



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

November 28, 2012

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: CHANGE TO THE TECHNICAL SPECIFICATION
REQUIREMENT FOR CONTAINMENT SUMP LEVEL INDICATION
(TAC NO. ME7367)

Dear Sir or Madam:

The Commission has issued the enclosed Amendment No. 270 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 October 18, 2011, as supplemented by letters dated April 27, and October 2, 2012.

The amendment changes TS 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," Table 3.3.3-1, "Post Accident Monitoring Instrumentation," by revising the existing requirement for two channels of the Containment Water Level (Containment Sump) function and two channels of the Containment Sump Water Level (Recirculation Sump) function to two Containment Water Level channels. This is consistent with the Standard Technical Specifications found in NUREG-1431, Rev 3, "Standard Technical Specifications: Westinghouse Plants".

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".

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. 270 to DPR-26
2. Safety Evaluation

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
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ENERGY NUCLEAR INDIAN POINT 2, LLC

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. 270
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 October 18, 2011, as supplemented on April 27 and October 2, 2012, 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.

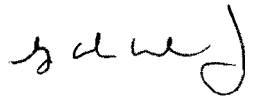
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-26 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendices A, B, and C, as revised through Amendment No. 270, 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



George A. Wilson, 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: November 28, 2012

ATTACHMENT TO LICENSE AMENDMENT NO. 270

AMENDED 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 Page

3.3.3-1

Insert Page

3.3.3-1

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. | 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 10-27-04
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(2) Technical Specifications

The Technical Specifications contained in Appendices A, B, and C, as revised through Amendment No. 270, 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.

Table 3.3.3-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITION REFERENCED FROM REQUIRED ACTION D.1
1. Reactor Coolant System (RCS) Hot Leg Temperature (Wide Range)	1 per loop ^(a)	E
2. RCS Cold Leg Temperature (Wide Range)	1 per loop ^(b)	E
3. RCS Pressure (Wide Range)	2	E
4. Reactor Vessel Level Indication System (RVLIS)	2	F
5. Containment Water Level (Containment and Recirculation Sump)	2 ^(d)	E
6. NOT USED		
7. Containment Pressure	2	E
8. Containment Pressure (High Range)	2	E
9. Containment Area Radiation (High Range)	2	F
10. NOT USED		
11. Pressurizer Level	2	E
12. Steam Generator (SG) Water Level (Narrow Range)	2 per steam generator	E
13. Steam Generator Water Level (Wide Range)	4	E
14. Condensate Storage Tank level	2	F
15. Core Exit Temperature - Quadrant 1	2 trains ^(c)	E
16. Core Exit Temperature - Quadrant 2	2 trains ^(c)	E
17. Core Exit Temperature - Quadrant 3	2 trains ^(c)	E
18. Core Exit Temperature - Quadrant 4	2 trains ^(c)	E
19. Auxiliary Feedwater Flow	4	E
20. Steam Generator Pressure	2 per steam line	E
21. RCS Subcooling Margin Monitor	2	E
22. RWST Level	2	E

(a) The required redundant channel for each of the four loops of RCS hot leg temperature is a qualified Core Exit Temperature train in the quadrant associated with that loop.

(b) The required redundant channel for each of the four loops of RCS cold leg temperature is any channel of steam generator pressure for that loop.

(c) A CET train consists of two core exit thermocouples (CETs).

(d) Only met by LT-3300 and LT-3301 or LT-939 and LT-941 to ensure redundant power supplies.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 270

TO AMENDED FACILITY OPERATING LICENSE NO. DPR-26

ENTERGY NUCLEAR OPERATIONS, INC.

INDIAN POINT NUCLEAR GENERATING UNIT NO. 2

DOCKET NO. 50-247

1.0 INTRODUCTION

By letter dated October 18, 2011, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML11297A028), as supplemented by letters dated April 27 (ADAMS ML12132A049), and October 2, 2012, (ADAMS ML12292A388), Entergy Nuclear Operations, Inc. (Entergy or the licensee) submitted a request for changes to the Indian Point Nuclear Generating Unit No. 2 (IP2) Technical Specifications (TSs).

The license amendment request (LAR) would change TS Section 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," Table 3.3.3-1, "Post Accident Monitoring Instrumentation," by revising the existing requirement to maintain operable two channels of Containment Sump Water Level (Recirculation Sump) function and two channels of Containment Water Level (Containment Sump) function to only require two channels of Containment Water Level to be operable. This is consistent with NUREG-1431, Rev. 3, "Standard Technical Specifications: Westinghouse Plants".

The supplements dated April 27, and October 2, 2012, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's original proposed no significant hazards consideration as published on December 27, 2011 in the *Federal Register* (76 FR 80975).

2.0 REGULATORY EVALUATION

The IP2 design includes two sumps within containment. These are referred to as the Recirculation Sump and the Containment Sump. IP2's primary means of post accident recirculation uses recirculation pumps located inside containment that draws suction from the Recirculation Sump. The alternative means of post accident recirculation is through the RHR pumps in the Auxiliary Building taking suction from a separate sump in containment, identified as the Containment Sump.

The current configuration for containment water level indication was licensed to use separate wide range indicators (from the bottom of the sump to a containment level equivalent to the design flood level) and narrow range indicators (from the bottom of the sump to the top of the sump) in each sump. The Recirculation Sump uses LT-3301 powered from Bus 5A for wide

range level and LT-939 powered from Bus 2A/3A for narrow range level. The Containment Sump uses LT-3300 powered from Bus 2A/3A for wide range level and LT-941 powered from Bus 5A for narrow range level.

<u>Recirculation Sump</u>		<u>Containment Sump</u>	
<u>Level Transmitter</u>	<u>Power Supply</u>	<u>Level Transmitter</u>	<u>Power Supply</u>
LT-3301 (wide range)	Bus 5A	LT-3300 (wide range)	Bus 2A/3A
LT-939 (narrow range)	Bus 2A/3A	LT-941 (narrow range)	Bus 5A

While the licensee has described the above level transmitters as being either wide range or narrow range, all four instruments have been accepted as having adequate range and accuracy to cover both wide and narrow range monitoring. This is documented in an NRC staff safety evaluation dated September 27, 1990 (ADAMS Accession No. ML100331515) as meeting the post-accident monitoring instrumentation guidance of Regulatory Guide (RG) 1.97, Revision 2, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants." The LT3301 and LT3300 instruments were previously qualified to RG 1.97 Category 1 requirements. The LT939 and LT941 instruments were accepted as Category 1 as described in Section 7.1.3.1 of the IP2 Updated Final Safety Analysis Report (UFSAR).

The proposed amendment requests a change to the plant's TSs. The current TS Table 3.3.3-1 requires two operable channels in both the Recirculation Sump and the Containment Sump. The proposed amendment would change TS Table 3.3.3-1 by revising the existing requirement to maintain two operable channels of Containment Sump Water Level (Recirculation Sump) and two operable channels of Containment Water Level (Containment Sump) to only maintain two operable channels of Containment Water Level. Level transmitters LT-3300 and LT-3301 will normally be used to meet the Limiting Condition for Operation (LCO). Level transmitters LT-939 and LT-941 are additional qualified detectors and may be used to meet LCO requirements. Entergy has stated that all four level indicators will be maintained operable.

2.1 Regulatory Requirements

In 10 CFR 50.36, "Technical Specifications," the Commission established its regulatory requirements related to the contents of the TSs. Specifically, 10 CFR 50.36 (c)(2)(ii)(A) states that a limiting condition for operation must be established for "Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary."

The NRC staff reviewed the proposed TS changes against these requirements to ensure that there is reasonable assurance that the systems affected by the proposed TS changes will perform their required safety functions.

2.2 Regulatory Guidance

The NRC staff considered the regulatory guidance provided in Chapter 7 of the Standard Review Plan (SRP) and found the following two Branch Technical Positions (BTP) applied to the license amendment request (LAR): (BTP) 7-6, "Guidance on Design of Instrumentation and

Controls Provided to Accomplish Changeover from Injection to Recirculation Mode," and BTP 7-10, "Guidance on Regulatory Guide 1.97".

BTP 7-6 states the following:

A design that provides manual initiation at the system level of the transfer to the recirculation mode, while not ideal, is sufficient and satisfies the intent of IEEE Std 279-1971 or IEEE 603-1991 provided that adequate instrumentation and information display are available to the operator so that he or she can make the correct decision at the correct time. Furthermore, it should be shown that, in case of operator error, sufficient time and information are available so that the operator can correct the error, and that the consequences of such an error are acceptable.

RG 1.97 provides guidance for use in complying with the agency's regulations with respect to satisfying criteria for post-accident monitoring (PAM) instrumentation in nuclear power plants. BTP 7-10 provides additional guidance to clarify the NRC staff position on accident monitoring instrumentation and identifies alternatives acceptable to the NRC staff for satisfying the guidelines identified in RG 1.97. The introduction section of RG 1.97 describes it as a means to show compliance with 10 CFR Part 50, Appendix A, General Design Criteria (GDC) 13, 19, and 64. Although IP2 was originally licensed to the draft GDC published by the Atomic Energy Commission in the Federal Register on July 11, 1967, there were similar GDC to those listed in RG 1.97. IP2 is committed to meeting the intent of RG 1.97, Revision 2, as stated in the IP2 UFSAR, Section 7.1.5, "Regulatory Guide 1.97 Compliance." The IP2 PAM instrumentation is in IP2 TSs, Section 3.3.3, "Post-Accident Monitoring Instrumentation."

3.0 TECHNICAL EVALUATION

The NRC staff's method of review was to compare the proposal to the regulation and guidance noted in the regulatory evaluation. The staff evaluated how removing two of the four containment sump level channels from TSs impacts 10 CFR 50.36 requirements and the SRP Chapter 7 guidance in BTP 7-6 and 7-10.

BTP 7-10 and RG 1.97 describe the NRC staff position on accident monitoring instrumentation which includes containment level indication as described in the LAR. RG 1.97 classifies monitoring variables by type and by category. RG 1.97 Type classifications (Type A – Type E) describe how the variable is used functionally. The Category classification (Cat. 1, Cat. 2, etc.) describe the qualification requirements for the instrumentation used to measure the variable. RG 1.97 states that a variable may be used to fulfill multiple functions (Types), but the most stringent qualifications (Category) must be maintained. Category 1 requires the highest degree of qualification.

As noted in the LAR, containment sump water level in IP2 is credited in the UFSAR as a redundant indication to support manual initiation of recirculation. This means that containment sump water level is a RG 1.97 Type A variable which requires Category 1 qualification. Category 1 requirements include single failure criteria including power supply. To meet the new requirement for only having two operable containment sump water level transmitters, the NRC staff concluded that there must be one operable level transmitter from each sump and that the power sources for the two level transmitters must be diverse.

Level transmitters LT-3300 and LT-3301 are located in different sumps (containment and recirculation sumps, respectively) and have different power sources (Buses 2A/3A and 5A, respectively). Similarly, level transmitters LT-941 and LT-939 are located in different sumps (containment and recirculation sumps, respectively) and have different power sources (Buses 5A and 2A/3A, respectively). The NRC staff concluded that only these combinations of level transmitters, i.e., LT3300 and LT3301 or LT 939 and LT941, will meet the acceptance criteria set forth above. The staff also concluded that a note must be added to TS Table 3.3.3.1 that clarifies the requirement to have one qualified, operable instrument in the Containment Sump and one qualified, operable instrument in the Recirculation Sump, powered from separate sources. In response to this concern, the licensee's letter dated October 2, 2012 proposed the following note to TS Table 3.3.3.1, Item 5:

“Only met by LT-3300 and LT-3301 or LT-939 and LT-941 to ensure redundant power supplies.”

The above note provides the necessary restrictions for meeting LCO 3.3.3. Therefore, the NRC staff concludes that the proposed TS meets the criteria of 10 CFR 50.36(c)(2)(ii)(A) and the single failure criteria of RG 1.97.

The NRC staff also identified that partial redundancy is lost for Category 1 functionality when only two level transmitters are in service because the levels from the bottom of each sump (at elevation 35') to the common containment floor (at elevation 46') cannot be fully covered by instruments in separate sumps. By letter dated March 29, 2012 (ADAMS Accession No. ML120880435), the staff requested the licensee to describe the potential impact of the discrepancy in coverage. Entergy's response, dated April 27, 2012 (ADAMS Accession No. ML12132A049), stated that the overall volume of the two sumps is very small (approximately 2200 cubic feet) compared to the wide range volume of 600,000 gallons (80,208 cubic feet) given in RG 1.97. Thus, the region of lost redundancy, which is the volume of the sump, only represents 2.7 percent of the 600,000 gallon range (2200/80,208). The staff also verified that when the refueling water storage tank is depleted, the containment water level will be significantly higher than the containment floor elevation of 46'. Thus, redundant containment water level transmitters will be available well in advance of required manual operator actions to initiate the recirculation pumps. Therefore, the staff found that the partial loss of redundancy still met the criteria of RG 1.97 because the loss of redundancy occurs for only a small portion of the range (2.7 percent) and the level associated with the manual operator action occurs after the sumps are filled and instrument redundancy is restored.

RG 1.97 also calls for Category 1 equipment to have continuous indication. The LT3301 and LT3300 transmitters are described in the LAR as having fully continuous indication in the control room. While LT-939 and LT-941 use a series of indicator lights, the NRC staff previously determined in a safety evaluation dated July 28, 2006 (ADAMS Accession No. ML062080088) that the series of indicator lights met the criteria for continuous indication called for in RG 1.97.

The NRC staff determined that the proposed LAR met the criteria of RG 1.97 Rev. 2, and BTP 7-10 because the two channel combinations (LT-3300 & LT-3301 or LT-939 & LT-941) still met the RG 1.97 Category 1 criteria for single failure, environmental qualification, and continuous indication.

Conclusion – Technical Evaluation:

The NRC staff evaluated the licensee's justifications for the proposed TS change from a requirement for two channels of Containment Water Level (Containment Sump) function and two channels of Containment Sump Water Level (Recirculation Sump) function to a requirement for two channels of Containment Water Level. The staff finds that the proposed change meets the criteria of 10 CFR 50.36(c)(2)(ii)(A), RG 1.97 Rev. 2 and the BTP's 7-6 and 7-10 in Chapter 7 of the Standard Review Plan. The staff, therefore, finds the proposed TS changes acceptable.

4.0 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 had no comments.

5.0 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. 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 has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (76 FR 80975, dated December 27, 2011). 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.

6.0 CONCLUSION

The Commission 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 Contributor: S. Wyman, NRR

Date: November 28, 2012

November 28, 2012

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

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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

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