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A4.05
PR

July 9, 2001

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Waterford 3 SES
Docket No. 50-358
License No. NPF-38
Technical Specification Change Request NPF-38-234
Replacement of Part-Length Control Element Assemblies

Gentlemen:

Attached for your review and approval are proposed Technical Specification changes deleting the requirements associated with the part-length control element assemblies (PLCEAs) from the Waterford 3 Technical Specifications. During the upcoming Waterford 3 refueling outage (RF11), the Waterford 3 PLCEAs will be replaced with five-element full-length, full strength control element assemblies (CEAs). Additionally, all four of the four-element CEAs on the core periphery will be removed and no longer used. The attached submittal is not intended to request NRC review of the PLCEA replacement or removal of the four-element CEAs. This modification will be evaluated by Waterford 3 under the 10CFR50.59 process for acceptability prior to its implementation. This Technical Specification change removes Technical Specification requirements that will no longer be applicable following implementation of the modification. The proposed changes are administrative in nature, or result in more stringent requirements for the control element assemblies previously designated as PLCEAs.

The proposed change has been evaluated in accordance with 10CFR50.91(a)(1) using criteria in 10CFR50.92(c) and it has been determined that this change

A001

involves no significant hazards considerations. The bases for these determinations are included in the attached submittal.

The modifications to Waterford 3 which result in the need for the attached changes will be implemented during the upcoming RF11 refueling outage that is scheduled to begin in March 2002. Therefore, Entergy Operations requests that the effective date for this Technical Specification change correspond with the implementation of the modification in RF11. Although this request is neither exigent nor emergency, your prompt review is requested. Waterford 3 requests issuance of an amendment approving these changes by February 22, 2002.

All of the commitments contained in this submittal are identified on the attached Commitment Identification/Voluntary Enhancement Form. Should you have any questions or comments concerning this request, please contact D. Bryan Miller at (504) 739-6692.

I declare under penalty of perjury that the foregoing is true and correct. Executed on July 9, 2001.

Very truly yours,

J. T. Herron
Vice President, Operations
Waterford 3

JTH/dbm/cbh
Attachments

cc: E.W. Merschoff, NRC Region IV
N. Kalyanam, NRC-NRR
J. Smith
N.S. Reynolds
NRC Resident Inspectors Office
Louisiana DEQ/Surveillance Division
American Nuclear Insurers

ATTACHMENT 1

TO

W3F1-2001-0063

PROPOSED TECHNICAL SPECIFICATION

AND

RESPECTIVE SAFETY ANALYSES

IN THE MATTER OF AMENDING

NPF-38

ENTERGY OPERATIONS, INC.

DOCKET NO. 50-382

DESCRIPTION OF PROPOSED CHANGES

The proposed changes delete all references to "Full-Length" and "Part-Length" control element assemblies, deletes Technical Specification 3/4.1.3.7, "Part-Length CEA Insertion Limits," and adds requirements for "new" Group P control element assemblies to existing Technical Specifications. Additionally, a previously approved analytical methodology, ENEAD-01-P, "Qualification of Reactor Physics Methods for the Pressurized Water Reactors of the Entergy System," will be added to Technical Specification 6.9.1.11.1.

The following Technical Specifications sections are impacted by this change.

Section	Pages
Index	IV
1.28	1-6
3/4.1.1	3/4 1-1
3/4.1.1.2	3/4 1-3
3/4.1.3.1	3/4 1-18, 19, 20
3/4.1.3.3	3/4 1-22
3/4.1.3.4	3/4 1-23
3/4.1.3.5	3/4 1-24
3/4.1.3.6	3/4 1-25, 26
3/4.1.3.7	3/4 1-28
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Table 3.3-1	3/4 3-7
3/4.9.1	3/4 9-1
3/4.10.1	3/4 10-1
3/4.10.2	3/4 10-2
5.3.2	5-5
6.9.1.11.1	6-20, 20a

A change to Bases 3/4.1.3 is also included for information only.

The proposed Technical Specification change is similar to a change approved by the NRC Staff for Arkansas Nuclear One, Unit 2 in 1995. (Reference NRC Staff Safety Evaluation contained in a letter dated October 12, 1995 (TAC # M92064.))

BACKGROUND

The Waterford 3 reactor contains 91 control element assemblies (CEAs). Eighty-three of the CEAs contain full-length neutron absorber sections while the remaining eight CEAs are part-length CEAs (PLCEAs), containing neutron absorber sections in only the upper 10% of their length. The PLCEAs were intended to provide control of axial power distribution, particularly in the event of axial xenon oscillations. Seventy-nine of the 83 full-length CEAs are standard five-element design CEAs while the remaining four are four-element CEAs (do not have a center poison rod) located on the periphery of the reactor core. These four-element CEAs were originally intended to provide additional shutdown margin in early core designs. The CEAs are described in Waterford 3 Safety Analysis Report (SAR) Sections 4.2 and 4.3.

In addition to being categorized according to differences in the length of the neutron absorber section, CEAs are categorized by their intended function, shutdown or regulating. The shutdown CEAs are fully withdrawn, before the regulating CEA groups, during the approach to criticality. The shutdown CEAs are then left in this position until the reactor is shutdown. During plant operation, the control of reactivity to increase or decrease reactor power can be accomplished by use of the regulating CEA groups to compensate for changes in reactivity associated with the desired change in power level. The positions of the regulating CEAs are manually controlled and operate with a predetermined amount of position overlap. The regulating CEA groups are withdrawn and operated in a predetermined sequence. In addition, the shutdown and regulating CEA groups are dropped into the core to ensure a rapid shutdown of the reactor on a manual trip or an automatic reactor trip signal from the plant protection system. The group sequence and overlap limits are specified in the Core Operating Limits Report (COLR) for each fuel cycle.

By the end of the current fuel cycle, Cycle 11, the PLCEAs and four-finger CEAs will have operated to the end of their currently evaluated design life. As part of the plant modification to replace the PLCEAs, Entergy will replace the PLCEAs with full-length CEAs. The replacement CEAs are identical to the five-element CEAs already in use at Waterford 3. Additionally, the four-element CEAs located on the core periphery will be removed and not replaced. Finally, shutdown group A CEAs and the full-length CEAs installed in the PLCEA positions will be reallocated between shutdown group A and a new group P to more efficiently utilize the CEAs. In addition to a new Group P, there will continue to be two shutdown groups and six regulating groups. These plant modifications will be evaluated in-accordance-with the 10CFR50.59 process prior to implementation.

Although the PLCEAs were provided as a means to control axial power distribution, operating experience has shown that additional control can be obtained by replacing the PLCEAs with full-length CEAs. Replacement of the PLCEAs with full-length CEAs will also allow Waterford 3 to credit larger shutdown margins as the PLCEAs are not currently credited in the shutdown

margin calculation. The worth of eight new full-length CEAs is significantly greater than that of the four-element CEAs being removed and the eight PLCEAs they are replacing. With the replacement of the PLCEAs, all of the Waterford 3 CEAs will contain full-length neutron absorber sections. The Group P CEAs may be used as an additional control group. Power dependent insertion limits (PDILs) will be developed to allow this application. The new PDILs will be located in the Waterford 3 COLR.

Four-element CEAs were provided in order to increase the shutdown margin during a postulated steamline break event. Four such four-element CEAs are located on the two major core axes near the core periphery. The physical design is unique because these CEAs straddle two fuel assemblies. For early core designs characterized by out-in type loadings, these CEAs provided an increase in the minimum net CEA worth used in the safety analysis. However, the benefit is relatively small in the modern low-leakage core design utilized at Waterford 3. Removal of the four-element CEAs is expected to save 8 to 10 hours of critical path time during refueling outages. In conjunction with the replacement of the PLCEAs with full-length CEAs, the overall shutdown margin and scram worth will be enhanced.

BASIS FOR PROPOSED CHANGE

The proposed Technical Specification changes discussed below are administrative in nature, or result in more restrictive requirements for those CEAs formerly designated as PLCEAs. Since all CEAs will contain full-length (i.e., full strength neutron absorber sections) the need to differentiate the CEAs based on neutron absorber length is no longer required. CEAs will be differentiated only by their functional units as shutdown groups, regulating groups, or Group P CEAs. The four-element CEAs are not specifically called out in the Technical Specifications but are addressed via the fact that they are part of shutdown group A. The PLCEA replacement and four-element CEA removal modification will be evaluated by Waterford 3 under the 10CFR50.59 process for acceptability prior to implementation of the modification. This Technical Specification change removes Technical Specification requirements that will no longer be applicable following implementation of the modification and insures that appropriate Technical Specification requirements are applied to the new Group P CEAs.

TS Page No. IV

The TS index will be revised to reflect the deletion of TS page 3/4 1-28, incorporates the Group P CEAs on page 3/4 1-25, and deletes references to full-length CEAs on pages 3/4 1-1 and 3/4 1-3. Changes to the individual pages are discussed below. The changes to the index page are purely administrative in nature.

Technical Specification (TS) Page No. 1-6

Definition 1.28, "Shutdown Margin" will be revised to delete the statement indicating that PLCEAs are not considered for shutdown margin. Following the modification all CEAs will be full-length CEAs and all CEAs including Group P CEAs will be utilized for shutdown margin. Additionally, the terms "full-length" and "shutdown and regulating" have been deleted because they are unnecessary since all CEAs will be considered for shutdown margin. No requirements are relaxed by this proposed change.

TS Page No. 3/4 1-1

References to full-length CEAs will be deleted from TS 3/4.1.1.1. Following the modification all CEAs will be full-length and all CEAs will be utilized for shutdown margin. TS 3/4.1.1.1 currently applies only to full-length CEAs. With the changes to TS 3/4.1.1.1, its associated applicability and Surveillance Requirement (SR), the specification will apply to all CEAs including Group P CEAs. No requirements are relaxed by this proposed change.

TS Page No. 3/4 1-3

References to full-length CEAs will be deleted from TS 3/4.1.1.2. Following the modification all CEAs will be full-length and all CEAs will be utilized for shutdown margin. TS 3/4.1.1.2 currently applies only to full-length CEAs. With the changes to TS 3/4.1.1.2, its associated applicability, and SR the specification will apply to all CEAs including Group P CEAs. This is considered to be a more restrictive change.

TS Page No. 3/4 1-18

References to full-length (shutdown and regulating) and part-length CEAs will be deleted from TS 3.1.3.1 and its associated Action requirements. Following the modification all CEAs will be full-length. TS 3.1.3.1 currently applies to all full-length and part-length CEAs and defines the full-length CEAs as being only the shutdown and regulating CEAs. With the changes to TS 3.1.3.1 and the associated Actions a, b, and c, the requirement continues to apply to all CEAs, including the Group P CEAs. No requirements are relaxed by this proposed change.

TS Page No. 3/4 1-19

References to full-length and part-length CEAs will be deleted from TS 3.1.3.1 Actions d, e, f, and h. Action g, dealing solely with PLCEAs, will be deleted. Following the modification all CEAs will be full-length.

Actions d and h currently apply to all full-length and part-length CEAs. With the changes to Actions d and h these actions will continue to apply to all CEAs, including Group P CEAs. No requirements are relaxed by this proposed change.

Actions e and f currently apply only to full-length CEAs. With the changes to Actions e and f, these actions will apply to all CEAs including Group P CEAs. Action f currently allows continued operation with one trippable but inoperable CEA if it is within its specified alignment limits and either fully withdrawn or within the long term steady state insertion limits if in Group 6. This Action will be changed to apply limits to Group P CEAs like those limits currently required for Group 6 CEAs. Following the modification, Group P CEAs may be operated as a control group. No requirements are relaxed by the proposed change.

The requirements currently specified by TS 3.1.3.1 Action g will be deleted. The requirements of Action g apply only to the PLCEAs. Action g currently allows continued operation with an inoperable PLCEA for an indefinite period of time, provided it is maintained within 7 inches of all other PLCEAs within its group. Following the modification all CEAs will be full-length CEAs. The existing requirements for full-length CEAs will now apply to the full-length CEAs that replaced the PLCEAs. No requirements are relaxed by the proposed change.

TS Page No. 3/4 1-20

References to full-length and part-length CEAs will be deleted from SR 4.1.3.1.1 and SR 4.1.3.1.2 as will the "below 145 inches" qualifier for the PLCEAs in SR 4.1.3.1.2. Following the modification all CEAs will be full-length CEAs. With the change to these SRs, the position determination requirements continue to apply to all CEAs. No requirements are relaxed by the proposed change.

TS Page No. 3/4 1-22

References to shutdown, regulating, and part-length CEAs will be deleted from TS 3.1.3.3. The current wording of this TS applies to all CEAs. With this change, TS 3.1.3.3 still applies to all CEAs. No requirements are relaxed by the proposed change.

TS Page No. 3/4 1-23

TS 3/4.1.3.4 will be revised to remove references to full-length, shutdown, and regulating CEAs. Following the modification all CEAs will be full-length CEAs. With these changes TS 3/4.1.3.4 will apply to all CEAs, including those CEAs formerly designated as PLCEAs. No requirements are relaxed by the proposed changes. An editorial correction will also be made to SR 4.1.3.4.b to change "individuals CEAs" to "individual CEAs".

TS Page No. 3/4 1-24

SR 4.1.3.5.a will be revised to include Group P CEAs. Currently the SR requires that each shutdown CEA be determined to be withdrawn greater than or equal to 145 inches within 15 minutes prior to the withdrawal of any CEA in regulating groups during an approach to criticality. With this change, this determination will be required within 15 minutes prior to the withdrawal of any CEA in regulating groups or Group P during an approach to criticality. Following the modification, Group P CEAs may be operated as a control group. No requirements are relaxed by the proposed change.

TS Page No. 3/4 1-25

TS 3.1.3.6 and its associated Actions a and b will be revised to include the Group P CEAs. This specification currently applies only to the regulating groups. The shutdown CEA requirements are separately specified by TS 3.1.3.5. Following the modification, the Group P CEAs may be used as an additional control group. This usage will be evaluated in the Waterford 3 Reload Analysis for each fuel cycle. As required by the proposed TS 3.1.3.6, the operation of the Group P CEAs will be limited to the withdrawal sequence and insertion limits specified in the COLR, as developed from the Reload Analysis. As is currently required for the regulating CEAs, transient insertion limits and long-term steady state insertion limits will be developed for the Group P CEAs, as applicable. No requirements are relaxed by this change.

TS Page No. 3/4 1-26

TS 3.1.3.6 Action c and SR 4.1.3.6 will be revised to incorporate the Group P CEAs. Following the modification, the Group P CEAs may be used as an additional control group. This usage will be evaluated in the Waterford 3 Reload Analysis. As required by the proposed TS 3.1.3.6, the operation of the Group P CEAs will be limited to the withdrawal sequence and insertion limits specified in the Core Operating Limits Report (COLR), as developed from the Reload Analysis. As is currently required for the regulating CEAs, short-term steady state insertion limits and transient insertion limits will be developed for the Group P CEAs, as applicable. Appropriately, SR 4.1.3.6 will apply to both regulating group CEAs and Group P CEAs. No requirements are relaxed by this change.

TS Page No. 3/4 1-28

TS 3.1.3.7 applies only to PLCEAs. The LCO and its associated Actions and SR will be deleted. The proposed TS 3.1.3.6, its associated Actions, and SR will be revised to apply to the Group P CEAs. No requirements are relaxed by this change.

TS Page No. 3/4 2-4

TS 3.2.3 Action b.1 will be revised to remove the references to part-length and full-length CEAs. Following the modification, all CEAs will be full-length. As currently worded, Action b.1 applies to all CEAs. With the changes to Action b.1, the requirements continue to apply to all CEAs. No requirements are relaxed by this change.

TS Page No. 3/4 3-7

Action 6.b.2.a and Action 6.b.3, associated with TS Table 3.3-1, will be revised to delete references to full-length and part-length CEAs. Following the modification, all CEAs will be full-length CEAs. The proposed Actions continue to apply to all CEAs. No requirements are relaxed by this change.

TS Page No. 3/4 9-1

SR 4.9.1.1.b will be revised to remove a reference to full-length CEAs. Following the modification, all CEAs will be full-length CEAs. The proposed requirement will apply to all CEAs, including the Group P CEAs. No requirements are relaxed by this change.

TS Page No. 3/4 10-1

TS 3.10.1 Action a and Action b will be revised to delete references to full-length CEAs. SR 4.10.1.1 will be revised to delete references to full-length and part-length CEAs. Following the modification, all CEAs will be full-length CEAs. The proposed requirements will apply to all CEAs, including the Group P CEAs. No requirements are relaxed by these changes.

TS Page No. 3/4 10-2

TS 3/4.10.2 will be revised to delete a reference to TS 3.1.3.7 which will be deleted by this proposed TS change. Deletion of TS 3.1.3.7 has been discussed above. The deletion of this reference is considered to be administrative and no requirements are relaxed by this change.

TS Page No. B 3/4 1-6 (for information only)

The TS Bases associated with TS 3/4.1.3 will be revised to delete a reference to TS 3.1.3.7 which will be deleted by the proposed change as discussed above. The long and short-term insertion limits associated with the regulating CEAs and the Group P CEAs will be specified by the proposed TS 3.1.3.6 only.

TS Page No. 5-5

The Design Features description of the CEAs contained in TS 5.3.2 will be revised to delete references to full-length and part-length CEAs. This description

will be revised to state that the reactor core contains 87 control element assemblies to correctly reflect the configuration of the plant following the modification. While the total number of CEAs will be reduced by four, no TS requirements will be relaxed. The evaluation of the modified CEA configuration (new full-length CEAs and elimination of the four-element CEAs) will be addressed via the Waterford 3 design change process, Reload Analysis, and associated 10CFR50.59s. No requirements are relaxed by this change.

TS Page No. 6-20

The list of Technical Specifications in TS 6.9.1.11.1.1 for which the analytical method applies will be revised to correct the title for TS 3.1.3.6 which will be changed as described above to include Group P CEAs. This is considered to be an administrative change. Group P CEAs will have insertion limits determined by methodologies previously approved by the NRC for the regulating CEAs. The evaluation of the Group P CEAs will be performed in the Reload Analysis for each fuel cycle.

The list of Technical Specifications in TS 6.9.1.11.1.2 for which the analytical method applies will be revised to correct the title for TS 3.1.3.6 which will be changed as described above to include Group P CEAs. This is considered to be an administrative change. Group P CEAs will be evaluated for the CEA ejection analyses described in Waterford 3 SAR Section 15, and limits from these analyses will be applied in the Group P insertion limits in the Waterford 3 COLR.

TS Page No. 6-20a

The list of Technical Specifications in TS 6.9.1.11.1.6 for which the analytical method applies will be revised to delete a reference to TS 3.1.3.7, "Part Length CEA Insertion Limits," which will be deleted as described above and correct the title for TS 3.1.3.6 which will be changed as described above to include Group P CEAs. This is considered to be an administrative change. This change assures that the effect of the Group P CEAs on shutdown margin is incorporated in the Group P insertion limits.

New TS 6.9.1.11.1.7 will be added to include a previously approved analytical methodology and the Technical Specifications to which it may be applied. "Qualification of Reactor Physics Methods for the Pressurized Water Reactors of the Entergy System," ENEAD-01-P, Revision 0 was approved for use by the NRC Staff in a letter from George Kalman to Fred W. Titus dated September 29, 1995. The addition of TS 6.9.1.11.1.7 is considered to be an administrative change and is not directly related to the replacement of the PLCEAs or removal of the four-finger CEAs.

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

Energy Operations, Inc. (Entergy) is proposing that the Waterford 3 Operating License be amended to delete all references to "Full-Length" and "Part-Length" control element assemblies (CEAs), delete Technical Specification 3/4.1.3.7, "Part-Length CEA Insertion Limits," and add requirements for the "new" Group P control element assemblies to existing Technical Specifications. Additionally, a previously approved analytical methodology, ENEAD-01-P, "Qualification of Reactor Physics Methods for the Pressurized Water Reactors of the Entergy System," is being added to Technical Specification 6.9.1.11.1.

An evaluation of the proposed change has been performed in accordance with 10CFR50.91(a)(1) regarding no significant hazards considerations using the standards in 10CFR50.92(c). A discussion of these standards as they relate to this amendment request follows:

1. **Will operation of the facility in accordance with this proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   The proposed changes are administrative in nature and maintain the conservative restrictions on the operation of the CEAs. Chapter 15 of the Waterford 3 Safety Analysis Report identifies the analyses associated with the CEAs. These analyses are evaluated in the development of the Reload Analysis for each fuel cycle, and the appropriate limitations to insure acceptable analysis results are incorporated in the Core Operating Limits Report (COLR) for the fuel cycle. The modifications replacing the part-length CEAs with full-length CEAs and removing the four-element CEAs will be evaluated under the 10CFR50.59 process prior to implementation. The Reload Analysis and changes to the COLR are also evaluated under the 10CFR50.59 process prior to incorporating the identified changes.

   Therefore, this change does <u>not</u> involve a significant increase in the probability or consequences of any accident previously evaluated.

2. **Will operation of the facility in accordance with this proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   The proposed changes introduce no new mode of plant operation and are considered to be administrative in nature. Operating experience has shown that the full-length CEAs are capable of controlling the axial power distribution function intended for the part-length CEAs. The part-length CEAs will be replaced with the same type of full-length CEAs used in the shutdown and regulating CEA groups. Removal of the four-element CEAs provides no mechanism for creating a new or different kind of accident.

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

3. **Will operation of the facility in accordance with this proposed change involve a significant reduction in a margin of safety?**

   The proposed changes may improve overall safety margins. Replacement of the part-length CEAs with full-length CEAs will allow Entergy to credit these CEAs in the shutdown margin calculations. The worth of the four-element CEAs being removed from the core is relatively small in the modern low-leakage core design used at Waterford 3. Therefore, the removal of the four-element CEAs in combination with the replacement of the part-length CEAs with full-length CEAs will result in an overall increase in the net CEA worth. This will result in an increase in the available shutdown margin during reactor operation.

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

Therefore, based on the reasoning presented above, Entergy has determined that the requested change does not involve a significant hazards consideration.

ENVIRONMENTAL IMPACT EVALUATION

Pursuant to 10CFR51.22(b), an evaluation of the proposed amendment has been performed to determine whether or not it meets the criteria for categorical exclusion set forth in 10CFR 51.22 (c) (9) of the regulations. The proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). The basis for this determination is as follows:

1. The proposed license amendment does not involve a significant hazards consideration as described previously in the evaluation.

2. This change does not result in a significant change or significant increase in the radiological doses for any Design Basis Accident. The proposed license amendment does not result in a significant change in the types or a significant increase in the amounts of any effluents that may be released off-site.

3. The proposed license amendment does not result in a significant increase to the individual or cumulative occupational radiation exposure because this change is administrative in nature and no Technical Specification requirements are relaxed.

MARKUP OF CURRENT TECHNICAL SPECIFICATIONS

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DEFINITIONS

RATED THERMAL POWER

1.24 RATED THERMAL POWER shall be a total reactor core heat transfer rate to the reactor coolant of 3390 MWt.

REACTOR TRIP SYSTEM RESPONSE TIME

1.25 The REACTOR TRIP SYSTEM RESPONSE TIME shall be the time interval from when the monitored parameter exceeds its trip setpoint at the channel sensor until electrical power is interrupted to the CEA drive mechanism.

REPORTABLE EVENT

1.26 A REPORTABLE EVENT shall be any of those conditions specified in Section 50.73 to 10 CFR Part 50.

SHIELD BUILDING INTEGRITY

1.27 SHIELD BUILDING INTEGRITY shall exist when:

a. Each door in each access opening is closed except when the access opening is being used for normal transit entry and exit, then at least one door shall be closed,

b. The shield building filtration system is in compliance with the requirements of Specification 3.6.6.1, and

c. The sealing mechanism associated with each penetration (e.g., welds, bellows, or O-rings) is OPERABLE.

SHUTDOWN MARGIN

1.28 SHUTDOWN MARGIN shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming:

~~a. No change in part length control element assembly position, and~~

~~b.~~ All ~~full length~~ control element assemblies ~~(shutdown and regulating)~~ are fully inserted except for the single assembly of highest reactivity worth which is assumed to be fully withdrawn.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.1 BORATION CONTROL

SHUTDOWN MARGIN - ANY ~~FULL LENGTH~~ CEA WITHDRAWN

LIMITING CONDITION FOR OPERATION

3.1.1.1 The SHUTDOWN MARGIN shall be greater than or equal to that specified in the COLR.

APPLICABILITY: MODES 1, 2*, 3, 4, and 5 with any ~~full length~~ CEA fully or partially withdrawn.

ACTION:

With the SHUTDOWN MARGIN less than that specified in the COLR, immediately initiate boration to restore SHUTDOWN MARGIN to within limit.

SURVEILLANCE REQUIREMENTS

4.1.1.1.1 With any ~~full length~~ CEA fully or partially withdrawn, the SHUTDOWN MARGIN shall be determined to be greater than or equal to that specified in the COLR:

a. Within 1 hour after detection of an inoperable CEA(s) and at least once per 12 hours thereafter while the CEA(s) is inoperable. If the inoperable CEA is immovable or untrippable, the above required SHUTDOWN MARGIN shall be verified acceptable with an increased allowance for the withdrawn worth of the immovable or untrippable CEA(s).

b. When in MODE 1 or MODE 2 with Keff greater than or equal to 1.0, at least once per 12 hours by verifying that CEA group withdrawal is within the Transient Insertion Limits of Specification 3.1.3.6.

c. When in MODE 2 with Keff less than 1.0, within 4 hours prior to achieving reactor criticality by verifying that the predicted critical CEA position is within the limits of Specification 3.1.3.6.

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* See Special Test Exception 3.10.1.

REACTIVITY CONTROL SYSTEMS

SHUTDOWN MARGIN - ALL ~~FULL LENGTH~~ CEAS FULLY INSERTED

LIMITING CONDITION FOR OPERATION

3.1.1.2 The SHUTDOWN MARGIN shall be greater than or equal to that specified in the COLR.

APPLICABILITY: MODES 3, 4 and 5 with all ~~full length~~ CEAs fully inserted.

ACTION:

With the SHUTDOWN MARGIN less than that specified in the COLR, immediately initiate boration to restore SHUTDOWN MARGIN to within limit.

SURVEILLANCE REQUIREMENTS

4.1.1.2 With all ~~full length~~ CEAs fully inserted, the SHUTDOWN MARGIN shall be determined to be greater than or equal to that specified in the COLR, at least once per 24 hours by consideration of the following factors:

1. Reactor Coolant System boron concentration,
2. CEA position,
3. Reactor Coolant System average temperature,
4. Fuel burnup based on gross thermal energy generation,
5. Xenon concentration,and
6. Samarium concentration.

REACTIVITY CONTROL SYSTEMS

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

CEA POSITION

LIMITING CONDITION FOR OPERATION

3.1.3.1 All ~~full-length (shutdown and regulating)~~ CEAs~~, and all part-length CEAs which are inserted in the core,~~ shall be OPERABLE with each CEA of a given group positioned within 7 inches (indicated position) of all other CEAs in its group.

APPLICABILITY: MODES 1* and 2*.

ACTION:

a. With one or more ~~full-length~~ CEAs inoperable due to being immovable as a result of excessive friction or mechanical interference or known to be untrippable, determine that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied within 1 hour and be in at least HOT STANDBY within 6 hours.

b. With more than one ~~full-length or part-length~~ CEA trippable but misaligned from any other CEA in its group by more than 19 inches (indicated position), be in at least HOT STANDBY within 6 hours.

c. With one ~~full-length or part-length~~ CEA trippable but misaligned from any other CEA in its group by more than 19 inches, operation in MODES 1 and 2 may continue, provided that core power is reduced in accordance with the limits specified in the COLR and within 1 hour the misaligned CEA is either:

   1. Restored to OPERABLE status within its above specified alignment requirements, or

   2. Declared inoperable and the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied. After declaring the CEA inoperable, operation in MODES 1 and 2 may continue pursuant to the requirements of Specification 3.1.3.6 provided:

      a) Within 1 hour the remainder of the CEAs in the group with the inoperable CEA shall be aligned to within 7 inches of the inoperable CEA while maintaining the allowable CEA sequence and insertion limits specified in the COLR; the THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.6 during subsequent operation.

      b) The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined at least once per 12 hours.

   Otherwise, be in at least HOT STANDBY within 6 hours.

*See Special Test Exceptions 3.10.2 and 3.10.4.

REACTIVITY CONTROL SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

d. With one or more ~~full-length or part-length~~ CEAs trippable but misaligned from any other CEAs in its group by more than 7 inches but less than or equal to 19 inches, operation in MODES 1 and 2 may continue, provided that core power is reduced in accordance with the limits specified in the COLR and within 1 hour the misaligned CEA(s) is either:

1. Restored to OPERABLE status within its above specified alignment requirements, or

2. Declared inoperable and the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied. After declaring the CEA inoperable, operation in MODES 1 and 2 may continue pursuant to the requirements of Specification 3.1.3.6 provided:

a) Within 1 hour the remainder of the CEAs in the group with the inoperable CEA shall be aligned to within 7 inches of the inoperable CEA while maintaining the allowable CEA sequence and insertion limits specified in the COLR; the THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.6 during subsequent operation.

b) The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined at least once per 12 hours.

Otherwise, be in at least HOT STANDBY within the next 6 hours.

e. With one ~~full-length~~ CEA trippable but inoperable due to causes other than addressed by ACTION a., above, and inserted beyond the Long Term Steady State Insertion Limits but within its above specified alignment requirements, operation in MODES 1 and 2 may continue pursuant to the requirements of Specification 3.1.3.6.

f. With one ~~full-length~~ CEA trippable but inoperable due to causes other than addressed by ACTION a., above, but within its above specified alignment requirements and either greater than or equal to 145 inches withdrawn or within the Long Term Steady State Insertion Limits if in ~~full-length~~ CEA group 6 or group P, operation in MODES 1 and 2 may continue.

DELETED

g. ~~With one part-length CEA inoperable and inserted in the core, operation may continue provided the alignment of the inoperable part-length CEA is maintained within 7 inches (indicated position) of all other part-length CEAs in its group and the CEA is maintained pursuant to the requirements of Specification 3.1.3.7.~~

h. With more than one ~~full-length or part-length~~ CEA trippable but inoperable due to causes other than addressed by ACTION a., above, restore the inoperable CEAs to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours.

REACTIVITY CONTROL SYSTEMS

SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position of each full-length and part-length CEA shall be determined to be within 7 inches (indicated position) of all other CEAs in its group at least once per 12 hours except during time intervals when one CEAC is inoperable or when both CEACs are inoperable, then verify the individual CEA positions at least once per 4 hours.

4.1.3.1.2 Each full-length CEA not fully inserted and each part-length CEA which is inserted in the core below 145 inches shall be determined to be OPERABLE by movement of at least 5 inches in any one direction at least once per 92 days.

REACTIVITY CONTROL SYSTEMS

POSITION INDICATOR CHANNELS - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.3.3 At least one CEA Reed Switch Position Transmitter indicator channel shall be OPERABLE for each ~~shutdown, regulating or part-length~~ CEA not fully inserted.

APPLICABILITY: MODES 3*, 4*, and 5*.

ACTION:

With less than the above required position indicator channel(s) OPERABLE, immediately open the reactor trip breakers.

SURVEILLANCE REQUIREMENTS

4.1.3.3 Each of the above required CEA Reed Switch Position Transmitter indicator channel(s) shall be determined to be OPERABLE by performance of a CHANNEL FUNCTIONAL TEST at least once per 18 months. The provisions of Specification 4.0.4 are not applicable for performance of this surveillance testing.

*With the reactor trip breakers in the closed position.

REACTIVITY CONTROL SYSTEMS

CEA DROP TIME

LIMITING CONDITION FOR OPERATION

3.1.3.4 The arithmetic average of the CEA drop times of all ~~full-length~~ CEAs from a fully withdrawn position, shall be less than or equal to 3.0 seconds; and the individual ~~full length (shutdown and regulating)~~ CEA drop time, from a fully withdrawn position, shall be less than or equal to 3.2 seconds from when the electrical power is interrupted to the CEA drive mechanism until the CEA reaches the 90% insertion position with:

a. Tavg greater than or equal to 520°F, and

b. All reactor coolant pumps operating.

APPLICABILITY: MODES 1 and 2.

ACTION:

a. With either the average CEA drop time or any individual CEA drop time ~~of any full length CEA~~ determined to exceed the above limits, restore the CEA drop time to within the above limits before proceeding to MODE 1 or 2.

b. With the CEA drop times within limits but determined at less than full reactor coolant flow, operation may proceed provided THERMAL POWER is restricted to less than or equal to the maximum THERMAL POWER level allowable for the reactor coolant pump combination operating at the time of CEA drop time determination.

SURVEILLANCE REQUIREMENTS

4.1.3.4 The CEA drop time ~~of full-length CEAs~~ shall be demonstrated through measurement prior to reactor criticality:

a. For all CEAs following each removal and reinstallation of the reactor vessel head,

b. For specifically affected individual CEAs following any maintenance on or modification to the CEA drive system which could affect the drop time of those specific CEAs, and

c. At each refueling outage.

REACTIVITY CONTROL SYSTEMS

SHUTDOWN CEA INSERTION LIMIT

LIMITING CONDITION FOR OPERATION

3.1.3.5 All shutdown CEAs shall be withdrawn to greater than or equal to 145 inches.

APPLICABILITY: MODES 1 and 2*#**.

ACTION:

With a maximum of one shutdown CEA withdrawn to less than 145 inches withdrawn, within 1 hour either:

a. Withdraw the CEA to greater than or equal to 145 inches, or

b. Declare the CEA inoperable and determine that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied within 1 hour and be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.5 Each shutdown CEA shall be determined to be withdrawn to greater than or equal to 145 inches withdrawn:

a. Within 15 minutes prior to withdrawal of any CEAs in regulating groups or group P during an approach to reactor criticality, and

b. At least once per 12 hours thereafter.

*See Special Test Exception 3.10.2.

#With Keff greater than or equal to 1.0.

**Except for surveillance testing pursuant to Specification 4.1.3.1.2.

REACTIVITY CONTROL SYSTEMS

REGULATING CEA INSERTION LIMITS AND GROUP P

LIMITING CONDITION FOR OPERATION

3.1.3.6 The regulating CEA groups and group P CEAs shall be limited to the withdrawal sequence and to the insertion limits* specified in the COLR** with CEA insertion between the Long Term Steady State Insertion Limits and the Transient Insertion Limits restricted to:

a. Less than or equal to 4 hours per 24 hour interval,

b. Less than or equal to 5 Effective Full Power Days per 30 Effective Full Power Day interval, and

c. Less than or equal to 14 Effective Full Power Days per calendar year.

APPLICABILITY: MODES 1*** and 2*** #.

ACTION:

a. With the regulating CEA groups or group P CEAs inserted beyond the Transient Insertion Limits, except for surveillance testing pursuant to Specification 4.1.3.1.2, or Reactor Power Cutback, within 2 hours either:

1. Restore the regulating CEA groups or group P CEAs to within the limits, or

2. Reduce THERMAL POWER to less than or equal to that fraction of RATED THERMAL POWER which is allowed by the CEA group position using the COLR.

b. With the regulating CEA groups or group P CEAs inserted between the Long Term Steady State Insertion Limits and the Transient Insertion Limits for intervals greater than 4 hours per 24-hour interval, operation may proceed provided either:

1. The Short Term Steady State Insertion Limits specified in the COLR are not exceeded, or

2. Any subsequent increase in THERMAL POWER is restricted to less than or equal to 5% of RATED THERMAL POWER per hour.

---

*Following a reactor power cutback in which (1) Regulating Groups 5 and/or 6 are dropped or (2) Regulating Groups 5 and/or 6 are dropped and the remaining Regulating Groups (Groups 1, 2, 3, and 4) are sequentially inserted, the Transient Insertion Limit specified in the COLR can be exceeded for up to 2 hours.

**CEAs are fully withdrawn in accordance with the Transient Insertion Limit specified in the COLR when withdrawn to at least 145 inches.

***See Special Test Exceptions 3.10.2 and 3.10.4.

#With K_{eff} greater than or equal to 1.0.

REACTIVITY CONTROL SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

c. With the regulating CEA groups or group P CEAs inserted between the Long Term Steady State Insertion Limits and the Transient Insertion Limits for intervals greater than 5 EFPD per 30 EFPD interval or greater than 14 EFPD per calendar year, either:

1. Restore the regulating CEA groups or group P CEAs to within the Long Term Steady State Insertion Limits within two hours, or

2. Be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.6 The position of each regulating CEA group and CEA group P shall be determined to be within the Transient Insertion Limits at least once per 12 hours except during time intervals when the PDIL Auctioneer Alarm Circuit is inoperable, then verify the individual CEA positions at least once per 4 hours. The accumulated times during which the regulating CEA groups or CEA group P are inserted beyond the Long Term Steady State Insertion Limits but within the Transient Insertion Limits shall be determined at least once per 24 hours.

THIS PAGE IS NOT USED

REACTIVITY CONTROL SYSTEMS

PART LENGTH CEA INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.1.3.7 The part length CEA groups shall be limited to the insertion limits specified in the COLR with PLCEA insertion between the Long Term Steady State Insertion Limit and the Transient Insertion Limit restricted to:

a. ≤ 7 EFPD per 30 EFPD interval, and

b. ≤ 14 EFPD per calender year.

APPLICABILITY: MODE 1 above 20% THERMAL POWER.*

ACTION:

a. With the part length CEA groups inserted beyond the Transient Insertion Limit, except for surveillance testing pursuant to Specification 4.1.3.1.2, within two hours, either:

1. Restore the part length CEA group to within the limits, or

2. Reduce THERMAL POWER to less than or equal to that fraction of RATED THERMAL POWER which is allowed by the PLCEA group position as specified in the COLR.

b. With the part length CEA groups inserted between the Long Term Steady State Insertion Limit and the Transient Insertion Limit for intervals > 7 EFPD per 30 EFPD interval or > 14 EFPD per calendar year, either:

1. Restore the part length group within the Long Term Steady State Insertion Limits within two hours, or

2. Be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.7 The position of the part length CEA group shall be determined to be within the Transient Insertion Limit at least once per 12 hours.

*See Special Test Exception 3.10.2.

POWER DISTRIBUTION LIMITS

3/4.2.3 AZIMUTHAL POWER TILT - T_q

LIMITING CONDITION FOR OPERATION

3.2.3 The AZIMUTHAL POWER TILT (T_q) shall be less than or equal to the FOLLOWING LIMITS:

a. AZIMUTHAL POWER TILT Allowance used in the Core Protection Calculators (CPCs) and

b. the limit specified in the COLR.

APPLICABILITY: MODE 1 above 20% of RATED THERMAL POWER.*

ACTION:

a. With the measured AZIMUTHAL POWER TILT determined to exceed the AZIMUTHAL POWER TILT Allowance used in the CPCs within 2 hours either correct the power tilt or adjust the AZIMUTHAL POWER TILT Allowance used in the CPCs to greater than or equal to the measured value.

b. With the measured AZIMUTHAL POWER TILT determined to exceed the limit specified in the COLR:

1. Due to misalignment of ~~either a part length or full length~~ a CEA, within 30 minutes verify that the Core Operating Limit Supervisory System (COLSS) (when COLSS is being used to monitor the core power distribution per Specifications 4.2.1.2 and 4.2.4.2) is detecting the CEA misalignment.

2. Verify that the AZIMUTHAL POWER TILT is within its limit within 2 hours (24 hours for a CEA misalignment event) or reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within the next 2 hours and reduce the Linear Power Level - High trip setpoints to less than or equal to 55% of RATED THERMAL POWER within the next 4 hours.

3. Identify and correct the cause of the out of limit condition prior to increasing THERMAL POWER; subsequent POWER OPERATION above 50% of RATED THERMAL POWER may proceed provided that the AZIMUTHAL POWER TILT is verified within its limit at least once per hour for 12 hours or until verified acceptable at 95% or greater RATED THERMAL POWER.

*See Special Test Exception 3.10.2.

TABLE 3.3-1 (Continued)

ACTION STATEMENTS

2. Within 4 hours:

   a) All ~~full-length and part-length~~ CEA groups are withdrawn to and subsequently maintained at the "Full Out" position, except during surveillance testing pursuant to the requirements of Specification 4.1.3.1.2 or for control when CEA group 6 may be inserted no further than 127.5 inches withdrawn.

   b) The "RSPT/CEAC Inoperable" addressable constant in the CPCs is set to the inoperable status.

   c) The Control Element Drive Mechanism Control System (CEDMCS) is placed in and subsequently maintained in the "Off" mode except during CEA group 6 motion permitted by a) above, when the CEDMCS may be operated in either the Manual Group" or "Manual Individual" mode.

3. At least once per 4 hours, all ~~full-length and part-length~~ CEAs are verified fully withdrawn except during surveillance testing pursuant to Specification 4.1.3.1.2 or during insertion of CEA group 6 as permitted by 2.a) above, then verify at least once per 4 hours that the inserted CEAs are aligned within 7 inches (indicated position) of all other CEAs in its group.

ACTION 7 - With three or more auto restarts of one non-bypassed calculator during a 12-hour interval, demonstrate calculator OPERABILITY by performing a CHANNEL FUNCTIONAL TEST within the next 24 hours.

ACTION 8 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement restore the inoperable channel to OPERABLE status within 48 hours or open the reactor trip breakers within the next hour.

3/4.9 REFUELING OPERATIONS

3/4.9.1 BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.9.1 With the reactor vessel head closure bolts less than fully tensioned or with the head removed, the boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained uniform and sufficient to ensure that the more restrictive of the reactivity conditions specified in the COLR is met.

APPLICABILITY: MODE 6*.

ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes and initiate action to restore boron concentration to within COLR limits.

SURVEILLANCE REQUIREMENTS

4.9.1.1 The more restrictive of the above two reactivity conditions shall be determined prior to:

a. Removing or unbolting the reactor vessel head, and

b. Withdrawal of any full-length CEA in excess of 3 feet from its fully inserted position within the reactor pressure vessel.

4.9.1.2 The boron concentration of the Reactor Coolant System and the refueling canal shall be determined by chemical analysis at least once per 72 hours.

*The reactor shall be maintained in MODE 6 whenever fuel is in the reactor vessel with the reactor vessel head closure bolts less than fully tensioned or with the head removed.

3/4.10 SPECIAL TEST EXCEPTIONS

3/4.10.1 SHUTDOWN MARGIN

LIMITING CONDITION FOR OPERATION

3.10.1 The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 or 3.1.1.2 may be suspended for measurement of CEA worth and SHUTDOWN MARGIN provided reactivity equivalent to at least the highest estimated CEA worth is available for trip insertion from OPERABLE CEA(s).

APPLICABILITY: MODES 2 AND 3*.

ACTION:

a. With any ~~full-length~~ CEA not fully inserted and with less than the above reactivity equivalent available for trip insertion, immediately initiate boration to restore the SHUTDOWN MARGIN required by Specification 3.1.1.1.

b. With all ~~full-length~~ CEAs fully inserted and the reactor subcritical by less than the above reactivity equivalent, immediately initiate boration to restore the SHUTDOWN MARGIN required by Specification 3.1.1.2.

SURVEILLANCE REQUIREMENTS

4.10.1.1 The position of each ~~full-length and part-length~~ CEA required either partially or fully withdrawn shall be determined at least once per 2 hours.

4.10.1.2 Each CEA not fully inserted shall be demonstrated capable of full insertion when tripped from at least the 50% withdrawn position within 7 days prior to reducing the SHUTDOWN MARGIN to less than the limits of Specification 3.1.1.1.

*Operation in MODE 3 shall be limited to 6 consecutive hours.

SPECIAL TEST EXCEPTIONS

3/4.10.2 MODERATOR TEMPERATURE COEFFICIENT, GROUP HEIGHT, INSERTION, AND POWER DISTRIBUTION LIMITS

LIMITING CONDITION FOR OPERATION

3.10.2 The moderator temperature coefficient, group height, insertion, and power distribution limits of Specifications 3.1.1.3, 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.1.3.7, 3.2.2, 3.2.3, 3.2.7, and the Minimum Channels OPERABLE requirement of Functional Unit 15 of Table 3.3-1 may be suspended during the performance of PHYSICS TESTS provided:

a. The THERMAL POWER is restricted to the test power plateau which shall not exceed 85% of RATED THERMAL POWER, and

b. The limits of Specification 3.2.1 are maintained and determined as specified in Specification 4.10.2.2 below.

APPLICABILITY: MODES 1 and 2.

ACTION:

With any of the limits of Specification 3.2.1 being exceeded while the requirements of Specifications 3.1.1.3, 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.1.3.7, 3.2.2, 3.2.3, 3.2.7, and the Minimum Channels OPERABLE requirement of Functional Unit 15 of Table 3.3-1 are suspended, either:

a. Reduce THERMAL POWER sufficiently to satisfy the requirements of Specification 3.2.1, or

b. Be in HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.10.2.1 The THERMAL POWER shall be determined at least once per hour during PHYSICS TESTS in which the requirements of Specifications 3.1.1.3, 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.1.3.7, 3.2.2, 3.2.3, 3.2.7, or the Minimum Channels OPERABLE requirement of Functional Unit I5 of Table 3.3-1 are suspended and shall be verified to be within the test power plateau.

4.10.2.2 The linear heat rate shall be determined to be within the limits of Specification 3.2.1 by monitoring it continuously with the Incore Detection Monitoring System pursuant to the requirements of Specifications 4.2.1.2 during PHYSICS TESTS above 5% of RATED THERMAL POWER in which the requirements of Specifications 3.1.1.3, 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.1.3.7, 3.2.2, 3.2.3, 3.2.7, or the Minimum Channels OPERABLE requirement of Functional Unit 15 of Table 3.3-1 are suspended.

DESIGN FEATURES

5.3 REACTOR CORE

FUEL ASSEMBLIES

5.3.1 The reactor core shall contain 217 fuel assemblies with each fuel assembly containing a maximum of 236 fuel rods clad with Zircaloy-4. Each fuel rod shall have a nominal active fuel length of 150 inches and contain a nominal total weight of 1830 grams uranium. The initial core loading shall have a maximum enrichment of 2.91 weight percent U-235. Reload fuel shall be similar in physical design to the initial core loading. Assemblies shall have a maximum nominal enrichment of 5.0 weight percent U-235 and meet the final storage requirements described in Section 5.6.

CONTROL ELEMENT ASSEMBLIES

5.3.2 The reactor core shall contain ~~83 full-length and 8 part-length~~ 87 control element assemblies.

5.4 REACTOR COOLANT SYSTEM

DESIGN PRESSURE AND TEMPERATURE

5.4.1 The Reactor Coolant System is designed and shall be maintained:

a. In accordance with the code requirements specified in Section 5.2 of the FSAR with allowance for normal degradation pursuant of the applicable Surveillance Requirements,

b. For a pressure of 2500 psia, and

c. For a temperature of 650°F, except for the pressurizer and surge line which is 700°F.

VOLUME

5.4.2 The total water and steam volume of the reactor coolant system is 11,800 +600, -0 cubic feet at a nominal T_{avg} of 582.1°F.

5.5 METEOROLOGICAL TOWERS LOCATION

5.5.1 The primary and backup meteorological towers shall be located as shown on Figure 5.1-1.

INDUSTRIAL SURVEY OF TOXIC OR HAZARDOUS CHEMICALS REPORT

6.9.1.9 Surveys and analyses of major industries in the vicinity of Waterford 3 which could have significant inventories of toxic chemicals onsite to determine impact on safety shall be performed and submitted to the Commission at least once every 4 years.

6.9.1.10 A survey of major pipelines (≥ 4 inches) within a 2-mile radius of Waterford 3, which contain explosive or flammable materials and may represent a hazard to Waterford 3, including scaled engineering drawings or maps which indicate the pipeline locations, shall be performed and submitted to the Commission at least once every 4 years.

CORE OPERATING LIMITS REPORT COLR

6.9.1.11 Core operating limits shall be established and documented in the CORE OPERATING LIMITS REPORT prior to each reload cycle or any remaining part of a reload cycle.

6.9.1.11.1 The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC as follows:

1) "The ROCS and DIT Computer Codes for Nuclear Design," CENPD-266-P-A, April 1983; and "C-E Methodology for Core Designs Containing Gadolinia-Urania Burnable Absorber," CENPD-275-P-A, May 1988. (Methodology for Specifications 3.1.1.1 and 3.1.1.2 for Shutdown Margins, 3.1.1.3 for MTC, 3.1.3.6 for Regulating and group P CEA Insertion Limits, 3.1.2.9 Boron Dilution (Calculation of CBC & IBW), and 3.9.1 Boron Concentration).

2) "C-E Method for Control Element Assembly Ejection Analysis," CENPD-0190-A, January 1976. (Methodology for Specification 3.1.3.6 for Regulating CEA Insertion Limits and 3.2.3 for Azimuthal Power Tilt).

3) "Modified Statistical Combination of Uncertainties" CEN-356(V)-P-A, May 1988. (Methodology for Specification 3.2.4 for DNBR Margin and 3.2.7 for ASI).

4) "Calculative Methods for the C-E Large Break LOCA Calculation Model For The Analysis of C-E and W Designed NSSS," CENPD-132, Supplement 3-P-A, June 1985. (Methodology for Specification 3.1.1.3 for MTC, 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Power Tilt and 3.2.7 for ASI).

5) "Calculative Methods for the ABB CE Small Break LOCA Evaluation Model," CENPD-137-P, August 1974: Supplement 2-P-A, April 1998. (Methodology for Specification 3.1.1.3 for MTC, 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Power Tilt and 3.2.7 for ASI).

ADMINISTRATIVE CONTROLS

CORE OPERATING LIMITS REPORT COLR (Continued)

6) "CESEC - Digital Simulation for a Combustion Engineering Nuclear Steam Supply System," CENPD-107, December 1981. (Methodology for Specification 3.1.1.1 and 3.1.1.2 for Shutdown Margins, 3.1.1.3 for MTC, 3.1.3.1 for Movable Control Assemblies - CEA Position, 3.1.3.6 for Regulating and group P CEA Insertion Limits, ~~3.1.3.7 for Part Length CEA Insertion Limits~~ and 3.2.3 for Azimuthal Power Tilt).

6.9.1.11.2 The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal limits, core thermal-hydraulic limits, ECCS limits, nuclear limits such as shutdown margin, and transient and accident analysis limits) of the safety analysis are met.

6.9.1.11.3 The CORE OPERATING LIMITS REPORT, including any mid-cycle revisions or supplements thereto, shall be provided upon issuance, for each reload cycle, to the NRC Document Control Desk with copies to the Regional Administrator and Resident Inspector.

SPECIAL REPORTS

6.9.2 Special reports shall be submitted to the Regional Administrator of the Regional Office of the NRC within the time period specified for each report.

6.10 Not Used

7) "Qualification of Reactor Physics Methods for the Pressurized Water Reactors of the Entergy System," ENEAD-01-P, Revision 0. (Methodology for Specifications 3.1.1.1 and 3.1.1.2 for Shutdown Margins, 3.1.1.3 for MTC, 3.1.3.6 for Regulating and group P CEA Insertion Limits, 3.1.2.9 Boron Dilution (Calculation of CBC + IBW), and 3.9.1 Boron Concentration).

MARKUP OF TECHNICAL SPECIFICATION BASES

FOR INFORMATION ONLY

MOVABLE CONTROL ASSEMBLIES (Continued)

Transient Insertion Limit Line. This method of insertion is protected from sequence errors by the Core Protection Calculators.

~~The Part Length CEA Insertion Limits of Specification 3.1.3.7 ensure that adverse power shapes and rapid local power changes which affect radial peaking factors and DNB considerations do not occur as a result of a part-length CEA group covering the same axial segment of the fuel assemblies for an extended period of time during operation.~~

COMMITMENT IDENTIFICATION/VOLUNTARY ENHANCEMENT FORM

Attachment 2 to W3F1-2001-0063
Technical Specification Change Request NPF-38-234
Replacement of Part-length Control Element Assemblies

COMMITMENT(S)	ONE-TIME ACTION*	CONTINUING COMPLIANCE*	SCHEDULED COMPLETION DATE (IF REQUIRED)	ASSOCIATED CR OR ER
The Group P CEAs may be used as an additional control group. Power dependent insertion limits (PDILs) will be developed to allow this application. The new PDILs will be located in the Waterford 3 COLR.	X		RF11	
As is currently required for the regulating CEAs, short-term steady state insertion limits and transient insertion limits will be developed for the Group P CEAs, as applicable.	X		RF11	
The evaluation of the modified CEA configuration (new full-length CEAs and elimination of the four-element CEAs) will be addressed via the Waterford 3 design change process, Reload Analysis, and associated 10CFR50.59s.	X		RF11	

*Check one only

VOLUNTARY ENHANCEMENT(S)	ASSOCIATED CR OR ER