the permanent shutdown date. The lack of fuel in the reactor vessel and resulting absence of challenges to the containment (i.e., no credible source of large mass and energy releases) render the development of guidance and strategies to maintain or restore core cooling and containment capabilities unnecessary.

Entergy has informed the NRC of its decision to permanently cease power operations of IP2 and IP3 at the end of each unit's current operating cycle. Upon docketing of the 10 CFR 50.82(a)(1) certifications for permanent cessation of operations and permanent removal of fuel from the reactor vessel, the 10 CFR Part 50 license will no longer authorize operation of the reactor or emplacement or retention of fuel in the reactor vessel, obviating the need to maintain or restore core cooling and containment for BDBEE mitigation. In the event of a challenge to the safety of the fuel stored in the SFP, decision-makers would not have to prioritize actions. The safety of the irradiated fuel in the SFP would be the primary focus for site personnel for mitigation of a BDBEE. Thus, the Order EA-12-049 requirements for guidance and strategies to maintain or restore core cooling and containment capabilities will no longer apply to the configurations of IP2 and IP3 upon their respective docketing of the 10 CFR 50.82(a)(1) certifications.

III. Spent Fuel Pool Cooling

During IP2 and IP3 decommissioning, the spent fuel pit cooling loop will be maintained at each unit to provide SFP cooling until all spent fuel has been transferred from the unit's SFP to dry storage containers at the onsite Independent Spent Fuel Storage Installation (ISFSI).

At IP2 and IP3, each unit's spent fuel pit cooling loop serves to provide SFP cooling, as described in Section 9.3 of the IP2 and IP3 Updated Final Safety Analysis Report. The spent fuel pit cooling loop is part of the Auxiliary Coolant System and is designed to remove the residual heat generated by the spent fuel elements placed in the SFP for long term storage. The IP2 SFP contains spent fuel discharged from the IP2 and IP3 reactors.

The IP2 and IP3 spent fuel pit cooling loops each consist of two pumps, heat exchanger, filter, demineralizer, piping, and associated valves and instrumentation. Redundancy of this equipment is not required because of the large heat capacity of the pit and slow heat up rate. Each spent fuel pit cooling loop can safely accommodate the heat load from all of the fuel elements for which there is storage space available, including the heat load associated with a full core offload. In the unlikely event of a loss of spent fuel pit loop cooling, existing design features and capabilities are available for mitigation until the spent fuel pit cooling loop can be restored, alternate means of SFP cooling established, or offsite resources obtained. The existing capabilities for mitigation of a loss of SFP cooling are enhanced by virtue of the continued full compliance status with the SFP cooling capability requirements of Order EA-12-049 and the applicable extensive damage mitigation guidelines as required by 10 CFR 50.155(b)(2) that are retained as license conditions in the IP2 and IP3 Renewed Facility Operating Licenses. In addition, letters of agreement with Buchanan Engine Company No. 1, Inc. and the Verplanck Fire Department are in place to provide emergency support and trained manpower with the capabilities to provide makeup cooling water for SFP cooling in addition to fire suppression and medical response.

IV. Precedent

This request for relaxation of the requirements of Order EA-12-049 that were imposed on IP2 and IP3 to maintain or restore core cooling and containment capabilities following a BDBEE is similar to the request that was approved by the NRC on December 14, 2018 for Oyster Creek Nuclear Generating Station (Reference 8), and which became effective upon docketing of the 10 CFR 50.82(a)(1)(i) and (ii) certifications for permanent cessation of operations and permanent removal of fuel from the reactor vessel. The basis for this request, as presented in Section II, is consistent with the Statements of Consideration published in the Federal Register for the "Mitigation of Beyond-Design-Basis Events, Final Rule [10 CFR 50.155]" (Reference 9) and the 10 CFR 50.155(a)(2)(i) exemption of the core cooling and containment capability requirements from the applicability of the regulation once a licensee has submitted the 10 CFR 50.82(a)(1) certifications. The 10 CFR 50.155 rulemaking also includes a provision that will withdraw Order EA-12-049 for IP2 and IP3 on September 9, 2022. This request for relaxation of the requirements of the Order upon docketing of the 10 CFR 50.82(a)(1) certifications remains necessary because the certifications for IP2 and IP3 will be submitted and docketed before the automatic withdrawal of the Order.

V. Conclusion

Upon docketing of the 10 CFR 50.82(a)(1) certifications for permanent cessation of operations and permanent removal of fuel from the reactor vessel, the 10 CFR Part 50 licenses for IP2 and IP3 will no longer authorize operation of the reactors or emplacement or retention of fuel in the reactor vessels. Since IP2 and IP3 will be permanently shutdown and defueled, all fuel in the reactor will be relocated to the SFPs. Therefore, all nuclear fuel will be permanently removed from the reactor vessel and containment upon shutdown of the unit. The lack of fuel in the reactor vessel and the resulting absence of challenges to the containment render the development of guidance and strategies to maintain or restore core cooling and containment capabilities unnecessary. The current full compliance with Order EA-12-049 provides

assurance that the required guidance and strategies for mitigating a simultaneous loss of all AC power and loss of normal access to the ultimate heat sink resulting from a BDBEE are acceptable. The guidance and strategies for the SFP cooling capabilities to mitigate a BDBEE will be maintained until it can be demonstrated that the requirements no longer apply and the Order is withdrawn or rescinded.

The foregoing evaluation demonstrates that the Order EA-12-049 requirements that were imposed on IP2 and IP3 to maintain or restore core cooling and containment capabilities following a BDBEE are unnecessary upon each unit's permanent shutdown and defuel. Entergy's docketing of the 10 CFR 50.82(a)(1) certifications for permanent cessation of operations and permanent removal of fuel from the reactor vessel and acknowledgement that the 10 CFR Part 50 licenses for IP2 and IP3 no longer authorize operation of the reactor or emplacement of fuel into the reactor will demonstrate good cause for the relaxation of the core cooling and containment capability requirements specified in the Order.

Based on the above, the Director, Office of Nuclear Reactor Regulation is requested to relax the requirements of Order EA-12-049 that were imposed on IP2 and IP3 to maintain or restore core cooling and containment capabilities following a BDBEE. The relaxation of these requirements would become effective upon each unit's docketing of the 10 CFR 50.82(a)(1) certifications for permanent cessation of operations and permanent removal of fuel from the reactor vessel.

VI. References

1. U.S. Nuclear Regulatory Commission (NRC) Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," (ADAMS Accession No. ML12054A735), dated March 12, 2012
2. Entergy Nuclear Operations, Inc. (Entergy) letter to NRC, "Overall Integrated Plan in Response to March 12, 2012, Commission Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), Indian Point Unit Numbers 2 and 3, Docket Nos. 50-247 and 50-286, License Nos. DPR-26 and DPR-64," (Letter No. NL-13-042) (ADAMS Accession No. ML13079A348), dated February 28, 2013
3. Entergy letter to NRC, "Notification of Full Compliance with Order EA-12-049, 'Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events,' and Order EA-12-051 'Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation' (TAC Nos. MF0745 and MF0738), Indian Point Unit Number 3, Docket No. 50-286, License No. DPR-64," (Letter No. NL-15-059) (ADAMS Accession No. ML15149A140), dated May 20, 2015
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5. NRC letter to Entergy, "Indian Point Nuclear Generating Unit Nos. 2 and 3 – Safety Evaluation Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Pool Instrumentation Related to Order EA-12-049 and EA-12-051 (CAC Nos. MF0737, MF0738, MF0744, and MF0745)," (ADAMS Accession No. ML17065A171), dated March 27, 2017
6. NRC letter to Entergy, "Indian Point Nuclear Generating – Temporary Instruction 2515/191 Inspection Report 05000247/2017010 and 05000286/2017010," (ADAMS Accession No. ML18031A358), dated January 31, 2018
7. Entergy letter to NRC, "Notification of Permanent Cessation of Power Operations," (Letter No. NL-17-021) (ADAMS Accession No. ML17044A004), dated February 8, 2017
8. NRC letter to Exelon Generation Company, LLC, "Oyster Creek Nuclear Generating Station – Withdrawal of Order EA-12-049, 'Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events' (EPID No. L-2018-JLD-0007)," (ADAMS Accession No. ML18176A071), dated December 14, 2018
9. Federal Register, "Mitigation of Beyond-Design-Basis Events, Final Rule [10 CFR 50.155]," 84 FR 39684 – 39722, published August 9, 2019