



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 24, 2014

Vice President, Operations
Entergy Nuclear Operations, Inc.
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249

**SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT NO. 2 - ISSUANCE OF
AMENDMENT RE: TEMPORARY CHANGE TO TECHNICAL SPECIFICATION
3.8.6 BATTERY 22 SURVEILLANCE REQUIREMENT (EXIGENT
CIRCUMSTANCES) (TAC NO. MF4799)**

Dear Sir or Madam:

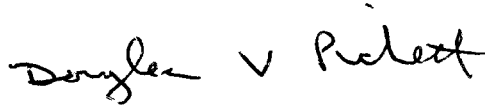
The Commission has issued the enclosed Amendment No. 278 to Facility Operating License No. DPR-26 for the Indian Point Nuclear Generating Unit No. 2. The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated September 15, 2014, as supplemented by letter dated September 18, 2014.

The amendment inserts a temporary change to Surveillance Requirement (SR) 3.8.6.6 by reducing the acceptance criteria for Battery 22 capacity from 85 percent to 80 percent through March 6, 2015. The change is necessary because questions have been raised about the continued operability of the battery until the next scheduled surveillance test that is due by March 7, 2015. The questions are based on a concern that the Battery 22 will degrade and no longer meet SR 3.8.6.6 before the next scheduled test and therefore must be demonstrated to meet the criteria to ensure strict technical specification compliance.

This amendment is being issued under exigent circumstances in accordance with paragraph 50.91(a)(6) of Title 10 of the *Code of Federal Regulations*. The exigent circumstances and final no significant hazards considerations are addressed in Sections 4.0 and 5.0 of the enclosed Safety Evaluation.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink that reads "Douglas V. Pickett". The signature is written in a cursive style with a checkmark-like flourish between the first and last names.

Douglas V. Pickett, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-247

Enclosures:

1. Amendment No. 278 to DPR-26
2. Safety Evaluation

cc w/encls: Distribution via Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

ENERGY NUCLEAR INDIAN POINT 2, LLC

AND ENERGY NUCLEAR OPERATIONS, INC.

DOCKET NO. 50-247

INDIAN POINT NUCLEAR GENERATING UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

AND TECHNICAL SPECIFICATIONS

Amendment No. 278
License No. DPR-26

1. The Nuclear Regulatory Commission (the Commission) has found that:

- A. The application for amendment by Entergy Nuclear Operations, Inc. (the licensee) dated September 15, 2014, as supplemented on September 18, 2014, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
- B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
- C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
- D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
- E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

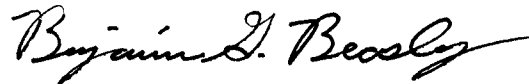
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-26 is hereby amended to read as follows:

- (2) Technical Specifications

- The Technical Specifications contained in Appendices A, B and C, as revised through Amendment No. 278, are hereby incorporated in the license. ENO shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Benjamin G. Beasley, Chief
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the License and
Technical Specifications

Date of Issuance: September 24, 2014

ATTACHMENT TO LICENSE AMENDMENT NO. 278

FACILITY OPERATING LICENSE NO. DPR-26

DOCKET NO. 50-247

Replace the following page of the License with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove Page

3

Insert Page

3

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove Pages

3.8.6-4

Insert Pages

3.8.6-4

instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

- (4) ENO pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; Amdt. 42
10-17-78
- (5) ENO pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility and Indian Point Nuclear Generating Unit No. 3 (IP3). Amdt. 220
09-06-01

C. This amended license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

ENO is authorized to operate the facility at steady state reactor core power levels not in excess of 3216 megawatts thermal. Amdt. 241
10-27-2004

(2) Technical Specifications

The Technical Specifications contained in Appendices A, B, and C, as revised through Amendment No. 278, are hereby incorporated in the license. ENO shall operate the facility in accordance with the Technical Specifications.

(3) The following conditions relate to the amendment approving the conversion to Improved Standard Technical Specifications:

- 1. This amendment authorizes the relocation of certain Technical Specification requirements and detailed information to licensee-controlled documents as described in Table R, "Relocated Technical Specifications from the CTS," and Table LA, "Removed Details and Less Restrictive Administrative Changes to the CTS" attached to the NRC staff's Safety Evaluation enclosed with this amendment. The relocation of requirements and detailed information shall be completed on or before the implementation of this amendment.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.6.5 Verify each battery connected cell voltage is ≥ 2.07 V.	92 days
SR 3.8.6.6 ----- <p style="text-align: center;">- NOTE -</p> This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. ----- Verify battery capacity is $\geq 85\%$ ($\geq 80\%$ for Battery 22 through March 6, 2015) of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months <u>AND</u> 12 months when battery shows degradation, or has reached 85% of the expected life with capacity < 100% of manufacturer's rating <u>AND</u> 24 months when battery has reached 85% of the expected life with capacity $\geq 100\%$ of manufacturer's rating



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 278

TO FACILITY OPERATING LICENSE NO. DPR-26

ENERGY NUCLEAR INDIAN POINT 2, LLC

AND ENERGY NUCLEAR OPERATIONS, INC.

DOCKET NO. 50-247

INDIAN POINT NUCLEAR GENERATING UNIT NO. 2

1.0 INTRODUCTION

By letter dated September 15, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14259A331), as supplemented by letter dated September 18, 2014, Entergy Nuclear Operations, Inc. (Entergy, the licensee) submitted a request for changes to the Indian Point Nuclear Generating Unit No. 2 (IP2) Technical Specifications (TSs). The amendment inserts a temporary change to Surveillance Requirement (SR) 3.8.6.6 by reducing the acceptance criteria for Battery 22 capacity from 85 percent to 80 percent through March 6, 2015. The change is necessary because questions have been raised about the continued operability of the battery until the next scheduled surveillance test that is due by March 7, 2015.

The supplemental letter dated September 18, 2014, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the U.S. Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration as published in the *Journal News* located in White Plains, New York, from September 19 through September 21, 2014.

2.0 REGULATORY EVALUATION

The following explains the applicability of General Design Criteria (GDC) for IP2. The construction permit for IP2 was issued by the Atomic Energy Commission (AEC) on October 14, 1966, and the operating license was issued on September 28, 1973. The plant GDC are discussed in the Updated Final Safety Analysis Report (UFSAR) Chapter 1.3, "General Design Criteria," with more details given in the applicable UFSAR sections. The AEC published the final rule that added Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," in the *Federal Register* (36 FR 3255) on February 20, 1971, with the rule effective on May 21, 1971. In accordance with an NRC staff requirements memorandum from S. J. Chilk to J. M. Taylor, "SECY-92-223 - Resolution of Deviations Identified During the Systematic Evaluation Program," dated September 18, 1992 (ADAMS Accession No. ML003763736), the Commission decided not to apply the Appendix A

GDC to plants with construction permits issued prior to May 21, 1971. Therefore, the GDC which constitute the licensing bases for IP2 are those in the UFSAR.

As discussed in the UFSAR, the licensee for IP2 has made some changes to the facility over the life of the unit that has committed to some of the GDCs from 10 CFR Part 50, Appendix A. The extent to which the Appendix A GDC have been invoked can be found in specific sections of the UFSAR and in other IP2 licensing basis documentation, such as license amendments.

IP2 was designed to the proposed Atomic Industrial Forum versions of the criteria issued for comment by the AEC on July 11, 1967. These criteria are found in Section 8.1 of the UFSAR. The applicable criteria are:

- GDC 24 and 39 which specify that an emergency power source shall be provided and designed with adequate independency, redundancy, capacity, and testability to permit the functioning of the engineered safety features and protection systems required to avoid undue risk to the health and safety of the public. This power source shall provide this capacity assuming a failure of a single component.

The following NRC requirements and guidance document are also applicable to the staff's review of the licensee's amendment request:

- The regulations in 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," provide the regulatory requirements for the licensing of production and utilization facilities.
- Section 50.92, "Issuance of amendment," of 10 CFR, paragraph 50.92(a) states that in determining whether an amendment to a license will be issued to the applicant, the Commission will be guided by the considerations that govern the issuance of initial licenses to the extent applicable and appropriate.
- Section 182a of the Atomic Energy Act requires applicants for nuclear power plant operating licenses to include TSs as part of the application for a license. These TSs are derived from the plants' safety analyses. The regulatory requirements related to the content of the TSs are contained in 10 CFR 50.36, "Technical Specifications." Section 50.36 of 10 CFR requires TSs to include the following categories related to station operation: (1) safety limits, limiting safety systems settings and control settings; (2) LCOs; (3) SRs; (4) design features; (5) administrative controls; (6) decommissioning; (7) initial notification; and (8) written reports.
- Paragraph 50.36(c)(2)(ii) of 10 CFR, "Technical specifications," requires that "[a] technical specification limiting condition for operation [LCO] of a nuclear reactor must be established for each item meeting one or more of the [criteria set forth in 10 CFR 50.36(c)(2)(ii)(A)-(D)]."
- Paragraph 50.36(c)(3) of 10 CFR, "Technical specifications," requires that TSs include Surveillance Requirements (SRs), which "are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is

maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.”

- GDC 17; “Electrical Power Systems”, requires that onsite electrical power systems have sufficient independence, capacity, capability, redundancy and testability to ensure the (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences, and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents, assuming a single failure.
- GDC 18; “Inspection and Testing of Electrical Power Systems”, requires that electrical power systems important to safety be designed to permit appropriate periodic inspection and testing to assess the continuity of systems and the conditions of their components.

While IP2 is not currently committed to the following NRC guidance document, the staff used this document as a technical reference during its review of the license amendment request:

- Regulatory Guide (RG) 1.212, “Sizing of Large Lead-Acid Storage Batteries,” describes a method that the staff of the NRC considers acceptable for use in complying with requirements and regulations on the criteria for the sizing of large lead-acid storage batteries for use in nuclear power plants.

3.0 TECHNICAL EVALUATION

The NRC staff reviewed the licensee’s proposed changes against the regulations, design basis information, and guidance provided in Section 2 of this safety evaluation. The staff reviewed the acceptability of the licensee’s proposed changes to SR 3.8.6.6 by evaluating whether, among other things, if changes provide reasonable assurance of public health and safety. The staff also verified that the proposed change to SRs assured that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.

IP2 has four separate safety-related 125 V direct current (DC) systems that serve various DC loads throughout the station. Each system consists of one battery, one battery charger, one main power panel, and one or more DC distribution panels (sub panels). Each of the four batteries is composed of 58 lead-calcium storage cells connected to provide a nominal terminal voltage of 125 V DC.

Each battery charger is supplied from a different 480 V alternating current (AC) switchgear bus. Under normal and emergency conditions, the battery charger supplies the DC loads and float charges the battery. The IP2 UFSAR states that the battery provides power to the DC loads under the following conditions:

- (a) When the load exceeds the capacity of the battery charger, such as during DC motor starting or simultaneous breaker operation.
- (b) When the battery charger is not available, such as a battery charger failure or loss of input voltage.

According to the IP2 UFSAR, each battery has been sized to carry its expected shutdown loads for a period of 2 hours following a plant trip and a loss of all AC power. All equipment supplied by the batteries is maintained operable with minimum expected voltages at the battery terminals during the 2 hours. Each of the four battery chargers has been sized to recharge its own discharged battery within 15 hours while carrying its normal load.

Each battery is maintained under continuous charge by its associated self-regulating battery charger so that the batteries will always be at full charge in anticipation of a loss of AC power incident. This ensures that adequate DC power will be available for starting and loading the emergency diesel generators and for other emergency uses.

During a Problem Identification and Resolution sample inspection performed during the week of September 8, 2014, NRC inspectors informed the licensee that extrapolation of the expected degradation of the 22 Battery indicated that the capacity may drop below the 85 percent acceptance criteria of SR 3.8.6.6 before the next scheduled surveillance test scheduled for March 7, 2015. This would indicate noncompliance with existing TS SR 3.8.6.6. Therefore, the licensee submitted this exigent TS amendment request.

The license amendment request proposes to revise the SR 3.8.6.6 acceptance criteria for a performance discharge test or modified performance discharge test to allow 22 Battery to use 80 percent rather than 85 percent battery capacity. The TS proposed change is:

Existing:

"Verify battery capacity is $\geq 85\%$ of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test."

To:

"Verify battery capacity is $\geq 85\%$ ($\geq 80\%$ for Battery 22 through March 6, 2015) of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test."

TS SR 3.8.6.6 currently requires the verification that battery capacity is ≥ 85 percent of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test. The current acceptance criteria of ≥ 85 percent represents a change from the original criteria of ≥ 80 percent made in Amendment No. 264 (ADAMS Accession No. ML100270051). The 80 percent capacity value is based upon manufacturer recommendations and battery standards. Amendment No. 264 was requested to correct non-conservative TS that was determined after an engineering review related to the impact of environmental temperature. According to the licensee, this change was not required for the Battery 22 but was made for consistency with the other 3 battery divisions. In the supplemental submittal dated September 18, 2014, the licensee stated that only 62.5 percent of manufacturer's rated capacity is required to supply the design basis loads for Battery 22, indicating that there is adequate margin in the current capacity of Battery 22 even when it approaches 80 percent of rated capacity.

As part of Amendment No. 264, the battery sizing for IP2 was performed using Institute of Electrical and Electronics Engineers (IEEE) Standard (Std.) 485-1997 "IEEE Recommended

Practice for Sizing Lead–Acid Batteries for Stationary Applications.” The NRC staff reviewed the general battery loading assumptions and methodology of calculation FEX-00062-01 “Minimum Operating Electrolyte Temperature for 125 V DC Batteries 21, 22, 23 and 24,” used to determine the 85 percent battery capacity, and calculation FEX-00204-01, “Station Battery 22 System Calculation.” The staff reviewed specific areas of the calculations to verify that the assumptions were consistent with IEEE Std. 485-1997, endorsed by RG 1.212.

The licensee requested a license amendment to revise TS SR 3.8.6.6 to require verification that the battery capacity is greater than or equal to 80 percent of the manufacturer’s rating when subjected to a performance discharge test or a modified performance discharge test. The NRC staff reviewed the calculations that were included in the application. Review of the calculations was limited to the general battery loading assumptions and the battery cell sizing criterion for Battery 22. The staff reviewed specific areas to verify that the assumptions were consistent with the IEEE Std. 485-1997, “IEEE Recommended Practice for Sizing Lead-Acid Batteries for Stationary Applications,” which is endorsed by RG 1.212.

In the application dated September 15, 2014, the licensee stated that the battery sizing methodology described in IEEE Std. 485-1997 was used for the battery calculations. Section 6.2.3, “Aging factor,” of IEEE Std. 485-1997, states that:

As a rule, the performance of a lead-acid battery is relatively stable throughout most of its life, but begins to decline with increasing rapidity in its latter stages, with the “knee” of its life versus performance curve occurring at approximately 80% of its rated performance.

Section 7 of IEEE Std. 450-1995, “IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications,” recommends that a battery be replaced when its actual performance drops to 80 percent of its rated performance if the battery was sized using a 1.25 aging factor.

The Standard states:

If a lesser aging factor was used, battery replacement will be required before 80% capacity is reached to ensure that the load can be served. The timing of the replacement is a function of the sizing criteria utilized and the capacity margin, compared to the load requirements available.

The Standard recommends replacement of the battery if the capacity falls below 80 percent. A capacity of 80 percent shows that the battery rate of deterioration is increasing even if there is ample capacity to meet the load requirements. The licensee for IP2 applied a 17.6 percent aging factor as discussed in Amendment No. 264 versus 25 percent. This implies that a minimum capacity of 85 percent is required to demonstrate the capability of the battery to support design basis loads.

By letter dated September 18, 2014, the licensee stated that the modified performance test in March 2014 determined that capacity was 85.2 percent. The testing performed in 2012 showed that the battery capacity was 85.9 percent. The licensee stated that the linear method was used to predict battery capacity because the drop in capacity between the 2012 and 2014 was 0.7 percent. The 0.7 percent drop demonstrated that the battery’s capacity remained in the linear

region of the curve and not close to the "knee" of the curve. The licensee also stated that a capacity drop of 5 percent is not expected prior to battery replacement. The licensee stated that a replacement battery has been ordered and planning is underway to perform an online replacement. Furthermore, the licensee stated that if online replacement of the battery is not feasible, Entergy would shut down the facility to replace the battery. Considering that the battery is only 12 years old, and the fact that the capacity drop does not show major signs of degradation based on the results of their modified performance tests, the NRC staff finds the linear method used by the licensee for determining the Battery 22 capacity acceptable.

Test data related to previous surveillance testing provides an indication of battery capability and was used as supplementary information in this evaluation due to different acceptance criterion used by the licensee. Specifically, on page 3 of 6 of the submittal dated September 15, 2014, the licensee states that:

Previous battery testing was done in a manner that does not allow direct trending of the SR 3.8.6.6 test results.

The NRC staff requested the licensee to clarify how the previous test data was corrected in order to accurately represent the capacity of the battery, and provide the corrected results (i.e., capacity value only) of the previous three performances of SR 3.8.6.6.

In its letter dated September 18, 2014, the licensee stated that battery testing prior to 2014 was performed based on the cells initial delivered capacity of approximately 90 percent of the manufacturer's rating (317 amps), rather than the full 100 percent value (360 amps). Testing prior to 2008 also terminated the test at rated discharge time rather than continuing the test until minimum battery terminal voltage was reached. These values were corrected prior to performing the test in 2014 but direct trending of test results over the battery's life is no longer possible. The licensee also stated that the 2012 and 2014 test data were corrected based on the actual current and temperature used during the test, applying a temperature correction factor as needed, and comparing it to the manufacturer's standard "S" curves at 77 °F. Past testing on Battery 22 (installation date 2002) shows that capacity has been consistent and that all test results, based on the old discharge rate, were greater than 100 percent capacity. The licensee concluded that the information above confirms battery capacity has been stable with no drastic change in capacity. Since the licensee has clarified how the previous test data was corrected in order to evaluate the capacity of the battery and has provided the corrected results (i.e., capacity value only) of the previous two performances of SR 3.8.6.6, the NRC staff finds this response acceptable.

Section 4.2.3, "Momentary loads," of IEEE Std. 485-1997 states that:

...the load for the 1 minute period should be assumed to be the sum of all momentary loads occurring within that minute.

It also states that:

Typical momentary loads are as follows:

- a) Switchgear operations
- b) Motor-driven valve operations (stroke time \leq 1 min)
- c) Isolating switch operations
- d) Field flashing of generators
- e) Motor starting currents
- f) Inrush currents

The NRC staff requested the licensee to indicate whether all the intermittent or momentary loads in the first minute of the duty cycle and any other high load conditions such as the last minute of the duty cycle were considered for the whole minute, and to provide a justification if they were not included in the calculation.

In its letter dated September 18, 2014, the licensee stated that IEEE Std. 485-1997, Section 4.2.3, notes that the load for the period should be assumed to be the maximum load at any instant if a discrete sequence can be established. The licensee also stated that a discrete sequence was determined and demonstrated in Attachment O of the submitted calculation (IP-CALC-14-00028). The one minute period in the Battery Load Profile (shown in IP-CALC-14-00028 Attachment M) is from the maximum load appearing for an instant at Time Step 3, for which the Time Step Range is from 0:00:01.1 to 0:00:02.0, in Attachment G of the same calculation. Since the licensee has indicated that its method is consistent with Section 4.2.3 of IEEE Std. 485-1997, the NRC staff finds this response acceptable.

In its letter dated September 15, 2014, the licensee included Calculation IP-CALC-14-00028, "Station Battery 22 System Calculation – Analysis Variation with a Battery Aged to 80 percent Capacity." On page 20 of 33 of this calculation, the licensee states that:

...it is desirable that the battery has a design margin greater than 5 percent to allow for slightly diminished battery capacity immediately following recharge from a discharged state.

IEEE Std.485-1997, Section 6.2.2, "Design Margin," states that:

It is prudent to provide a capacity margin to allow for unforeseen additions to the dc system and less-than optimum operating conditions of the battery due to improper maintenance, recent discharge, or ambient temperatures lower than anticipated, or a combination of these factors. A method of providing this design margin is to add 10–15 percent to the cell size determined by calculations.

The NRC staff requested the licensee to explain why the calculation does not include the minimum design margin described in IEEE Std. 485-1997 and clarify whether and how this design margin was credited in the battery sizing calculation.

In its letter dated September 18, 2014, the licensee stated that the design margin factor is intended for new batteries/systems. The current Battery 22 is of the same size and manufacturer as the previous battery (prior to 2002). Nonetheless, the IEEE recommended

prudence is “incorporated” in the strict application of various configuration management processes and maintenance programs such as unforeseen additions to the DC system, improper maintenance, recent discharge, or ambient temperatures lower than anticipated. The licensee stated that unforeseen additions to the DC system are controlled by the engineering modification process which prevents such occurrence by strictly controlling any kind of changes to plant equipment including load addition, removal or change, especially on safety-related components and systems. Also, the operating conditions, recent discharge and ambient temperatures are all monitored via monthly, quarterly, yearly and biannual (refueling outage) surveillance and testing. The licensee concluded that, since it controls the above-mentioned variables, then a design margin is not needed. The NRC staff finds the licensee’s clarification acceptable from the operability perspective since it controls the variables that could affect the capacity of the battery.

In its letter dated September 18, 2014, the licensee stated that a replacement battery has been ordered and planning is underway to perform an online replacement. If that is not feasible and a replacement battery is obtained, Entergy would shutdown to replace the battery. Since the licensee has stated its intentions to replace the battery, the NRC staff considers this issue resolved.

The service load profile for the nuclear plant battery system is characterized by a high initial current, which generally lasts approximately one minute. The “Coup de Fouet Effect,” which is a rapid loss of voltage, is critical when the initial discharge current is very high. The NRC staff requested the licensee to explain if this effect was factored into the battery sizing calculations.

In its letter dated September 18, 2014, the licensee stated that the “Coup de Fouet” effect is addressed in the voltage portion of manufacturer’s “S” curves, and this effect was considered in the voltage analysis section of calculation FEX-00204. The calculation uses computer program Direct Current System Database Model, and the effect was used in programming the voltage response. Since the licensee has included the “Coup de Fouet” effect in its analysis and calculations, the NRC staff considers this issue resolved.

The NRC staff reviewed the licensee’s proposed changes against the regulations, design basis information, and guidance provided in Section 2 of this safety evaluation. The staff reviewed the acceptability of the licensee’s proposed changes to SR 3.8.6.6 by evaluating whether, among other things, if changes provide reasonable assurance of public health and safety. The staff also verified that the proposed change to SR 3.8.6.6 assured that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met. Based on the above, the NRC staff finds that there is reasonable assurance that safe plant conditions will continue to be maintained; therefore, the proposed change is acceptable.

The NRC staff evaluated the licensee’s request to temporarily modify TS SR 3.8.6.6 by requiring verification that the battery capacity is greater than or equal to 80 percent of the manufacturer’s rating when subjected to a performance discharge test or a modified performance discharge test. The temporary change would expire after March 6, 2015, at which time the acceptance criteria for Battery 22 would revert back to ≥ 85 percent.

Based on the above evaluation, the NRC staff concludes the proposed revision to the IP2 TSs provides reasonable assurance of the continued availability of the required power to shut down

the reactor and to maintain the reactor in a safe condition after an anticipated operational occurrence or a postulated design-basis accident. The staff also concludes that the proposed TS changes are in accordance with the requirements in 10 CFR 50.36, GDCs 17, and 18, UFSAR GDCs 24 and 39, and the guidance in RG 1.212. Therefore, the staff finds the proposed changes acceptable.

4.0 EXIGENT CIRCUMSTANCES

The NRC's regulations contain provisions for issuance of amendments when the usual 30-day public comment period cannot be met. These provisions are applicable under exigent circumstances. Consistent with the requirements in 10 CFR 50.91(a)(6), exigent circumstances exist when: (1) a licensee and the NRC must act quickly and, (2) time does not permit the NRC to publish a *Federal Register* notice allowing 30 days for prior public comment. The NRC requires the licensee to explain the exigency and why the licensee cannot avoid the situation such that the NRC cannot use its normal public notice and comment procedures.

As discussed in the licensee's application dated September 15, 2014, the licensee requested that the proposed amendment be processed by the NRC on an exigent basis. In its letter the licensee provided the following as the basis for exigency:

Entergy has requested that this proposed change be processed as an exigent change per 10 CFR 50.91(a)(6), since insufficient time exists to provide a normal public comment period prior to issuance of the amendment to resolve the concerns with the 22 Battery. As demonstrated below, there is no unreviewed safety question. The change is needed because of concerns that the 22 Battery will degrade and no longer meet SR 3.8.6.6 before the next scheduled test. The station must be able to demonstrate the ability to meet the criteria in SR 3.8.6.6 to ensure strict TS compliance. If the SR no longer meets SR 3.8.6.6 then SR 3.0.1 requires the 22 Battery to be declared inoperable. Foreseeing the question regarding compliance with the SR would be raised and there would be a need to revise the surveillance acceptance criteria or shut down the plant could not reasonably have been foreseen or anticipated. TS SRs are designed to maintain components operable under TS until the next scheduled surveillance unless there is objective evidence to the contrary.

The NRC will not use exigent procedures if it determines that the licensee has failed to use its best efforts to make a timely application for the amendment in order to create the exigency and to take advantage of this procedure. The NRC staff considered the circumstances leading to this exigent amendment request and concluded that the licensee could not avoid the exigent application. Until recently, Entergy believed that the inherent margin in the capacity of the 22 Battery would ensure operability of the battery in compliance with TS SR 3.8.6.6 through the current operating cycle until the next required surveillance test that is due by March 7, 2015, and that no further actions were necessary. This belief was based upon (1) previous testing of Battery 22 demonstrated that battery capacity had been stable with no reasonable expectation that an accelerated drop in capacity would occur, (2) the most recent capacity test on Battery 22 performed on March 7, 2014, resulted in a value of 85.2 percent which met the acceptance criteria of the SR, demonstrated past operability, and provided an indication that the battery capacity should be sufficient until the next scheduled capacity test, (3) industry experience indicated that battery capacity would not be expected to drop by more than a percent or two

prior to the next scheduled capacity test, and (4) the total capacity necessary for Battery 22 to supply the design basis loads is approximately 62.5 percent of the manufacturer's rated capacity which provides sufficient margin to ensure operability. However, during a Problem Identification and Resolution sample inspection performed during the week of September 8, 2014, NRC inspectors informed the licensee that regardless of the licensee's belief that the 22 Battery would successfully perform its safety function through its next scheduled capacity test on March 7, 2015, extrapolation of the expected degradation of the 22 Battery indicated that the capacity may drop below the acceptance criteria of the SR. Specifically, NRC inspectors identified that Battery 22 may not meet the acceptance criteria of the SR before the next scheduled surveillance. Based on the extrapolated results, the licensee would have to either take action to request an exigent license amendment to modify the acceptance criteria or shut down the facility until replacement batteries could be obtained and installed.

The NRC staff also concluded that it needed to act quickly and that time did not permit the Commission to publish a *Federal Register* notice allowing 30 days for prior public comment because the amendment is necessary to avoid an unnecessary reactor shutdown.

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

Under the provisions in 10 CFR 50.91(a)(6), if the NRC has determined that exigent circumstances exist, and if the NRC also determines that the amendment involves no significant hazards consideration, then it will either issue a *Federal Register* notice providing notice of an opportunity for hearing and allowing at least two weeks from the date of the notice for prior public comment; or it will use local media to provide reasonable notice to the public in the area surrounding a licensee's facility of the licensee's amendment and of its proposed determination. In this case, the NRC published a notice in the *Journal News* located in White Plains, New York, from September 19 through September 21, 2014.

The Commission may issue the license amendment before the expiration of the 60-day period provided that its final determination is that the amendment involves no significant hazards consideration. This amendment is being issued prior to the expiration of the 60-day period. Therefore, a final finding of no significant hazards consideration follows.

The Commission has made a final determination that the amendment request involves no significant hazards consideration. Under the Commission's regulations in 10 CFR 50.92, this means that operation of the facility in accordance with the proposed amendment does not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. As required by 10 CFR 50.91(a), the licensee has provided its analysis of the issue of no significant hazards consideration which is presented below.

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed change revises the acceptance criterion applied to an existing surveillance test for the Indian Point 2 station battery 22

discharge test. Performing a technical specification surveillance test is not an accident initiator and does not increase the probability of an accident occurring. The proposed revision to the test acceptance criterion is based on the design calculation for battery performance and an assessment of the acceptability of the lower acceptance criterion for the discharge test. The proposed new value for the test acceptance criteria is less limiting than the existing value but meets operability criterion. Establishing a test acceptance criterion that meets plant criterion validates the equipment performance assumptions used in the accident mitigation safety analyses. Therefore the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed change revises the test acceptance criterion for an existing technical specification surveillance test conducted on the 22 station battery. The proposed change does not involve installation of new equipment or modification of existing equipment, so that no new equipment failure modes are introduced. Also, the proposed change in test acceptance criterion does not result in a change to the way that the equipment or facility is operated so that no new accident initiators are created. Therefore the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

The conduct of performance tests on safety-related plant equipment is a means of assuring that the equipment is capable of performing its intended safety function and therefore maintaining the margin of safety established in the safety analysis for the facility. The proposed change in the acceptance criterion for the 22 battery capacity surveillance test is less conservative and less restrictive than the overly conservative value currently in the technical specification. The proposed change is based on the applicable design calculation for these components and meets IEEE criteria.

The NRC staff has reviewed the licensee's analysis and based on this review, the staff has determined that the three standards of 10 CFR 50.92 are satisfied and that the amendment does not involve a significant hazards consideration.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New York State official was notified of the proposed issuance of the amendment. The State official provided comments by letter dated

September 22, 2014. While the New York State Energy Research and Development Authority (NYSERDA) did not raise concerns related to issuance of this exigent amendment nor did it comment on the proposed no significant hazards consideration determination, NYSERDA expressed concerns that are outside the scope of this amendment. Specifically, NYSERDA expressed concerns about compliance of all New York State nuclear power plant batteries and the current status of station battery capacity at the Indian Point, Ginna, FitzPatrick, and Nine Mile Point nuclear plants. NYSERDA requested up-to-date station battery surveillance and maintenance schedules along with the most recent test results, and current overall surveillance records for all New York State nuclear power plants. The NRC staff will address issues unrelated to this specific amendment through its normal correspondence process.

7.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes a surveillance requirement. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission made a preliminary finding that the amendment involves no significant hazards consideration which was published in the *Journal News* located in White Plains, New York, from September 19 through September 21.

In response to this publication, the NRC staff did not receive any comments.

Conclusion

The NRC staff has concluded, based on the considerations discussed above, that the amendment does not (a) involve a significant increase in the probability or consequences of an accident previously evaluated, or (b) create the possibility of a new or different kind of accident from any previously evaluated, or (c) involve a significant reduction in a margin of safety and, therefore, the amendment does not involve a significant hazards consideration.

Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

8.0 CONCLUSION

The NRC staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations; and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: Tainia Martinez-Nevado
Gurcharan Matharu
Matthew Hamm

Date: September 24, 2014

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly *Federal Register* notice.

Sincerely,

/RA/

Douglas V. Pickett, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-247

Enclosures:

1. Amendment No. 278 to DPR-26
2. Safety Evaluation

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