Entergy

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Fred Dacimo
Site Vice President
Administration

May 25, 2005

Re: Indian Point Unit No. 2
Docket No. 50-247
NL-05-062

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

SUBJECT: **Proposed Change to IP2 Technical Specifications**
Regarding Pressurizer Water Level Requirements

Dear Sir:

Pursuant to 10 CFR 50.90, Entergy Nuclear Operations, Inc, (Entergy) hereby requests an amendment to the Operating License for Indian Point Nuclear Generating Unit No. 2 (IP2). The proposed change to Technical Specification 3.4.9 will revise the existing pressurizer water level limit for plant operating Mode 3 (Hot Standby).

Technical Specification 3.4.9 currently requires the pressurizer to be operable with an indicated water level of less than or equal to 65.1% in Modes 1, 2, and 3. The proposed amendment will retain this limit for Modes 1 and 2, but will establish a limit for actual water level of less than or equal to 90% for Mode 3. This proposed change will provide additional operational flexibility and efficiency for performing a plant cooldown.

Entergy has evaluated the proposed change in accordance with 10 CFR 50.91 (a)(1) using the criteria of 10 CFR 50.92 (c) and Entergy has determined that this proposed change involves no significant hazards considerations, as described in Attachment 1. The proposed changes to the Technical Specification and Bases are shown in Attachment 2.

A copy of this application and the associated attachments are being submitted to the designated New York State official.

Entergy requests approval of the proposed amendment by February 17, 2006, with a 30-day implementation period, to support the next refueling outage for IP2. Commitments being made

A001

by Entergy for implementing the requested amendment are stated in Attachment 3. If you have any questions or require additional information, please contact Mr. Kevin Kingsley at 914-734-6695.

I declare under penalty of perjury that the foregoing is true and correct. Executed on 5/25/05.

Sincerely,

Fred R. Dacimo
Site Vice President
Indian Point Energy Center

Attachments:
1. Analysis of Proposed Technical Specification Changes
2. Proposed Technical Specification and Bases Changes (markup)
3. Commitments

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ATTACHMENT 1 TO NL-05-062

ANALYSIS OF PROPOSED

TECHNICAL SPECIFICATION CHANGE REGARDING

PRESSURIZER WATER LEVEL REQUIREMENT

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
DOCKET NO. 50-247

1.0 DESCRIPTION

This is a request for an amendment to Operating License DPR-64, Docket No. 50-247 for Indian Point Nuclear Generating Unit No. 2.

The proposed change to Section 3.4.9 of the Indian Point 2 Technical Specifications will establish a new limit for pressurizer water level (≤ 90%) in MODE 3. The existing level requirement (≤ 65.1%) for MODES 1 and 2 is not being changed.

The reason for the proposed amendment is to allow greater operational flexibility and efficiency when performing a plant cooldown. The new higher limit in Mode 3 will provide the following benefits:

- accommodate contraction of reactor coolant during cooldown,
- allow greater flexibility for establishing boron concentration required for shutdown margin,
- reduce additional RCS makeup required for establishing the 'pressurizer-solid' condition in Mode 4.

2.0 PROPOSED CHANGES

2.1 Indian Point 2 Technical Specification LCO 3.4.9 currently states:

"The pressurizer shall be OPERABLE with:

a. Pressurizer water level ≤ 65.1%; and ....."

The applicability for this LCO is MODES 1, 2, and 3.

The proposed amendment will revise LCO 3.4.9 to state:

"The pressurizer shall be OPERABLE with:

a. Pressurizer water level ≤ 65.1% **in MODES 1 and 2, or ≤ 90% in MODE 3;** and ....."

The applicability statement for this LCO is not being changed.

2.2 Indian Point 2 Technical Specification surveillance SR 3.4.9.1 currently states:

"Verify pressurizer water level is ≤ 65.1%."

The proposed amendment will revise SR 3.4.9.1 to state:

"Verify pressurizer water level is ≤ 65.1% **in MODES 1 and 2, OR ≤ 90% in MODE 3.**"

The frequency of 12 hours for this surveillance is not being changed.

Proposed changes to the Bases Section 3.4.9 pertaining to the proposed new pressurizer water level limit in Mode 3 are also provided in Attachment 2, for information.

3.0 BACKGROUND

The pressurizer is a component in the reactor coolant system (RCS) that is used to maintain required RCS pressure during steady state operations. The pressurizer also limits pressure changes caused by reactor coolant thermal expansion and contraction during load transients. The pressurizer provides a point in the RCS where liquid and vapor are maintained in equilibrium under saturated conditions for pressure control purposes. The proposed change will not alter these design features of the pressurizer.

The water level in the pressurizer, and the corresponding steam space volume, is maintained by a control system that varies level as a function of reactor coolant average temperature, T_{avg}. The control system is programmed to maintain pressurizer water level at approximately 37% with the RCS at the zero power T_{avg} (547°F). The programmed level increases with temperature and reaches approximately 53% at the current full power T_{avg} (562°F). This temperature-dependent level program is designed to maintain a constant mass of reactor coolant over the programmed temperature range for power operation. The water level maintained by this program is sufficient so that the pressurizer will not empty on a reactor trip from 100% power. The steam space associated with this water level is sufficient to prevent water relief through the pressurizer safety valves following a loss-of-load event or a loss-of-normal feedwater event at 100% power. Although the safety function of the pressurizer safety valves (overpressure protection of the RCS pressure boundary) can still be met if water relief occurs, it is preferable to limit operation to steam relief. Water discharge results in higher hydraulic loading on the discharge piping and other components downstream of the safety valves. The proposed change will not alter these design features of the pressurizer level control system.

The current Tech Spec limit is based on the initial condition pressurizer level (71%) used for the limiting design basis accidents that result in a water insurge to the pressurizer. The 71% value is based on the nominal programmed pressurizer level that would result from the plant operating at the highest T_{avg} (572°F) covered by the current safety analyses. The 71% value also includes 5.9% level for instrument uncertainty, so that the 65.1% value in Tech Specs is a limit on indicated level.

The design of the pressurizer and the pressurizer level control system are based primarily on thermal-hydraulic conditions that occur when the reactor is operating. The maximum water level limit is specified to maintain sufficient space for a steam bubble during normal operation and therefore accommodate pressurizer insurge during heatup transients. The safety analyses for loss-of-load and loss-of-normal feedwater represent the limiting analyses for insurge to the pressurizer. The proposed change will not affect the existing accident analyses and resulting requirements in Modes 1 and 2, which are for Power Operation and Plant Startup, respectively. The proposed change only applies to Mode 3 (Hot Standby), when the reactor is shutdown. In this Mode, a higher initial pressurizer level is acceptable because the magnitude of a

pressurizer insurge due to thermal expansion of the reactor coolant for an event in Mode 3 is much smaller than that which would occur in Mode 1 with the plant at full power.

Potential sources of insurge into the pressurizer during Mode 3 result from a Chemical and Volume Control System (CVCS) malfunction that maximizes charging flow or an inadvertent safety injection. At an actual pressurizer level of 90%, there is approximately 2300 gallons of empty volume in the pressurizer. In the event that a charging pump is operating without letdown, the operator would have more than 20 minutes to respond to that condition. In the unlikely event that all three charging pumps are operating without letdown, the operator would have nearly 8 minutes to respond to the condition. The purpose of the license amendment is to support a specific and limited plant evolution (e.g., plant cooldown from Mode 3 to Mode 4). Entergy will establish administrative controls which will require that an operator be assigned during that evolution for operating and controlling the CVCS, including monitoring pressurizer water level, whenever the indicated pressurizer level, in Mode 3, is above the 65.1% limit established for Modes 1 and 2.

The effect of an inadvertent safety injection on pressurizer water level is limited, because IP2 is a low head injection plant. The nominal shutoff head of the safety injection pumps is 1500 psig. Therefore, in the event of a safety injection actuation in Mode 3 with pressure above the pump shutoff head, no mass injection would occur and pressurizer level would not be affected. In the event of a safety injection with pressure below the shutoff head, the resulting mass injection would compress the pressurizer steam space and system pressure would increase to the pump shutoff head, at which point additional mass injection and increase in pressurizer level would terminate. The pressure-temperature limits for operating the plant are established, in part, by operating curves which ensure that the reactor pressure boundary fracture toughness requirements of 10 CFR 50 Appendix G are satisfied. The Low Temperature Overpressure Protection Technical Specification requirements for IP2 are not applicable in Mode 3.

4.0 TECHNICAL ANALYSIS

When performing a plant cooldown, reactor coolant contracts, resulting in a reduction in pressurizer water level. In order to maintain level in the pressurizer, a net positive addition to the RCS is established by adjusting the charging and letdown flowrates of the Chemical and Volume Control System (CVCS). However, the net positive addition of water may not be sufficient to fully compensate for contraction when performing a cooldown at or near the maximum allowable rate based on metal thermal stress considerations. Operation of the CVCS in this plant condition is also used to establish the higher reactor coolant boron concentrations required to maintain shutdown margin as reactor coolant temperature is reduced. The proposed change to allow a higher pressurizer water level in Mode 3 will provide operators greater flexibility in preparing for and performing a plant cooldown at or near the maximum allowable rate. The higher level will help compensate for reactor coolant contraction and will be less of an operational restriction to the addition of borated water, as needed, to meet shutdown margin requirements. In addition, upon reaching Mode 4 (RCS temperature less than 350 ^{0}F) and placing the residual heat removal system in service, pressurizer level is raised to a 'water-solid' condition. The increase in level is typically performed using the pressurizer spray line to protect the pressurizer surge line from cooling too rapidly. The lower the initial pressurizer level is, the longer this evolution will take. Entergy estimates that a time savings of approximately 1 – 2

hours for plant cooldown from Mode 3 to Mode 4 is achievable if a higher pressurizer level is allowed in Mode 3. During Modes changes for return to power operation, (e.g., Mode 3 to 2), there is no benefit to maintaining a higher pressurizer level so that the pressurizer level in Mode 3 for that evolution would normally be maintained at the existing Mode 1 / 2 limit.

The proposed change will allow plant operators to adjust actual pressurizer level in Mode 3 to $\leq$ 90% in anticipation of performing a plant cooldown. The proposed Tech Spec limit for Mode 3 is based on actual level, since there is not a direct indication that would be used for a Tech Spec limit that specifies 'indicated level'. The reading from the instrument channel indicators must be adjusted by plant operators using density compensation curves when the pressurizer is not at the temperature used for the instrument channel calibration. The limit on pressurizer water level established in plant procedures will account for applicable instrument uncertainty in addition to specifying the use of density compensation curves.

In Mode 3, the rate of volumetric expansion of reactor coolant in the event of a loss of decay heat removal would be much less significant than that resulting from a loss-of-load or loss-of-normal feedwater, with the plant at full power. The water level limit in Modes 1 and 2, which accommodates water insurge for these limiting events, is not being changed. The proposed change only applies to Mode 3 and there will still be a steam bubble maintained in the pressurizer with the proposed new level limit of 90%. In addition, administrative controls, implemented in plant procedures, will require that an operator be assigned for operating and controlling the CVCS, including monitoring pressurizer water level, whenever the pressurizer level, in Mode 3, is above 65.1%.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration

Entergy Nuclear Operations, Inc. (Entergy) has evaluated the safety significance of the proposed change regarding the Mode 3 pressurizer water level limit according to the criteria of 10 CFR 50.92, "Issuance of Amendment". Entergy has determined that the subject changes do not involve a Significant Hazards Consideration as discussed below:

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

   Response: No

Pressurizer water level is an assumed initial condition for certain accident analyses. Plant initial conditions are not accident initiators and do not have an effect on the probability of the accident occurring. The proposed change only revises the specified limit on water level in the pressurizer, so this change does not affect accident probability.

Pressurizer water level is an assumed initial condition for accidents such as LOCA, loss-of-load and loss-of-normal feedwater. The limiting accident analysis results occur at full power conditions when the available core thermal power is maximized. The proposed change does not affect the specified pressurizer level limit at any power level from zero to full power. That is, the pressurizer level limit is not being changed in Modes 1 and 2.

The proposed change does revise the specified pressurizer water level limit in Mode 3 (Hot Standby) but this does not affect accident analysis results because the limiting analyses will remain those that are postulated to occur in Mode 1 with the plant at full power.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   Response: No

The proposed change does not involve physical changes to existing plant equipment or the installation of any new equipment. The design of the pressurizer, the pressurizer level control system and the pressurizer safety valves is not being changed and the ability of these systems, structures, and components to perform their design or safety functions is not being affected. The proposed change revises the specified limit on pressurizer water level in Mode 3 (Hot Standby) to allow operators greater flexibility in performing a plant cooldown. The method used in performing the plant cooldown is not being changed. This proposed change does not create new failure modes or malfunctions of plant equipment nor is there a new credible failure mechanism.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

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

   Response: No

Pressurizer level is an initial condition assumed in certain accident analyses involving an insurge in the pressurizer and an increasing reactor coolant system (RCS) pressure. These analyses demonstrate that the design pressure for the RCS is not exceeded for the limiting analyses based on the plant at full power. The proposed change does not affect the existing Technical Specification requirement for Mode 1 (Power Operation) or Mode 2 (Plant Startup) and therefore does not affect the assumptions or results of these accident analyses. The margin for RCS design pressure demonstrated by these analysis results is not being reduced. The proposed change only applies to the pressurizer level limit in Mode 3 (Hot Standby) when there is substantially lower thermal energy available to cause rapid expansion of reactor coolant and an insurge to the pressurizer. Protection of the RCS pressure boundary is still maintained by the pressurizer safety valves, which are not being modified by the proposed change in pressurizer water level.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Entergy Nuclear Operations, Inc. concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92 (c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements / Criteria

The proposed changes have been evaluated to determine whether applicable requirements continue to be met. The proposed change is consistent with the Indian Point 2 FSAR. Section 4.2.2.2 states, "The pressurizer maintains the required reactor coolant pressure during steady-state operation, limits the pressure changes caused by coolant thermal expansion and contraction during normal load transients, and prevents the pressure in the reactor coolant system from exceeding the design pressure." This design function of the pressurizer will continue to be met with the proposed new water level limit in Mode 3, and no change to the FSAR is needed.

Changes to the Technical Specification Bases are proposed to provide information about the limit on pressurizer level in Mode 3. The existing Bases state "The intent of the LCO (e.g. 3.4.9) is to ensure that a steam bubble exists in the pressurizer prior to power operation to minimize the consequences of potential overpressure transients." This intent will continue to be satisfied with the proposed change. The new level limit still ensures that a steam bubble exists in the pressurizer in Mode 3. The limit on pressurizer level and the corresponding steam bubble in the pressurizer prior to power operation is not affected, because the existing level limit is not being changed for Modes 1 and 2. In addition, proposed changes to the Bases specify that whenever pressurizer water level in Mode 3 is above the Mode 1 and 2 limit, a dedicated operator is assigned for operating and controlling the chemical and volume control system, including monitoring pressurizer water level. This new requirement will be implemented in plant operating procedures.

Although IP2 is not a Standard Review Plan (SRP) plant, SRP Section 15.5.1 / 2 (Inadvertent Operation of ECCS and CVCS Malfunction that Increases the Reactor Coolant Inventory) does provide guidance regarding pressurizer insurge causing water relief through the pressurizer safety valves, followed by a failure to reclose, resulting in SBLOCA. The proposed use of a dedicated operator, as well as the potential for safety valve function during water relief, provides reasonable assurance that this condition is prevented.

The NRC review and approval of stretch power (SPU) operation at IP2 (Reference 1) applied criteria from SRP Section 15.4.6 (CVCS Malfunction that Results in a Decrease in RCS Boron Concentration). The proposed change in Mode 3 pressurizer water level has no affect on the Entergy analysis and NRC basis for SPU approval. For operation in Mode 3 the analysis credits at least one RCP being in service to assure that inadvertent boron dilution from a CVCS malfunction can be detected and mitigated by operator action before shutdown margin is lost. Having at least one RCP in service assures adequate mixing so that a power excursion resulting from a dilution slug entering the

core region does not occur. This proposed amendment does not change plant procedures regarding RCP operation in Mode 3.

Entergy has determined that the proposed changes do not require any exemptions or relief from regulatory requirements other than the change requested to Technical Specification Section 3.4.9. The proposed change to the Technical Specification does not affect conformance to any design criteria described in the FSAR and the revised Technical Specification will continue to satisfy Criterion 2 of 10 CFR 50.36.

5.3 Environmental Considerations

The proposed change to the IP2 Technical Specifications regarding pressurizer water do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 PRECEDENCE

The proposed change in the pressurizer water level limit for Mode 3 plant operation was previously approved for Indian Point 3 (Reference 2).

7.0 REFERENCES

1. NRC letter to Entergy Nuclear Operations, Inc, dated October 27, 2004; "Indian Point Nuclear Generating Unit No. 2 – Issuance of Amendment [241] RE: 3.26 Percent Power Uprate (TAC MC1865).

2. NRC letter to Entergy Nuclear Operations, Inc, dated March 25, 2003; "Indian Point Nuclear Generating Unit No. 3 – Issuance of Amendment [216] RE: Pressurizer Level Limit in Mode 3 (TAC MB5296).

ATTACHMENT 2 TO NL-05-062

MARKUP OF TECHNICAL SPECIFICATION AND BASES PAGES

FOR PROPOSED CHANGES REGARDING

PRESSURIZER WATER LEVEL REQUIREMENTS

Bold, italics for added text

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ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
DOCKET NO. 50-247

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

LCO 3.4.9 The pressurizer shall be OPERABLE with:

a. Pressurizer water level ≤ 65.1% ***in MODES 1 and 2, or ≤ 90% in MODE 3;*** and

b. Two groups of pressurizer heaters OPERABLE with the capacity of each group ≥ 150 kW with each group powered from a different safeguards power train.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Pressurizer water level not within limit.	A.1	Be in MODE 3.	6 hours
	AND		
	A.2	Fully insert all rods.	6 hours
	AND		
	A.3	Place Rod Control System in a condition incapable of rod withdrawal.	6 hours
	AND		
	A.4	Be in MODE 4.	12 hours
B. One required group of pressurizer heaters inoperable.	B.1	Restore required group of pressurizer heaters to OPERABLE status.	72 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	Verify pressurizer water level is ≤ 65.1% ***in MODES 1 and 2, or ≤ 90% in MODE 3.***	12 hours
SR 3.4.9.2	Verify capacity of each required group of pressurizer heaters is ≥ 150 kW.	24 months

NO CHANGES THIS PAGE — FOR INFORMATION ONLY

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.9 Pressurizer

BASES

BACKGROUND

The pressurizer provides a point in the RCS where liquid and vapor are maintained in equilibrium under saturated conditions for pressure control purposes to prevent bulk boiling in the remainder of the RCS. Key functions include maintaining required primary system pressure during steady state operation, and limiting the pressure changes caused by reactor coolant thermal expansion and contraction during normal load transients.

The pressure control components addressed by this LCO include the pressurizer water level, the required heaters, and their controls and emergency power supplies. Pressurizer safety valves and pressurizer power operated relief valves are addressed by LCO 3.4.10, "Pressurizer Safety Valves," and LCO 3.4.11, "Pressurizer Power Operated Relief Valves (PORVs)," respectively.

The intent of the LCO is to ensure that a steam bubble exists in the pressurizer prior to power operation to minimize the consequences of potential overpressure transients. The presence of a steam bubble is consistent with analytical assumptions. Relatively small amounts of noncondensible gases can inhibit the condensation heat transfer between the pressurizer spray and the steam, and diminish the spray effectiveness for pressure control.

Electrical immersion heaters, located in the lower section of the pressurizer vessel, keep the water in the pressurizer at saturation temperature and maintain a constant operating pressure. A minimum required available capacity of pressurizer heaters ensures that the RCS pressure can be maintained. The capability to maintain and control system pressure is important for maintaining subcooled conditions in the RCS and ensuring the capability to remove core decay heat by either forced or natural circulation of reactor coolant. Unless adequate heater capacity is available, the hot, high pressure condition cannot be maintained indefinitely and still provide the required subcooling margin in the primary system. Inability to control the system pressure and maintain subcooling under conditions of natural circulation flow in the primary system could lead to a loss of single phase natural circulation and decreased capability to remove core decay heat.

BASES

BACKGROUND (continued)

Pressurizer heaters are powered from either the offsite source or the diesel generators (DGs) through the four 480 V vital buses as follows:

Safeguards Power Train 5A supports heater group 23 (485 kW);

Safeguards Power Train 6A supports heater group 24 (277 kW); and

Safeguards Power Train 2A/3A supports both:
heater group 21 from Bus 3A (554 kW); and
heater group 22 from Bus 2A (485 kW).

APPLICABLE SAFETY ANALYSES

In MODES 1, 2, and 3, the LCO requirement for a steam bubble is reflected implicitly in the accident analyses. ***The limiting analysis is for*** ~~For~~ events that result in pressurizer insurge (e.g., loss of normal feedwater and the loss of load/turbine trip). Analyses assume that the limiting value for the highest initial pressurizer level is 71.0%. This is an analytical limit and is based on the pressurizer program level at a full power T_{avg} of 572 Degrees F ~~(65%)~~ ***(65.1%)*** plus a ~~6.0%~~ ***5.9%*** allowance for instrument error. For other events, the nominal value of pressurizer level is assumed because the effect of initial pressurizer level on PCT is small (Ref. 1). Safety analyses performed for lower MODES are not limiting. All analyses performed from a critical reactor condition assume the existence of a steam bubble and saturated conditions in the pressurizer. In making this assumption, the analyses neglect the small fraction of noncondensible gases normally present.

Safety analyses presented in the UFSAR (Ref. 1) do not take credit for pressurizer heater operation; however, an implicit initial condition assumption of the safety analyses is that the RCS is operating at normal pressure.

The maximum pressurizer water level limit, which ensures that a steam bubble exists in the pressurizer, satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii). Although the heaters are not specifically used in accident analysis, the need to maintain subcooling in the long term during loss of offsite power, as indicated in NUREG-0737 (Ref. 2), is the reason for providing an LCO.

LCO

The LCO requires the pressurizer to be OPERABLE with the actual water level less than or equal to 71.0%, ***in MODES 1 and 2.*** This maximum pressurizer level of 71.0% is the nominal level of the pressurizer program level at a full power T_{avg} of 572 Degrees F ~~(65%)~~ ***(65.1%)*** plus a ~~6.0%~~ ***5.9%*** allowance for instrument error. ***The level limit in MODE 3 is less than or equal to***

BASES

LCO (continued)

90% actual. Pressurizer level indications in the control room are averaged to come up with a value for comparison to the limit. A maximum allowance for instrument error of 5.9% (based on 2 channel measurement) applied to the analytical limit of 71% results in an indicated level that should not exceed 65.1%, ***in MODES 1 and 2. An instrument error of 5.9% is also conservative to use in Mode 3. In addition, density compensation curves must be applied to the indicator values when the pressurizer is not at the temperature used for the instrument channel calibration. Whenever pressurizer water level in MODE 3 is above the MODE 1 and 2 limit, a dedicated operator is assigned for operating and controlling the chemical and volume control system, including monitoring pressurizer water level.***

Limiting the LCO maximum operating water level preserves the steam space for pressure control. The LCO has been established to ensure the capability to establish and maintain pressure control for steady state operation and to minimize the consequences of potential overpressure transients. Requiring the presence of a steam bubble is also consistent with analytical assumptions.

The LCO requires two groups of OPERABLE pressurizer heaters, each with a capacity $\geq$ 150 kW. Each of the two groups of pressurizer heaters must be powered from a different DG to ensure that the minimum required capacity of 150 kW can be energized during a loss of offsite power condition assuming the failure of a single DG. The minimum heater capacity required is sufficient to maintain the RCS near normal operating pressure when accounting for heat losses through the pressurizer insulation. By maintaining the pressure near the operating conditions, a wide margin to subcooling can be obtained in the loops. The value of 150 kW has been demonstrated to be adequate to maintain RCS pressures control.

APPLICABILITY

The need for pressure control is most pertinent when core heat can cause the greatest effect on RCS temperature, resulting in the greatest effect on pressurizer level and RCS pressure control. Thus, applicability has been designated for MODES 1 and 2. The applicability is also provided for MODE 3. The purpose is to prevent solid water RCS operation during heatup and cooldown to avoid rapid pressure rises caused by normal operational perturbation, such as reactor coolant pump startup.

In MODES 1, 2, and 3, there is need to maintain the availability of pressurizer heaters, capable of being powered from an emergency power supply. In the event of a loss of offsite power, the initial conditions of these MODES give the greatest demand for maintaining the RCS in a hot pressurized condition with loop subcooling for an extended period. For MODE 4, 5, or 6, it is not necessary to control pressure (by heaters) to ensure loop subcooling for heat transfer when the Residual Heat Removal (RHR) System is in service, and therefore, the LCO is not applicable.

BASES

ACTIONS

A.1, A.2, A.3, and A.4

Pressurizer water level control malfunctions or other plant evolutions may result in a pressurizer water level above the nominal upper limit, even with the plant at steady state conditions. If the pressurizer water level is not within the limit, action must be taken to bring the plant to a MODE in which the LCO does not apply. To achieve this status, within 6 hours the unit must be brought to MODE 3 with all rods fully inserted and incapable of withdrawal. Additionally, the unit must be brought to MODE 4 within 12 hours. This takes the unit out of the applicable MODES.

The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

B.1

If one required group of pressurizer heaters is inoperable, restoration is required within 72 hours. The Completion Time of 72 hours is reasonable considering that the redundant heater group is still available and the low probability of an event during this period. Pressure control may be maintained during this time using the remaining heaters.

C.1 and C.2

If one group of pressurizer heaters are inoperable and cannot be restored in the allowed Completion Time of Required Action B.1, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 6 hours and to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1

This SR requires that during steady state operation, pressurizer level is maintained below the nominal upper limit to provide a minimum space for a steam bubble. The LCO requires that the actual pressurizer water level be less than or equal to 71.0% ***in MODES 1 and 2, or 90% in MODE 3.*** Pressurizer level indications in the control room are averaged to come up with a value for comparison to the limit. An additional margin of approximately 5.9%, should be allowed for instrument error (i.e., the indicated level should not exceed 65.1% ***in MODES 1 and 2. In MODE 3, instrument uncertainty and density compensation curves must be applied to assure that the actual level limit of 90% is met.*** The Frequency of 12 hours has been shown by operating

BASES

SURVEILLANCE REQUIREMENTS (continued)

practice to be sufficient to regularly assess level for any deviation and verify that operation is within safety analyses assumption of ensuring that a steam bubble exists in the pressurizer. Alarms are also available for early detection of abnormal level indications. ***In MODE 3 with level above the MODE 1 and 2 limit, pressurizer level monitoring is enhanced by use of a dedicated operator.***

SR 3.4.9.2

The SR is satisfied when the power supplies are demonstrated to be capable of producing the minimum power and the associated pressurizer heaters are verified to be at their design rating. This may be done separately by testing the power supply output which is performed by surveillance tests required by LCO 3.8.1, "AC Sources - Operating," and by performing an electrical check on heater element continuity and resistance. The Frequency of 24 months is considered adequate to detect heater degradation and has been shown by operating experience to be acceptable.

REFERENCES

1. UFSAR, Section 14.

2. NUREG-0737, November 1980.

ATTACHMENT 3 TO NL-05-062

ENTERGY COMMITMENTS

FOR PROPOSED CHANGES REGARDING

PRESSURIZER WATER LEVEL REQUIREMENTS

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
DOCKET NO. 50-247

COMMITMENTS REGARDING PROPOSED IP2 LICENSE AMENDMENT REQUEST FOR RELAXATION OF PRESSURIZER LEVEL REQUIREMENT IN MODE 3

Number	Commitment	Due Date
NL-05-062-A	Revise Technical Specification Bases to specify a requirement that a dedicated operator is assigned for operating and controlling the chemical and volume control system, including monitoring pressurizer level, whenever pressurizer level in Mode 3 is above the Mode 1 and 2 limit.	On or before the implementation date established when the License amendment is issued.
NL-05-062-B	Revise the operating procedure for plant cooldown from Mode 3 to Mode 4 to implement the requirement for a dedicated operator as stated in the revised Technical Specification Bases.	Prior to use of the relaxed limit on pressurizer water level in Mode 3.