October 16, 2000

Mr. Mike Bellamy
Site Vice President
Entergy Nuclear Generation Company
Pilgrim Nuclear Power Station
600 Rocky Hill Road
Plymouth, MA 02360

SUBJECT: PILGRIM NUCLEAR POWER STATION - ISSUANCE OF AMENDMENT RE: COMPLIANCE WITH THE OPERATING REQUIREMENTS DERIVED FROM NEDO-21231 (TAC NO. MA6107)

Dear Mr. Bellamy:

The Commission has issued the enclosed Amendment No. 186 to Facility Operating License No. DPR-35 for the Pilgrim Nuclear Power Station. This amendment is in response to your application dated June 16, 1999, as supplemented on May 4 and July 10, 2000.

The proposed amendment incorporates Technical Specification (TS) changes to comply with the operating requirements derived from GE Report, NEDO-21231, "Banked Position Withdrawal Sequence (BPWS)", dated January 1977, as referenced in NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel" (GESTAR-II). NEDO-21231 forms the current basis for the Pilgrim reactor core design process. NEDE-24011-P-A is one of the approved analytical methods for performing the reload analysis as specified in TS 5.6.5.b.1. The Nuclear Regulatory Commission (NRC) staff approved NEDO-21231 by a letter to General Electric dated January 25, 1985. NEDO-21231 describes a revised method for developing control rod withdrawal sequences to mitigate the consequences of the control rod drop accident (CRDA) in the startup and low power operating ranges of 20% rated thermal power (RTP) and 280 cal/gram peak fuel enthalpy. The proposed TS changes incorporate Specifications and Actions based upon the plant-specific CRDA and BPWS for 20% RTP and 280 cal/gram peak fuel enthalpy.

The proposed TS changes also include changes to the control rod worth limits to resolve Licensee Event Report (LER) 98-006-00, dated April 30, 1998, and its supplement LER 98-006-01, dated August 27, 1988.

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

Sincerely,

/RA/

Alan B. Wang, Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-293

Enclosures: 1. Amendment No. 186 to
License No. DPR-35
2. Safety Evaluation

cc w/encls: See next page

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

Sincerely,

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cc w/encls: See next page

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ENTERGY NUCLEAR GENERATION COMPANY

DOCKET NO. 50-293

PILGRIM NUCLEAR POWER STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 186
License No. DPR-35

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

   A. The application for amendment filed by the Entergy Nuclear Generation Company (the licensee) dated June 16, 1999, as supplemented on May 4 and July 10, 2000, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations;

   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 3.B of Facility Operating License No. DPR-35 is hereby amended to read as follows:

   B. Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 186 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days of the date of the issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

James W. Clifford, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: October 16, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 186

FACILITY OPERATING LICENSE NO. DPR-35

DOCKET NO. 50-293

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove	Insert
i	i
3/4.3-1	3/4.3-1
3/4.3-2	3/4.3-2
3/4.3-3	3/4.3-3
3/4.3-4	3/4.3-4
3/4.3-5	3/4.3-5
3/4.3-6	3/4.3-6
3/4.3-7	3/4.3-7
3/4.3-8	3/4.3-8
3/4.3-9	3/4.3-9
3/4.3-10	3/4.3-10
3/4.3-11	3/4.3-11
3/4.3-12	3/4.3-12
3/4.3-13	3/4.3-13
3/4.3-14	3/4.3-14
3/4.2-25	3/4.2-25
3/4.2-37	3/4.2-37
B 3/4.3-1	B 3/4.3-1
B 3/4.3-2	B 3/4.3-2
B 3/4.3-3	B 3/4.3-3
B 3/4.3-4	B 3/4.3-4
B 3/4.3-5	B 3/4.3-5
B 3/4.3-6	B 3/4.3-6
B 3/4.3-7	B 3/4.3-7
B 3/4.3-8	B 3/4.3-8
B 3/4.3-9	B 3/4.3-9
B 3/4.3-10	B 3/4.3-10
B 3/4.3-11	B 3/4.3-11
B 3/4.3-12	B 3/4.3-12
B 3/4.3-13	B 3/4.3-13
B 3/4.3-14	B 3/4.3-14
B 3/4.3-15	B 3/4.3-15
B 3/4.3-16	B 3/4.3-16
B 3/4.3-17	B 3/4.3-17
B 3/4.3-18	B 3/4.3-18
B 3/4.3-19	B 3/4.3-19
B 3/4.3-20	B 3/4.3-20
B 3/4.3-21	B 3/4.3-21

Remove	Insert
B 3/4.3-22	B 3/4.3-22
B 3/4.3-23	B 3/4.3-23
B 3/4.3-24	B 3/4.3-24
B 3/4.3-25	B 3/4.3-25
B 3/4.3-26	B 3/4.3-26
B 3/4.3-27	B 3/4.3-27
B 3/4.3-28	B 3/4.3-28
B 3/4.3-29	B 3/4.3-29
B 3/4.3-30	B 3/4.3-30
B 3/4.3-31	B 3/4.3-31
B 3/4.3-32	B 3/4.3-32
B 3/4.3-33	B 3/4.3-33
B 3/4.3-34	B 3/4.3-34
B 3/4.3-35	B 3/4.3-35
B 3/4.3-36	B 3/4.3-36
B 3/4.3-37	B 3/4.3-37
B 3/4.3-38	B 3/4.3-38
B 3/4.3-39	B 3/4.3-39

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 186 TO FACILITY OPERATING LICENSE NO. DPR-35

ENTERGY NUCLEAR GENERATION COMPANY

PILGRIM NUCLEAR POWER STATION

DOCKET NO. 50-293

1.0 INTRODUCTION

By letter dated June 16, 1999, the Boston Edison Company submitted a request for changes to the Pilgrim Nuclear Power Station (Pilgrim) Technical Specifications (TSs). On July 13, 1999, the Pilgrim license was transferred to the Entergy Nuclear Generation Company (Entergy/the licensee) and by letters dated May 4 and July 10, 2000, Entergy supplemented the application. The requested changes would incorporate TS changes to comply with the operating requirements derived from GE Report, NEDO-21231, "Banked Position Withdrawal Sequence (BPWS)", dated January 1977, as referenced in NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel" (GESTAR-II). NEDO-21231 forms the current basis for the Pilgrim reactor core design process. NEDE-24011-P-A is one of the approved analytical methods for performing the reload analysis as specified in TS 5.6.5.b.1. The Nuclear Regulatory Commission (NRC) staff approved NEDO-21231 by a letter to General Electric dated January 25, 1985. NEDO-21231 describes a revised method for developing control rod withdrawal sequences to mitigate the consequences of the control rod drop accident (CRDA) in the startup and low power operating ranges of 20% rated thermal power (RTP) and 280 cal/gram peak fuel enthalpy. The proposed TS changes incorporate Specifications and Actions based upon the plant-specific CRDA and BPWS for 20% RTP and 280 cal/gram peak fuel enthalpy. The proposed TS changes also include changes to the control rod worth limits to resolve Licensee Event Report (LER) 98-006-00, dated April 30, 1998, and its supplemental LER 98-006-01, dated August 27, 1988. The May 4 and July 10, 2000, letters provided clarifying information that did not change the initial proposed no significant hazards consideration determination or expand the scope of the application as published in the *Federal Register*.

2.0 EVALUATION

Entergy has proposed changes to the Pilgrim Reactivity Control Systems TSs to adopt certain provisions of the Standard TS (STS), NUREG-1433, *Standard Technical Specifications General Electric Plants, BWR/4*, of April 1995, and the NEDO-21231 report. These changes to the Pilgrim current TS (CTS) have been characterized as groups administrative changes, more restrictive changes, less restrictive changes, and relocated changes.

2.1 Administrative Changes

Entergy proposed to make the following administrative changes:

Entergy proposed to reformat the entire CTS 3.3, "Reactivity Control," to be more consistent with STS. The CTS has a generic Applicability and Objective for sections of CTS 3/4.3. In the CTS the individual TS sections contain the specific requirements for the applicability, Limiting Condition for Operation (LCO), and action requirements. However, these requirements are not separately delineated in each section of the CTS. Entergy has reformatted each section to provide a specific header for applicability, LCO, and action requirements in each section. These changes are denoted as A_1 in the application. The staff has reviewed each section and determined that the current requirements have been maintained and that these changes are purely editorial in nature. For those changes that have been changed to more or less restrictive or relocated, they are discussed later in this safety evaluation. Table 1 provides a comparison of the current TS and where the requirements of each section has maintained in the proposed TS. The staff has concluded that the changes annotated as A1 are format changes that are consistent with the STS and maintain the current requirements and, therefore, are administrative in nature.

The changes denoted as A_2 in the submittal propose editorial rewording (either adding or deleting) which result in no technical changes (either actual or interpretational) to the TSs. Therefore, they are administrative in nature.

These proposed changes denoted as A_3 are considered human factor improvements to existing requirements as follows:

Each LCO will have its own unique alphanumeric identifier.
Each surveillance will have its own unique alpha numeric identifier.
Each LCO will have its own APPLICABILITY statement.
Each LCO will state all ACTIONS necessary to satisfy the LCO.

These changes only affect the format in which the requirements are presented, not the technical content of the requirements. Since these changes will result in no technical changes (either actual or interpretational), they are administrative in nature.

CTS 3.3.F states, "Specifications 3.3.A through D above do not apply when there is no fuel in the reactor vessel". This requirement is restated in the APPLICABILITY for new LCO 3.3.A.1as "At all times when there is fuel in the reactor vessel." In addition, CTS 3.3.F requires that "If Specification 3.3.A through D above cannot be met, an orderly shutdown will be initiated and the reactor shall be in Cold Shutdown condition within 24 hours." This requirement is restated as ACTION A., when "LCO 3.3.B.2 cannot be met," and required ACTION A.1, "Be in COLD SHUTDOWN within 24 hours" for new LCO 3.3.B.2. While the wording of the CTS has changed, the substance of the requirement has been maintained; therefore, these changes are administrative in nature.

This proposed change will delete that portion of existing surveillance 4.3.A.2 which provides instructions for when the surveillance is not required. The requirements for when the surveillance is required are clear. It is understood that if the condition initially requiring the

surveillance is no longer applicable, then the surveillance is not required. Therefore, this proposed change does not change the substance of the requirement, and is administrative in nature.

This change proposes to replace CTS 3.3.A.2.b with proposed LCO 3.3.B.1, ACTIONS A.2 and C.2, and to delete that portion of CTS 3.3.A.2.b which provides details of the methods for disarming control rod drives (CRDs). The methods for disarming CRDs are addressed in the current BASES and will be carried forward into the revised BASES.

The requirement of CTS 3.3.A.2.b to disarm an inoperable control rod is retained in proposed LCO 3.3.B.1, ACTIONS A.2 and C.2. CTS 3.3.A.2.b does not specify a time for completing this ACTION. Proposed ACTION A.2 will allow 2 hours to disarm an inoperable control rod that is stuck and ACTIONS C.1 and C.2 will allow 4 hours to insert and disarm all other inoperable control rods. These times are based on experience for the actual operational steps involved to fully insert and/or disarm an inoperable control rod following discovery of the inoperable condition. The licensee has argued that since the TS provides no guidance for completing this Action that by imposing times that are consistent with past plant operation, they are maintaining the current TS requirements as interpreted by the licensee. Since the current requirements continue to be maintained, this change is administrative in nature.

The requirement of CTS 3.3.A.2.b to ensure Reactivity Margin (Specification 3.3.A.1) will be carried forward in proposed LCO 3.3.B.1, ACTION A.4 for a stuck control rod. In addition, as discussed later, for all other cases of inoperable control rods, proposed LCO 3.3 B.1 ACTIONS C.1 and C.2 will require them to be fully inserted and disarmed. This will ensure that the inoperable rod is in a position to satisfy reactivity margin. Since the current requirements of CTS 3.3.A.2 will continue to be maintained, this change is administrative in nature.

To be consistent with the STS a note would be added (at the start of proposed TS 3.3.B.1 ACTION C) that states: "Separate condition entry is allowed for each control rod." This note provides clarification for the proposed TS, since the required ACTIONS for each condition provide appropriate compensatory actions for each inoperable control rod. Complying with the required ACTIONS may allow for continued operation, and subsequent inoperable control rods are governed by subsequent condition entry and application of associated required ACTIONS. During startup when less than or equal to 20% RTP if the RWM is inoperable, TS 3.3.F would suspend all control rod movement. Required 3.3.B ACTION C.1 is modified by a note, which would allow continued operation with the Rod Worth Minimizer (RWM) bypassed, to allow insertion of inoperable control rods. Insertion of the inoperable rods places the plant in a safer condition. In addition, LCO 3.3.F provides requirements when the RWM is bypassed to ensure compliance with the control rod drop accident (CRDA) analysis. The addition of these two notes serves to assist the operator in complying with the required ACTIONS and does not alter the requirements as discussed above. Therefore, these proposed changes are administrative in nature.

CTS 3.3.A.2.e specifies that the number of inoperable control rods shall not exceed eight and that Specification 3.3.A.1 (Reactivity Margin - Core Loading) must be met at all times. The requirement to have no more than eight inoperable control rods is carried forward in proposed LCO 3.3.B.1, ACTION F. The requirement to ensure reactivity margin (CTS 3.3.A.1) will be carried forward in proposed LCO 3.3.B.1, ACTION A.4 for a stuck control rod. For all other cases of inoperable control rods, proposed LCO 3.3 B.1 ACTIONS C.1 and C.2 will require them to be fully inserted and disarmed, which will ensure that the inoperable rod is in a position to

satisfy the reactivity margin. Since the current requirements will continue to be maintained, these changes are administrative in nature.

CTS 3.3.B.1 requires each control rod to be coupled to its drive, or be completely inserted and the control rod directional control valves be electrically disarmed. The requirement that control rods be coupled to their drive mechanisms is presented in proposed surveillance requirement (SR) 4.3.B.1.3, making it a requirement for control rods to be considered OPERABLE. The actions to fully insert inoperable control rods and disarm them are presented in proposed LCO 3.3.B.1 ACTIONS C.1 and C.2. Moving the existing specification for control rod coupling to another specification (as a SR) does not eliminate any requirements, or impose a new or different treatment of the requirements. Therefore, this proposed change is administrative in nature.

CTS 3.3.B.1, contains the control rod coupling requirements and when they apply. The coupling requirements have been relocated to SR 4.3.B.1.3. In addition, CTS 3.3.B.1 also allows two control rod drives to be removed as long as Specification 3.3.A.1 (Reactivity Margin) is met. The proposed TS has been revised such that proposed TS 3.3.B.1 addresses the operability of control rods for the Run and Startup Modes, and the Refuel Mode with the head fully tensioned and TS 3.10.D addresses the removal of control rods and/or control rod drive mechanisms in the Refuel Mode during refueling and core alterations. This proposed change is a format change and does not eliminate any requirements or impose a new or different treatment of the requirements. As noted earlier the staff has concluded that the requirements for CTS 3.3.B.1 have been maintained and, therefore, this proposed change is administrative in nature.

CTS 3.3.B.2, requires the control rod housing support system to be in place during power operation and when the reactor is pressurized above atmospheric pressure unless all control rods are fully inserted and Specification 3.3.A.1 is met. This requirement is being replaced with the requirement to be in cold shutdown within 24 hours. This will ensure that the requirement for all control rods to be inserted and Specification 3.3.A.1 are met. This proposed change does not eliminate any requirements or impose a new or different treatment of the requirements. Therefore, this proposed change is administrative in nature.

CTS 4.3.B.3 requires the RWM be verified OPERABLE prior to control rod withdrawal for startup or insertion to reduce power below 20% and specifies the details (a, b, c, and d) for performing this verification. Proposed SR 4.3.F.1 will require performance of an INSTRUMENT FUNCTIONAL TEST of the RWM prior to control rod withdrawal for startup or insertion to reduce power below 20%. The specific details, except for (a) verification of sequence input, for performing this test are relocated to the BASES. Since the CTS requirements are still being met, therefore, the goal of the surveillance (i.e., to verify operability) is achieved by requiring a functional test, and this change is administrative in nature.

CTS 3.3.B.4 and SR 4.3.B.5 specify the count rate requirements for the Source Range Monitors (SRMs) during refueling. CTS 3/4.10.B also specifies the operability requirements, including count rate for the SRMs during core alterations (Refuel Mode). The requirement to have greater than three counts per second is stated in both specifications. This proposed change will delete the reference to refueling in proposed LCO 3.3.B.3 and SR 4.3.B.3. Deleting the reference to refueling does not eliminate any requirements or impose a new or different treatment of the requirements. Since the current requirements will continue to be maintained in TS 3/4.4.10.B, this change is administrative in nature.

CTS 3.3.B.5 specifies the requirements for the Rod Block Monitor (RBM) by referencing Table 3.2.C-1. This proposed change will delete CTS 3.3.B.5 because the requirements are redundant. CTS 3/4.2.C "Control Rod Block Actuation" also states that the LCOs for the instrumentation that initiates control rod block are given in Table 3.2.C-1. Table 3.2.C-1 specifies the APPLICABILITY for the RBM. The notes for Table 3.2.C-1 remain unchanged in the proposal and specify the ACTIONS for an inoperable RBM. Table 4.2.C specifies the SR for the RBM. Deleting CTS 3.3.B.5 will eliminate confusion without eliminating any surveillance requirements, or imposing any new or different treatment of the requirements. Since the current requirements will continue to be maintained, this change is administrative in nature.

CTS 4.3.E still contains requirements for the startup test program. The startup test program was performed following initial fuel loading to demonstrate that the station was capable of operating safely and satisfactorily. Since this change deletes the reference to the startup test program which is no longer applicable, this change is administrative in nature.

CTS 3.3.G.1 requires the scram discharge volume drain and vent valves to be OPERABLE whenever more than one OPERABLE control rod is withdrawn. Since the control rods can only be withdrawn in the RUN, STARTUP, and REFUEL MODES, proposed LCO 3.3.G for the scram discharge volume drain and vent valves requires APPLICABILITY only in the RUN and STARTUP MODES, or REFUEL MODE when the reactor vessel head is fully tensioned. CTS 3/4.10 requirements remain unchanged to ensure that core reactivity is within the capability of the control rods and to prevent criticality during refueling conditions. Since the requirements have not changed, this change is administrative in nature.

CTS 4.3.G.1.b. specifies testing of the scram discharge volume vent and drain valves in accordance with CTS 3.13. The requirements for surveillance testing in accordance with the Inservice Test Program are contained in CTS 4.13. The proposed change will modify the reference from CTS 3.13 to 3.14, which will provide the correct reference to the applicable CTS without eliminating any requirements or imposing any new or different treatment of the requirements. Since the current requirements will continue to be maintained, this change is administrative in nature.

As discussed in the preceding paragraphs, Entergy proposes to make a number of administrative changes. Administrative changes are modifications made to the combined new and old TSs to reconcile conflicting content, remove redundancy, or reformat requirements. The staff's review considered the following: first, that the proposed changes are indeed administrative; and, second, that the reformatted TS or deletions retain the substance of the original TS. The NRC staff reviewed all of the administrative and editorial changes proposed by the licensee and finds them acceptable, as set forth above, because they do not result in any change in operating requirements, are consistent with the STS, and are consistent with the Commission's regulations.

2.2 Technical Changes - More Restrictive

Entergy has proposed 12 changes that are more restrictive than the CTS requirements. Each of the proposed TS changes are discussed below.

CTS Section 3.3.F requires that the plant be in cold shutdown in 24 hours if conditions A through D of CTS Section 3.3 are not met. Sections A through D refer to reactivity control. The proposal is to add LCO 3.3.B.1 and LCO 3.3.B.3 to the TS and use LCO 3.3.C in the CTS to require that

the plant be in hot shutdown in 12 hours for the same reasons as those in CTS 3.3.F. This change is more restrictive because it places the plant in a shutdown state (K_{eff} < 0.99) earlier, and, therefore, is acceptable.

CTS Section 3.3.A.2.c requires that control rods that are inoperable and insertable be fully inserted and disarmed when the RTP is less than 20%. This is to ensure compliance with rod drop analysis assumptions. New TS LCO 3.3.B.1 would require that inoperable but insertable control rods always be inserted regardless of RTP. This change is more restrictive because these rods will be performing their reactivity control function at all times rather than only when RTP is less than 20%. This ensures the control rod analysis assumptions continue to be met and, therefore, this change is acceptable.

CTS Table 3.2.F allows up to 7 days of operation with no indication of control rod position indication in the control room. The licensee has proposed to increase the frequency of when the position indications are to be checked from once per shift to once per 24 hours which is less restrictive. However, the licensee has proposed SR 4.3.B.1.5 would require that the plant be placed in hot shutdown if more than nine control room rod position indicators fail as compared to CTS of no indication for 7 days. In addition, the licensee states in the proposed TS that a loss of position indication would require that the control rod be considered inoperable and fully inserted which places the plant in a safer condition. These changes requiring hot shutdown following the failure of more than nine control rod indicators and insertion of inoperable control rods is consistent with analytical assumptions and is more restrictive. In addition, the licensee has stated that each control rod indicator provides a drift alarm which provides an instant status of the control rod position indicator. The change in the frequency of position checks has decreased but the potential effects are offset by the more stringent requirements for the control rod position indication system. These changes are also consistent with the STS. Therefore, the proposed TS is acceptable.

The licensee proposed LCO 3.3.B.1 to address a condition not covered by the CTS. If the RTP is less than 20% and two or more inoperable control rods are not in compliance with the BPWS and are separated by two or more operable control rods, the plant must restore compliance with BPWS within 8 hours. The control rod drop accident evaluation (NEDE-24011-P-A-11-US) assumes that the plant is being operated within the constraints of the BPWS. NEDO-21231 requires all inoperable control rods be separated by two OPERABLE control rods when operating with reactor thermal power less than or equal to 20% RTP. These restrictions are not in CTS but were reviewed and approved by staff as part of the review of above topical reports . Therefore, the proposed TS change is acceptable.

CTS 3.3.A.2.d allows control rods with insertion times greater than 7 seconds to be disarmed and left in place. Proposed SR 4.3.B.1.4 will require that control rods not meeting the 7-second insertion time be fully inserted and disarmed. This will ensure that the control rods can meet the reactivity control function assumed in the accident analysis and, therefore, is acceptable.

NEDO-21231, “Banked Position Withdrawal Sequence (BPWS)” also assumes that there are no more than three inoperable control rods in any one BPWS group. This assumption is not currently addressed in the CTS. Proposed LCO 3.3.B.1, Action E , would require that if one or more groups with four or more inoperable control rods occurs, the plant must restore the control rod(s) to operable status within 8 hours. This assumption was previously reviewed and approved in NEDO-21231 and, therefore, is acceptable.

Proposed SR 4.3.B.1.3 requires that control rod coupling be verified after every full withdrawal as opposed to the current requirement of only once after the rod is fully withdrawn the first time following a refueling outage. More frequent verification of control rod coupling assures the control rods can be withdrawn when needed. This is also consistent with the STS. This proposal provides greater assurance of control rod operability and, therefore, is acceptable.

Proposed LCO 3.3.H would replace CTS 3.3.B.3.b to ensure compliance with BPWS analysis. Compliance with BPWS has been shown to limit control rod worth such that the design enthalpy limit will not be exceeded following a postulated CRDA. Proposed LCO 3.3.H stipulates a 1-hour completion time for the identification and/or restoration of an out-of-sequence condition involving nine or more control rods. CTS has no such actions or time limit and the proposal is more restrictive. The 1-hour limit will limit the time control rods can be out of sequence and, therefore, limits the time the plant is outside of the assumptions in the BPWS. This change is also consistent with the STS. Based on the above, the proposed TS is acceptable.

Proposed SR 4.3.F.2 requires verification of the automatic RWM set-point. The RWM is supposed to automatically bypass when RTP is greater than 20%. The proposed change verifies the actuation of a safety feature and is consistent with 10 CFR 50.36 for inclusion in the TS. This is a new requirement that is more restrictive and, therefore, is acceptable.

CTS 3.3.D allows an unspecified number of control rod accumulators to be inoperable as long as no other control rod in the nine-rod square array around this rod has : (1) an inoperable accumulator, (2) a directional control valve electrically disarmed while in a non-fully inserted position, or (3) a scram insertion time greater than the maximum permissible insertion time. In addition, if the control rod is inserted "full-in" and its directional control valves are electrically disarmed, it need not be considered to have an inoperable accumulator and the separation criteria would not have to be applied. Proposed LCO 3.3.D would address inoperable control rod accumulators. The proposed changes will impose more restrictive requirements as described below:

Action A would continue to allow operation of the control rod with an inoperable accumulator provided that there are no adjacent non-inserted inoperable control rods and that there are no adjacent operable control rods with inoperable accumulators when the dome pressure is greater than 950 psig. These requirements are the same as requirements 1 and 2 of CTS 3.3.D, except the licensee has added a new condition that reactor steam dome pressure must be greater than or equal to 950 psig. The insertion scram time requirement has been relocated to SR 4.3.B.1.4. Therefore, the CTS 3.3.D requirements have been maintained. During startup testing it was determined that a reactor dome pressure of 950 psig was necessary to drive the control rods in consistent with the safety analysis assumptions. The following actions are new and provide additional assurance that the control rod scram accumulator system will be able to perform its safety function. Action B would require the control rods with inoperable accumulators that cannot be restored to operable status within the specified time be declared inoperable if the dome pressure is less than 950 psig. This is necessary because the accumulators do affect the control rod insertion times if the reactor dome pressure is less than 950 psig. Action C addresses the condition when there is a loss of charging water pressure when reactor dome pressure is greater than or equal to 950 psig. The charging water is important because its loss could inhibit the operation of the control rod drive mechanism. Action C would allow 20 minutes to restore the charging water pressure. If restoration of the charging water does not correct the accumulator problem an additional 8 hours would be allowed to restore the accumulators to an operable status. This time would allow the operators to investigate the reason for the failure of

the control rod accumulator system. Action D is similar to Action C, but it would allow 1 hour to investigate the problem because the reactor dome pressure is less than 950 psig. Action E would require that the mode switch be placed in shutdown if the charging water pressure cannot be restored in 20 minutes when pressure is greater than 950 psig or all control rods with inoperable accumulators cannot be fully inserted when the pressure is less than 950 psig. These proposed TS provide additional assurance that control rod accumulator system would perform its safety function when required and, therefore, are acceptable.

Proposed LCO 3.3.E specifies a completion time of 12 hours to reach hot shutdown if a reactivity anomaly limit is exceeded. A completion time of 24 hours is currently assumed for this action. This results in a plant shutdown sooner than the CTS requires, is more conservative and, therefore, is acceptable.

CTS requires that the plant be in cold shutdown within 24 hours if any of the scram discharge volume drains or vent valves are inoperable. Proposed LCO 3.3.G will require that the plant be in hot shutdown in 12 hours. This proposal will require that the plant be shutdown sooner than the CTS requires, is more conservative, is consistent with the STS and, therefore, is acceptable.

The staff has reviewed the above proposed requirements and has determined that they are more restrictive than those in the CTS. The TS requirements in this category include requirements that are either new, more conservative than corresponding requirements in the CTS, or that have additional restrictions that are not in the CTS but are in the STS. The staff has concluded that these changes are additional restrictions on plant operation that enhance safety and, therefore, the NRC staff finds them acceptable.

2.3 Technical Changes - Relocations

Entergy proposes to relocate the description of how to determine the scram time to the Bases. The definition is not changing, and the requirement to perform scram time tests is contained in proposed SR 4.3.B.1.4. The provisions of 10 CFR 50.36 do not require that this description remain in TS, and changes to the description would be controlled by TS 5.5.6, “Technical Specification Bases Control Program.” Therefore, this relocation of information to the Bases document is acceptable.

2.4 Technical Changes - Less Restrictive

Proposed LCO 3.3.B.1 will allow continued operation with one failed control rod regardless of the reason for the failure as long as: (1) all other control rods are verified as not stuck within 24 hours; (2) the separation requirements are met; (3) the rod is disarmed; and (4) reactivity margins are satisfied. This proposal is less restrictive in that CTS only allows continued operation if the reason for the failure is confirmed as not related to a collet housing failure. The collet housing failure stipulation was added in 1976 following industry experience with intergranular corrosion cracking induced failures. CTS would allow operation with more than one inoperable control rod if the failure is not caused by collet housing failure; but, the proposed LCO will allow operation with only one inoperable control rod. The assumption of one stuck control rod for any reason was reviewed and approved in the review NEDO-21231. Furthermore, a completion time of 72 hours to ensure that reactivity margins are met is stipulated as opposed to the previously assumed 24 hours. The reactivity margin are based on one rod in stuck out. Therefore, this time is considered acceptable because the remaining operable control rods provide the required shutdown reactivity. Based on the above the proposed TS is acceptable.

Proposed SRs 4.3.B.1.1 and 4.3.B.1.2 will require that fully withdrawn control rods be exercised once per 7 days and that partially inserted rods be exercised once per 31 days. CTS requires that all control rods be exercised once per 7 days. Entergy states that exercising a partially inserted control rod could require a reduction in power. Entergy also states that this potential power reduction is not warranted given the following:

a. At full power, typically 80-90% of control rods are fully withdrawn and will be tested once every 7 days;

b. Operating experience has shown that stuck control rods are rare; and

c. Partially inserted control rods are exercised during normal plant operations and if one is found to be stuck, all rods will be exercised per LCO 3.3.B.1.

Given the fact that partially inserted control rods are exercised often during normal plant operations, it is highly likely that a failed control rod would be discovered well before the passage of 31 days. With this change there is still reasonable assurance that the control rods will continue to perform their safety function. The proposed change is, therefore, acceptable.

CTS 4.3.A.2 requires that all control rods be exercised once every 24 hours when operating with an inoperable control rod. This TS was intended to ensure the reliability of the shutdown system because each control rod becomes individually more important with inoperable rods that are not fully inserted. Proposed LCO 3.3.B.1 will require that inoperable control rods be fully inserted and disarmed, thus eliminating the reliability concern that necessitated CTS 4.3.A.2. CTS 4.3.A.2 also required that all control rods be exercised once every 24 hours with a stuck rod when failure of the control rod drive has not been ruled out as the reason for the failure. The proposed TS will require testing of all control rods once during the first 24 hours following the failure and on the normal interval thereafter. This proposed change is consistent with the STS which justifies maintaining the normal surveillance interval for the remaining operable rods based on the industry operational experience to date related to control rod reliability. The proposed change is acceptable.

CTS 4.3.B.1 requires that there be a discernable response from the nuclear instrumentation following a control rod withdrawal following a refueling outage. A response from instruments does indicate rod motion, but does not demonstrate that the rod is coupled as was the intent of the TS. This requirement is being deleted as proposed SR 4.3.B.1.3 will ensure that the control rods are coupled. Accordingly, this change is acceptable.

CTS 4.3.B.1 requires observation that the control rod does not go to the over-travel position following maintenance of any type. This TS is intended to ensure that the control rod is coupled following maintenance. Proposed SR 4.3.B.1.3 requires this observation following maintenance that would affect the control rod coupling. This proposal is acceptable because it addresses the concern addressed by the original TS and it will continue to provide the same level of safety.

CTS 3.3.B.3 does not allow control rods to be moved when the power is below 20% RTP unless the RWM is operable. Proposed LCO 3.3.F will continue to require operability of the RWM below 20% RTP, but it would allow movements once per 12 months if a second licensed operator or other qualified member of the technical staff verifies movements. The RWM is designed to aid the operator by not allowing rod patterns not considered as part of the BPWS

analyses. This function can also be performed by a visual inspection by another qualified staff member. The reason for the once per year restriction is to ensure that the RWM is maintained operable as much as possible. This proposal addresses the concern addressed by the original specification and is acceptable.

CTS 4.3.B.3 requires two verifications of the data entered into the RWM computer: prior to control rod withdrawal and prior to insertion below 20% RTP. Verifying the information in the RWM computer before inserting rods below 20% RTP is not necessary because any changes to the data that were entered after startup would have to be verified and the additional check is unnecessary. The check prior to insertion below 20% RTP is redundant and unnecessary. Therefore, the proposal to remove the portion of CTS 4.3.B.3 requiring verification of data into the RWM computer before control rod insertion below 20% RTP is acceptable.

CTSs 3.3.F and 3/4.10 are applicable during all modes when fuel is present in the reactor. These TSs govern reactivity control. Proposed LCOs 3.3.B.1, 3.3.C, and 3.3.D are applicable only during the run, startup, and refueling modes. In all other modes, only one control rod may be withdrawn and there are no design basis accidents or abnormal operational transients identified with single rod withdrawal that require reactor scram. Therefore, the proposed relaxation of the applicability statement will not reduce the capability of the control rods to perform their safety function and is acceptable.

CTS 3.3.E requires that core reactivity anomalies be limited to less than 1 percent delta K during the Startup and Run Modes. Proposed LCO 3.3.E has the same requirements, but is only applicable in the Run Mode, which means that the power is above 5% RTP. The rationale for this change is that measurements of reactivity during the startup mode are unreliable because the reactor is not in a steady state condition due to control rod movements. Furthermore, operation below 5% RTP represents only a fraction of the total reactor operating time. The staff concludes that the likelihood of an undetected reactivity anomaly is low due to the limited time between initial criticality and entry into the run mode. The proposed LCO is, therefore, acceptable.

The staff has reviewed the above less restrictive requirements proposed by the licensee which include deletions and relaxations to portions of the CTS requirements. Based on the discussion of each change, the staff has concluded that these proposed changes provide an acceptable level of safety, and are also consistent with the STS. When requirements have been shown to give little or no safety benefit, their relaxation or removal from the TS are appropriate. In addition to the technical review described above, the NRC staff reviewed the STS generic relaxations contained in the above TS and found that they are consistent with current licensing bases of the facility and the Commission's regulations.

2.5 Bases Changes

Bases Section 3/4.3, “Reactivity Control,” has been revised to reflect the proposed TS changes. All Bases changes are reviewed as part of TS 5.5.6, “Technical Specification Bases Control Program.” Therefore, Bases changes have an appropriate level of administrative control and review. The staff has reviewed the Bases Section 3/4.3 and has no objections to the proposed changes.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Massachusetts State Official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. 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 (65 FR 51350). 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.

5.0 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) 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.

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Table 1

CURRENT PNPS TECHNICAL SPECIFICATIONS		REVISED PNPS TECHNICAL SPECIFICATIONS	
3/4.3	Reactivity Control	3/4.3	REACTIVITY CONTROL
3.3.A.1	Reactivity Margin - Core Loading	LCO 3.3.A.1	Reactivity Margin - Core Loading
3.3.F	3.3.A-D do not apply when there is no fuel in vessel	Applicability	At all times when there is fuel in the reactor vessel
3.3.F	Requirements of Specifications 3.3.A-D not met	Action "A"	Requirements of LCO 33.A.1 not met
Cold Shutdown 24 hours	RA "A.1"	Hot Shutdown 12 hours	
4.3.A.1	Demonstrate Margin	SR 4.3.A.1	Demonstrate Margin
3.3.A.2	Reactivity Margin - Inoperable control rods	LCO 3.3.B.1	Control Rod OPERABILITY -
3.3.F	3.3.A-D do not apply when there is no fuel in vessel	Applicability	RUN AND STARTUP MODES; REFUEL MODE when the reactor vessel head is fully tensioned
3.3.A.2.a	STUCK ROD	Action "A"	One withdrawn rod stuck
		disarm, ensure separation, test all other rods	
	Action "B"	Two or more withdrawn rods stuck - Hot Shutdown 12 hours	
3.3.A.2.b	electrically disarm in position that meets LCO 3.3.A.1	Action "C"	one or more rods inoperable from reasons other than A or B - fully insert and disarm
3.3.A.2.c	Fully inserted & electrically disarmed-not inoperable		inoperable
	Action "D"	Two or more rods not in compliance with BPWS	
	Action "E"	one or more groups with 4 or more inoperable control rods	
3.3.A.2.d	scram times >7 sec	SR 4.3.B.1.4	Verify Scram Times < 7 sec
3.3.A.2.e	max # inoperable rods (8)	Action "F"	9 or more inoperable rods
3.3.F	Requirements of Specifications 3.3.A-D not met	Action "F"	Required actions and completion times of A, C, D, and E not met
Cold Shutdown 24 hours	RA "A.1"	Hot Shutdown 12 hours	
4.3.A.2	Control rod exercise	SR 4.3.B.1.1	Control rod exercise (fully withdrawn)
	SR 4.3.B.1.2	Control rod exercise (partially withdrawn)	
3.3.B.1	Control Rod coupling	SR 4.3.B.1.3	Verify rod does not go to overtravel
4.3.B.1.b	coupling integrity - overtravel	SR 4.3.B.1.3	Verify rod does not go to overtravel
Tables 3.2.F, 4.2.F	Control rod position	SR 4.3.B.1.5	Determine position of each control rod
3.3.B.2	housing support	LCO 3.3.B.2	housing support
3.3.F	Requirements of Specifications 3.3.A-D not met	Action "A"	Requirements of LCO 3.3.B.2 not met
Cold Shutdown 24 hours	RA "A.1"	Cold Shutdown 24 hours	

4.3.B.2	housing support inspection	SR 4.3.B.2	housing support inspection
3.3.B.3.a	Rod Worth Minimizer (RWM)	LCO 3.3.F	Rod Worth Minimizer (RWM)
3.3.B.3.b.(1)	rod worth below 20% design power	LCO 3.3.H	Compliance with BPWS
3.3.B.3.b.(2)	rod worth above 20% design power		NA
4.3.B.3.a	sequence input to RWM	SR 4.3.F.3	Sequence input to RWM
4.3.B.3.b	RWM diagnostic test	SR 4.3.F.1	Instrument Functional
4.3.B.3.c	selection error annunciation test		
4.3.B.3.d	RWM rod block function		
	SR 4.3.F.2	Verify RWM not bypassed < 20%	
3.3.B.4	Minimum SRM count rate	LCO 3.3.B.3	Minimum SRM count rate
3.3.F	3.3.A-D do not apply when there is no fuel in vessel	Applicability	Prior to withdrawing control rods for startup
Requirements of Specifications 3.3.A-D not met	Action "A"	LCO 3.3.B.3 not met	
Cold Shutdown 24 hours	RA "A.1"	Place mode switch in shutdown immediately	
4.3.B.4	SRM observed count rate	SR 4.3.B.3	SRM observed count rate
3.3.C	Scram Insertion Times	LCO 3.3. C	Control Rod Scram Times
3.3.C.1	Average Scram Insertion Time	LCO 3.3. C.1	Average Scram Insertion Time
3.3.C.2	Average Scram Insertion Time (3 fastest drives)	LCO 3.3. C.2	Average Scram Insertion Time (3 fastest drives)
3.3.C.3	Max scram time	SR 4.3.B.1.4	Verify scram time $\leq$ 7 seconds
3.3.F	3.3.A-D do not apply when there is no fuel in vessel	Applicability	RUN AND STARTUP MODES; REFUEL MODE when the reactor vessel head is fully tensioned
Requirements of Specifications 3.3.A-D not met	Action "A"	Requirements not met	
Cold Shutdown 24 hours	RA "A.1"	Hot Shutdown 12 hours	
4.3.C.1	Scram testing following extended outage	SR 4.3.C.1	Each Control rod Scram time within limits
4.3.C.2	scram testing 10% every 120 days	SR 4.3.C.2	Representative sample of Scram times within limits
3.3.D	Control Rod Accumulators	LCO 3.3.D	Control Rod Scram Accumulators
3.3.F	3.3.A-D do not apply when there is no fuel in vessel	Applicability	RUN AND STARTUP MODES; REFUEL MODE when the reactor vessel head is fully tensioned
3.3.D	a rod accumulator may be inoperable provided	Action "A"	Accumulator(s) inoperable $\geq$950 psig
	Action "B"	Accumulator(s) inoperable > 950 psig or $\leq$ 20% RTP	
	Action "C"	Two or more Accumulator inoperable $\geq$ 950 psig with low charging press	
	Action "D"	Two or more Accumulator inoperable < 950 psig with low charging press	
	Action "E"	Requirements of C or D not met	

4.3.D	Control Rod Accumulator alarm check	SR 4.3.D	Control Rod Accumulator alarm check
3.3.E	Reactivity Anomalies	LCO 3.3.E	Reactivity Anomalies
Applicability	During power operations	Appl icability	RUN MODE
Action	If limit exceeded, shutdown RA "A.1"	Action "A" Hot Shutdown 12 hours	Required action not met
4.3.E	Critical to expected Rod Comparison	SR 4.3.E	Verify core reactivity difference
3.3.F	failure to meet conditions A-D		Incorporated into individual LCO(s) or replaced with more appropriate actions
3.3.G	Scram Discharge Volume	3.3.G	Scram Discharge Volume (SDV) Vent and Drain Valves
3.3.G.1	Vent and Drain Valve OPERABILITY	LCO 3.3.G	Scram Discharge Volume (SDV) Vent and Drain Valves
Applicability	When ever there is more than one control rod withdrawn	Applicability	RUN AND STARTUP MODES; REFUEL MODE when the reactor vessel head is fully tensioned
3.3.G.2 Cold Shutdown 24 hours	Actions for inoperable vent and drain valve RA "A.1"	Action "A" Hot Shutdown 12 hours	One or More vent or drain lines valve(S) inoperable
4.3.G.1.a	Open vent & drain valves monthly	SR 4.3.G.1	Verify open
4.3.G.1.b	vent & drain valves IST requirements	SR 4.3.G.2	Cycle each valve
4.3.G.2.a	Verify vent & drain valves close after scram	SR 4.3.G.3	Verify vent & drain valves close after scram
4.3.G.2.b	Verify vent & drain valves open after scram reset	SR 4.3.G.3	Verify vent & drain valves open after scram reset