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Timothy G. Mitchell
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2CAN070701

July 31, 2007

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: License Amendment Request to Revise
Technical Specification 6.6.5, Core Operating Limits Report
Arkansas Nuclear One, Unit 2
Docket No. 50-368
License No. NPF-6

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Entergy Operations, Inc. (Entergy) hereby requests an amendment to Arkansas Nuclear One, Unit 2 (ANO-2) Technical Specification (TS) 6.6.5, Core Operating Limits. The proposed change will add new analytical methods to support the implementation of Next Generation Fuel (NGF).

The proposed change has been evaluated in accordance with 10 CFR 50.91(a)(1) using criteria in 10 CFR 50.92(c) and it has been determined that this change involves no significant hazards consideration. The bases for these determinations are included in the attached submittal.

The proposed change includes new commitments as summarized in Attachment 3. A similar change is requested for Waterford Steam Electric Station, Unit 3 (Waterford 3).

Entergy requests approval of the proposed amendment by February 14, 2008 in order to support the spring 2008 refueling outage. Once approved, the amendment shall be implemented prior to startup following the spring 2008 refueling outage. Although this request is neither exigent nor emergency, your prompt review is requested.

A001
NRR

If you have any questions or require additional information, please contact David Bice at 479-858-5338.

I declare under penalty of perjury that the foregoing is true and correct. Executed on July 31, 2007.

Sincerely,

TGM/DM

Attachments:
1. Analysis of Proposed Technical Specification Change
2. Proposed Technical Specification Changes (mark-up)
3. List of Regulatory Commitments

cc: Dr. Bruce S. Mallett
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U. S. Nuclear Regulatory Commission
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Attachment 1

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Analysis of Proposed Technical Specification Change

1.0 DESCRIPTION

This letter is a request to amend Operating License NPF-6 for Arkansas Nuclear One, Unit 2 (ANO-2).

The proposed change will revise ANO-2 Technical Specification (TS) 6.6.5, Core Operating Limits Report (COLR) by adding new analytical methods that will be used to determine the core operating limits.

2.0 PROPOSED CHANGE

The proposed change will modify TS 6.6.5 by adding the following new analytical methods:

11) "CE 16 x 16 Next Generation Fuel Core Reference Report," WCAP-16500-P and Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report (TR) WCAP-16500-P, Revision 0, "CE [Combustion Engineering] 16 x 16 Next Generation Fuel [(NGF)] Core Reference Report," (Methodology for Specification 3.1.1.4 for Moderator Temperature Coefficient (MTC), 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Power Tilt, 3.2.4.b, 3.2.4.c and 3.2.4.d for DNBR Margin, and 3.2.7 for ASI).
12) "Optimized ZIRLO™," WCAP-12610-P-A and CENPD-404-P-A Addendum 1-A, (Methodology for Specification 3.1.1.4 for MTC, 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Power Tilt, and 3.2.7 for ASI).
13) "Westinghouse Correlations WSSV and WSSV-T for Predicting Critical Heat Flux in Rod Bundles with Side-Supported Mixing Vanes," WCAP-16523-P and Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report (TR), WCAP-16523-P, "Westinghouse Correlations WSSV and WSSV-T for Predicting Critical Heat Flux in Rod Bundles with Side-Supported Mixing Vanes" (Methodology for Specification 3.2.4.b, 3.2.4.c and 3.2.4.d for DNBR Margin).
14) "ABB Critical Heat Flux Correlations for PWR Fuel," CENPD-387-P-A (Methodology for Specification 3.2.4.b, 3.2.4.c and 3.2.4.d for DNBR Margin and 3.2.7 for ASI).
15) "Calculative Methods for the CE Nuclear Power Large Break LOCA Evaluation Model – Improvement to 1999 Large Break LOCA EM Steam Cooling Model for Less Than 1 in/sec Core Reflood" CENPD-132, Supplement 4-P-A, Addendum 1-P and Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report (TR) CENPD-132 Supplement 4-P-A, Addendum 1-P, "Calculative Methods for the CE [Combustion Engineering] Nuclear Power Large Break LOCA Evaluation Model – Improvement to 1999 Large Break LOCA EM Steam Cooling Model for Less Than 1 in/sec Core Reflood" (Methodology for Specification 3.1.1.4 for MTC, 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Power Tilt, and 3.2.7 for ASI).

The use of these analytical methods is associated with the implementation of Combustion Engineering (CE) 16 x 16 Next Generation Fuel (NGF) as defined in WCAP-16500-P.

Administrative changes are proposed to relocate TS 6.6.3 and 6.6.4 from Page 6-20 to page 6-19 and COLR references 3 – 6 from page 6-21 to page 6-20. No content change is proposed. Therefore, no further discussion is included.

In summary, new analytical methods will be added to TS 6.6.5, COLR. These changes are needed to support implementation of the CE 16 x 16 NGF design.

3.0 BACKGROUND

Combustion Engineering 16 x 16 NGF as defined in WCAP-16500-P will be implemented at ANO-2 beginning in Cycle 20 commencing after the spring 2008 refueling outage. The fuel design is intended to provide improved fuel reliability by reducing grid-to-rod fretting issues, improved fuel performance for high duty operation, and enhanced operating margin.

The major analysis methods for ANO-2 remain unchanged as a result of the implementation of CE 16 x 16 NGF. Those areas that are impacted are identified in several topical reports (TRs), which are described below.

WCAP-16500-P and Final Safety Evaluation

Westinghouse TR WCAP-16500-P describes the methods and models that will be used to evaluate the acceptability of CE 16 x 16 NGF at CE plants.

The WCAP provides a comparison between CE 16 x 16 standard and the CE 16 x 16 NGF fuel assemblies and documents that the two assembly types are mechanically compatible. In addition, Nuclear Design, Thermal and Hydraulic Design, Safety and Setpoint, and Structural evaluations were performed demonstrating the CE 16 x 16 NGF fuel assembly design is acceptable for use at ANO-2.

The TR requested approval of the CE 16 x 16 NGF design to 62 MWd/kgU peak rod average burnup for use in CE NSSS units using the current CE reload methodology. No change is proposed to the current ANO-2 Operating License which restricts peak rod average burnup to 60 MWd/kgU.

WCAP-12610-P-A and CENPD-404-P-A Addendum 1-A

The CE 16 x 16 NGF assembly design contains Optimized ZIRLO™ clad fuel rods. Entergy has submitted by letter (Reference 1) a proposed change to ANO-2 TS 5.2.1 Fuel Assemblies, to add Optimized ZIRLO™ as a fuel rod cladding material. An exemption request to apply the acceptance criteria of 10 CFR 50.46, Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors," to Optimized ZIRLO™ was also submitted (Reference 1).

WCAP-16523-P and Final Safety Evaluation

This TR describes the departure from nucleate boiling correlations that will be used to account for the impact of the CE 16 x 16 NGF fuel assembly design. The correlation was developed to accurately reflect thermal performance of the NGF design with the side-supported vane grids and multiple grid spacing.

CENPD-387-P-A

This TR provides the departure from nucleate boiling (DNB) correlation that will be used to evaluate the DNB impact of non-mixing vane grid spans for CE 16 x 16 standard and NGF assemblies.

CENPD-132, Supplement 4-P-A, Addendum 1-P and Final Safety Evaluation

The addendum provides an optional steam cooling model that can be used in the Emergency Core Cooling System (ECCS) Performance Evaluation to support the implementation of the CE 16 x 16 NGF fuel assembly design. The optional steam cooling model is not being used to support implementation of CE 16 x 16 NGF assemblies in ANO-2 at this time.

4.0 TECHNICAL ANALYSIS

WCAP-16500-P and Final Safety Evaluation (SE)

"CE 16 x 16 Next Generation Fuel Core Reference Report," WCAP-16500-P has been approved by the NRC (Reference 7). Entergy meets the Limitations and Conditions contained in the NRC SE as follows.

1. *Using approved methods, the licensee must ensure that all of the design criteria specified in TR WCAP-16500-P are satisfied on a cycle-specific basis (SE Section 3.3.1).*

   As part of the reload methodology, all of the new design criteria specified for CE 16 x 16 NGF per WCAP-16500-P, Table 1-1 will become part of the reload analysis basis. Using approved models and methods, the reload analysis, which is reviewed per the requirements of 10 CFR 50.59, will check/confirm that these design criteria are met.

2. *Fuel assembly component design and configuration (e.g., type and distribution of spacer grids and IFM grids) are limited to the five designs described in TR WCAP-16500-P and in response to RAI No. 2 (SE Section 3.2).*

   The ANO-2 NGF assembly is consistent with the Plant A design defined in Figure 1-1 of WCAP-16500-P and for the Plant A design documented in the response to RAI No. 2 of Reference 2.

3. *The reference fuel assembly design, CE 16 x 16 NGF, its fuel mechanical design methodology and design criteria, are approved up to a peak rod average burnup of 62 GWd/MTU. A fuel burnup limit may exist, either explicitly or implicitly, in other portions of a plant's licensing basis. The NRC staff's approval of this topical report allows the CE 16 x 16 NGF assembly to reach a rod average burnup of 62 GWd/MTU. However, a license amendment request, specifically addressing each plant's licensing basis including radiological consequences, is required prior to extending burnup beyond current levels. Further, the NRC staff's SE for Optimized ZIRLO™ (Addendum 1 to TR WCAP-12610-P-A and TR CENPD-404-P-A) specified a 60 MWd/kgU burnup limit and this limitation must be revised prior to extending the peak rod average burnup for the NGF design (SE Section 3.4).*

   The current ANO-2 Operating License restricts peak rod average burnup to 60 MWd/kgU. Entergy is not proposing a change to this limit.

4. *Licensees shall demonstrate the accuracy of their growth predictions based upon measured data and this validation shall be ahead of the burnups achieved by batch implementation. The growth model validation (e.g., measured versus predicted) should be documented in a letter(s) to the NRC (SE Section 3.2.1).*

   The growth data presented in Figure 2-15 of WCAP-16500-P Supplement 1-P is ahead of the projected exposure for the first cycle implementation of NGF. The fluence for the data is approximately 7 x 10^{21} nvt, which corresponds to an assembly average burnup of 39 MWD/kgU. The projected end of first cycle assembly average burnup is approximately 27 MWD/kgU. As indicated in the responses to RAI 1a and 1b in Reference 2, additional growth data will be obtained from future LTA exams ahead of the exposure achieved by batch implementation. This data will be provided to the NRC as it becomes available.

5. *To compensate for NRC staff concerns related to the digital setpoints process, an interim margin penalty of 6 percent must be applied to the final addressable constants (e.g., BERR1* 1.06, [(1+EPOL2)*1.06 - 1.0]) calculated following the 1/64 hypercube setpoints process (Response No. 6 of Reference 6). Removal of this interim margin penalty will be considered after the digital setpoints methods have been formalized, documented (e.g., revision to TR WCAP-16500-P), and approved by the NRC (SE Section 3.7).*

   As discussed in the response to the Limitations and Conditions #6 (below), the potential DNB margin gain for the first cycle of ANO-2 that contains a reload batch of NGF (Cycle 20), after accounting for flow redistribution, is expected to be 16%. For this transition cycle, the analysis that calculates the uncertainty addressable constants for the Core Operating Limit Supervisory System (COLSS) on-line monitoring system and the Core Protection Calculator (CPC) System will not explicitly account for the NGF design and Critical Heat Flux (CHF) correlations. Therefore, the resultant DNB uncertainty addressable constants will not explicitly credit the potential DNB margin gain, will not require application of the interim 6% margin penalty and will not require use of the 1/64 hypercube setpoints process.

   If required to maintain acceptable COLSS and CPC DNB operating margin throughout the cycle, a portion of the potential DNB margin gain may be credited to reduce the DNB uncertainty addressable constants for COLSS and CPC. In this case even after applying a conservative 6% margin penalty, no more than one half of the net margin gain, will be credited to reduce the COLSS and CPC DNB uncertainty addressable constants. For a potential DNB margin gain of 16%, up to 5% would be credited. The reduction in the credit from 16% to 5% would be sufficient to compensate for any negative impact of the mixed core on transient and setpoint analyses. The credit would be applied to the COLSS and CPC DNB margin by adjusting the COLSS and CPC DNB uncertainty addressable constants.

   Full DNB margin credit for NGF will begin with the next cycle (Cycle 21) where the NGF CETOP-D model with the WSSV-T and ABB-NV CHF correlations will be used in the COLSS and CPC uncertainty analyses. The Modified Statistical Combination of Uncertainties (MSCU) analysis performed each cycle, as described in Reference 3, will automatically calculate appropriate DNB uncertainty addressable constants for COLSS and CPC reflecting the DNB margin impact of NGF. The 1/64 hypercube setpoints process as well as other process steps described in response to RAI 6 of WCAP-16500-P Supplement 1-P (Reference 4) will be utilized in this analysis. In addition, the 6% interim margin penalty will be applied to the resultant addressable constants until its removal has been approved by the NRC.

6. *Licensees are required to demonstrate that during transition cores, DNB margin gains associated with the NGF design offset (1) any impacts of flow starvation due to increased pressure drop and (2) uncertainty associated with predicting local flow characteristics. Further, licensees must detail the analytical methods and results of their transition core LOCA and non-LOCA analyses (SE Sections 3.7 and 3.10).*

   First time engineering implementation analyses have been performed for transition and full cores of NGF. The analytical methods are defined in WCAP-16500-P for NGF implementation. For the transition cycle the COLSS on-line monitoring system and the CPC system will continue to utilize the current models and the CE-1 CHF correlation. For the first cycle of ANO-2 that contains a batch of NGF (Cycle 20), the potential DNB margin gain, after accounting for the flow redistribution, is expected to be 16%. This margin gain is sufficient to compensate for any negative impact of the mixed core of NGF and standard fuel on transient and setpoint analyses. For non-LOCA analysis of the transition core NRC approved analytical methods are applied and results are based on a CETOP-D model for standard fuel so there is no transition core impact on transients. Full DNB margin credit for NGF will begin with the next cycle (Cycle 21) where the WSSV-T and ABB-NV DNB correlations will be used in the NGF CETOP-D model. The transition core LOCA evaluations for ECCS Performance including the implementation of CE 16 x 16 NGF assemblies are being finalized and will be submitted to NRC for review.

7. *Implementation of CE 16 x 16 NGF assemblies necessitate re-analysis of the plant-specific LOCA analyses. Licensees are required to submit a license amendment containing the revised LOCA analyses for NRC review. Upon approval, the revised LOCA analyses constitute the analysis-of-record and baseline for which future changes will be measured against in accordance with 10CFR50.46(a)(3) (SE Section 3.7).*

   The revised LOCA analyses for ECCS Performance including the implementation of CE 16 x 16 NGF assemblies for full core configuration are being finalized and will be submitted to NRC for review. It should be noted that the introduction of NGF does not impact the post-LOCA long term cooling analysis. Upon approval and implementation of NGF, these revised LOCA analyses will constitute the new analysis-of-record and baseline for ANO-2.

8. *Using approved models and methods, Westinghouse will continue to limit peak local power experienced during Condition I and II events to ensure that fuel temperature remains below melting temperature at all burnups. This evaluation may be both plant and cycle-specific (SE Section 3.3.4).*

   Peak local power experienced during Condition I and II events will be limited to ensure fuel temperature remains below melting temperature at all burnups in accordance with ANO-2 Technical Specification 2.1.1.2. This will be confirmed during each reload analysis.

9. *The NRC staff's approval of TR WCAP-16500-P establishes the licensing basis for batch implementation of the CE 16 x 16 NGF assembly design. Licensees wishing to implement this fuel design are required to submit a license amendment request, where applicable, updating their Core Operating Limits Report list of methodologies with the "A" version of this TR.*

   This amendment request satisfies this condition, however, the "A" version of the TR is not yet published.

10. *The NRC staff's review did not include the LOCA model changes described in Appendix A of TR WCAP-16500-P. Therefore, a licensee will have to submit a license amendment, if they desire to use The Appendix A LOCA model changes.*

    Changes to the LOCA model outlined in Appendix A of TR WCAP-16500-P were resubmitted to the NRC by Westinghouse under CENPD-132, Supplement 4-P-A, Addendum 1-P, and have been approved for use in license amendment applications as described below.

<u>WCAP-12610-P-A and CENPD-404-P-A Addendum 1-A</u>

Entergy submitted by letter (Reference 1) a proposed change to ANO-2 TS 5.2.1 Fuel Assemblies, to add Optimized ZIRLO™ as a fuel rod cladding material. Entergy's compliance with the Limitations and Conditions of this TR are included in Reference 1.

<u>WCAP-16523-P and Final Safety Evaluation</u>

"Westinghouse Correlations WSSV and WSSV-T for Predicting Critical Heat Flux in Rod Bundles with Side-Supported Mixing Vanes," WCAP-16523-P has recently been approved by the NRC (Reference 5). Entergy meets the Limitations and Conditions contained in the final NRC SE as follows.

1. *The WSSV correlation must be used in conjunction with the VIPRE code since the correlation was developed based on VIPRE and the associated VIPRE input specifications. Other uses of the WSSV correlation should reference this TR and be based on appropriate benchmarking with VIPRE.*

   This condition is not applicable for ANO-2 as the WSSV correlation with VIPRE will not be used at this time.

2. *The WSSV-T correlation must be used in conjunction with the TORC code since the correlation constants were developed based on TORC and the associated TORC input specifications. The correlations may also be used in the CETOP-D code in support of reload design calculations benchmarked by TORC.*

   The WSSV-T correlation is used in conjunction with TORC and CETOP-D codes in support of reload design calculations.

3. *The WSSV and WSSV-T correlations must also be used with the optimized Tong Fc shape factor for non-mixing and side-supported mixing vane grids to correct for non-uniform axial power shapes.*

   The optimized Tong Fc shape factor was utilized for non-mixing and side-supported mixing vane grids in the ANO-2 NGF Thermal Hydraulic (TH) implementation analyses.

4. *The range of applicability for both the WSSV and the WSSV-T correlations are:*

Parameter	***Units***	***Range***
Pressure	*psia*	*1,495 to 2,450*
Local coolant quality	--	*≤ 0.34*
Local mass velocity	*10^6 lbm/hr-ft^2*	*0.90 to 3.46*
Matrix heated hydraulic diameter, Dhm	*inches*	*0.4635 to 0.5334*
Heated hydraulic diameter ratio, Dhm/Dh	--	*0.679 to 1.00*
Heated length, HL	*inches*	*48* to 150*
Grid spacing	*inches*	*10.28 to 18.86*
** Set as minimum HL value, applied at all elevations below 48 inches.*		

   The WSSV-T correlation was applied according to Section 6.2 of WCAP-16523-P within the above range of applicability in the ANO-2 NGF TH implementation analyses.

<u>CENPD-387-P-A</u>

The following conditions are satisfied when applying the ABB-NV correlation for non-mixing vane grid spans for CE 16 x 16 Standard and NGF assemblies:

1. *The ABB-NV and ABB-TV correlations indicate a minimum DNBR limit of 1.13 will provide a 95 percent probability with 95 percent confidence of not experiencing CHF on a rod showing the limiting value.*

   The ABB-NV correlation is applied for non-mixing vane grid spans for CE 16 x 16 standard and NGF assemblies. The minimum DNBR correlation limit of 1.13 is used. The WSSV-T correlation is applied for the mixing vane grid spans of the NGF fuel as described in Section 6.2 of WCAP-16523-P instead of the ABB-TV correlation.

2. *The ABB-NV and ABB-TV correlations must be used in conjunction with the TORC code since the correlations were developed on the basis of the TORC and the associated TORC input specifications. The correlations may also be used in the CETOP-D code in support of reload design calculations.*

   The ABB-NV correlation for non-mixing vane grid spans for CE 16 x 16 standard and NGF assemblies is used in conjunction with both TORC and CETOP-D codes.

3. *The ABB-NV and ABB-TV correlations must also be used with the ABB-CE optimized F_c shape factor to correct for non-uniform axial power shapes.*

   The ABB-NV correlation will be used with the ABB-CE optimized Fc shape factor to correct for non-uniform axial power shapes.

4. *Range of applicability for the ABB-NV and ABB-TV correlations:*

Parameter	*ABB-NV Range*	*ABB-TV Range*
Pressure (psia)	*1750 to 2415*	*1500 to 2415*
Local mass velocity (Mlbm/hr/ft^2)	*0.8 to 3.16*	*0.9 to 3.40*
Local quality	*-0.14 to 0.22*	*-0.10 to 0.225*
Heated length, inlet to CHF location (in)	*48 to 150*	*48 to 136.7*
Grid Spacing (in)	*8 to 18.86*	*8 to 18.86*
Heated hydraulic diameter ratio, Dhm/Dh	*0.679 to 1.08*	*0.679 to 1.000*

   The specified range of applicability for the designated parameters is used when applying the ABB-NV correlation.

5. *The ABB-NV and ABB-TV correlation will be implemented in the reload analysis in the exact manner described in Section 7.1 of Topical Report CENPD-387-P, Revision 00-P.*

   The ABB-NV correlation is applied according to Section 7.1 of CENPD-387-P-A for non-mixing vane grid spans for CE 16 x 16 standard and NGF assemblies. The WSSV-T correlation is applied for the mixing vane grid spans of the NGF fuel as described in Section 6.2 of WCAP-16523-P instead of the ABB-TV correlation.

6. *Technology transfer will be accomplished only through the process described in Reference 5 which includes ABB-CE performing an independent benchmarking calculation for comparison to the licensee generated results to verify that the new CHF correlations are properly applied for the first application by the licensee.*

   There is no technology transfer between Westinghouse and Entergy at this time.

<u>CENPD-132, Supplement 4-P-A, Addendum 1-P and Final Safety Evaluation</u>

"Calculative Methods for the CE Nuclear Power Large Break LOCA Evaluation Model – Improvement to 1999 Large Break LOCA EM Steam Cooling Model for Less than 1 in/sec Core Reflood" CENPD-132, Supplement 4-P-A, Addendum 1-P has recently been approved by the NRC (Reference 6).

The conclusion of the SE stated that Limitations and Conditions 3, 4, and 5 are appropriate for use when evaluating CE 16 x 16 NGF design fuel assemblies. The first two Limitations and Conditions included in the SE for CENPD-132, Supplement 4-P-A, Addendum 1-P are for fuel designs other than CE 16 x 16 NGF. The optional steam cooling model is not being used to support the implementation of CE 16 x 16 NGF assemblies in ANO-2 at this time. However, the applicable Limitations and Conditions and the means of satisfying them are included below for future reference.

Entergy meets the Limitations and Conditions contained in the final NRC SE as follows.

3. *Limitation on the Optional Steam Cooling Heat Transfer Model*

The result of the grid model enhancement cannot result in the use of a heat transfer coefficient greater than FLECHT. The FLECHT upper-bound heat transfer coefficient, as required by the current NRC licensing constraint, is also applied to the spacer grid optional steam cooling model improvement.

The computer code logic for the optional steam cooling heat transfer model in the STRIKIN-II hot rod heatup computer code contains a specific algorithm to insure that the current NRC licensing constraint on the use of the FLECHT upper-bound heat transfer coefficient is also applied to the spacer grid steam cooling model improvement calculated in the PARCH steam cooling module. Therefore, this Limitation and Condition is automatically satisfied when performing the ANO-2 licensing calculations using the version of the STRIKIN-II computer code containing the approved optional steam cooling heat transfer model.

4. *Use of the Optional Steam Cooling Model*

If a licensee wants to use the optional steam cooling model, then a license amendment request should be submitted including the analyses performed to determine its applicability to the specific fuel design being evaluated, as discussed in Section 3.3.1, 3.3.2, and 3.3.3 above. In addition, the licensee should provide the results of the evaluation with and without the optional steam cooling model, in a format similar to the graphical results provided in the reference calculations presented in the supplemental TR. The PCT, local oxidation, and steam cooling flow rates should be included in the submittal. These comparisons will enable the NRC staff to confirm the acceptability of the use of the optional steam cooling model.

If the optional steam cooling model were to be used for ANO-2 ECCS Performance Analyses at some time in the future, then a license amendment request would be submitted including the analyses and comparison graphical results needed to confirm the acceptability of the use of the optional steam cooling model.

5. *Use of Flow Blockage and Reynolds Number Limits (Section 3.3.3)*

For use of this topical report at a specific plant, the flow blockage and Reynolds number limits, as discussed in Section 3.3.3 above, should be confirmed by plant-specific analyses.

The computer code logic for the optional steam cooling heat transfer model in the PARCH module of the STRIKIN-II hot rod heatup computer code contains specific computational constraints to print warning and diagnostic output messages to alert the user if the calculation is found to be outside the range of applicability for flow blockage and Reynolds number. Therefore, this Limitation and Condition is automatically satisfied when performing the ANO-2 licensing calculations using the version of the STRIKIN-II computer code containing the approved optional steam cooling heat transfer model.

5.0 REGULATORY ANALYSIS

5.1 Applicable Regulatory Requirements/Criteria

The proposed changes have been evaluated to determine whether applicable regulations and requirements continue to be met.

Title 10 of the *Code of Federal Regulations* (10 CFR) Paragraph 50.36(c)(2)(ii) requires that Technical Specifications (TS) limiting conditions for operation be established for process variables, design features, and operating restrictions for which a value is assumed as an initial condition of a design basis accident in the licensee's safety analyses. As such, amendments may be required for each fuel cycle to update the values of cycle-specific parameter limits in the TSs. To eliminate the need for an amendment to update the cycle-specific parameter limits for each fuel cycle while complying with 10 CFR 50.36(c)(2)(ii) requirements, the U.S. Nuclear Regulatory Commission (NRC) has allowed licensees to use an alternative incorporating the cycle-specific parameter limits in the COLR. Generic Letter (GL) 88-16, "Removal of Cycle-Specific Parameter Limits from Technical Specifications," provides the COLR implementation guidance, which includes the requirement to list the NRC approved analytical methods used to confirm the safety of the core operating limits in the TSs. The analytical methods referenced in the TSs would identify the topical reports (TRs) by number, title, and date, or identify the staff's safety evaluation report for a plant-specific methodology by NRC letter and date. To further avoid the need for TS changes every time a revision to an approved TR is approved, the staff approved TS Task Force (TSTF) Traveler TSTF-363, "Revised Topical Report Reference in ITS 5.6.5, COLR," which allows for the listing of the TRs in the TS by only the numbers and titles, with the detailed identification of the TR revisions, supplement numbers, and approval dates specified in the COLR. Implementation of this TSTF has been approved for Arkansas Nuclear One, Unit 2 (ANO-2).

The proposed change adds several Westinghouse TRs which have been reviewed and approved by the NRC for licensing application. The addition of these TRs to ANO-2 TS follows the same guidance of GL 88-16 and TSTF-363 in that only the TR numbers and titles will be listed in the TS, with the detailed identification of the report revisions and approval dates specified in the COLR.

By letter (Reference 1) Entergy has requested an exemption to 10 CFR 50.46 and Appendix K in support of implementing Optimized ZIRLO™. No other exemptions or relief from regulatory requirements, other than the TS, are required to support the proposed changes.

5.2 No Significant Hazards Consideration

The proposed change will modify the Arkansas Nuclear One, Unit 2 (ANO-2) Technical Specification (TS) related to the analytical methods that will be used to confirm the safety of core operating limits by adding the following references to topical reports:

- "CE 16 x 16 Next Generation Fuel Core Reference Report," WCAP-16500-P and Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report (TR) WCAP-16500-P, Revision 0, "CE [Combustion Engineering] 16 x 16 Next Generation Fuel [(NGF)] Core Reference Report"
- "Optimized ZIRLO™," WCAP-12610-P-A and CENPD-404-P-A Addendum 1-A
- "Westinghouse Correlations WSSV and WSSV-T for Predicting Critical Heat Flux in Rod Bundles with Side-Supported Mixing Vanes," WCAP-16523-P and Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report (TR), WCAP-16523-P, "Westinghouse Correlations WSSV and WSSV-T for Predicting Critical Heat Flux in Rod Bundles with Side-Supported Mixing Vanes"
- "ABB Critical Heat Flux Correlations for PWR Fuel," CENPD-387-P-A
- "Calculative Methods for the CE Nuclear Power Large Break LOCA Evaluation Model – Improvement to 1999 Large Break LOCA EM Steam Cooling Model for Less than 1 in/sec Core Reflood" CENPD-132, Supplement 4-P-A, Addendum 1-P and Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report (TR) CENPD-132 Supplement 4-P-A, Addendum 1-P, "Calculative Methods for the CE [Combustion Engineering] Nuclear Power Large Break LOCA Evaluation Model – Improvement to 1999 Large Break LOCA EM Steam Cooling Model for Less Than 1 in/sec Core Reflood"

Use of the referenced methodologies will support implementation of Combustion Engineering (CE) 16 x 16 Next Generation Fuel (NGF). The fuel design is intended to provide improved fuel reliability by reducing grid-to-rod fretting issues, improved fuel performance for high duty operation, and enhanced operating margin.

Entergy Operations, Inc. has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

   Response: No.

   The proposed changes to the COLR TS are administrative in nature and have no impact on any plant configuration or system performance relied upon to mitigate the consequences of an accident. Changes to the calculated core operating limits may only be made using NRC approved methodologies, must be consistent with all applicable safety analysis limits, and are controlled by the 10 CFR 50.59 process.

   The proposed change will add the following topical reports to the list of referenced core operating analytical methods.

WCAP-16500-P and Final Safety Evaluation (SE)

Westinghouse topical report WCAP-16500-P describes the methods and models that will be used to evaluate the acceptability of CE 16 x 16 NGF at CE plants. Entergy has demonstrated that the Limitations and Conditions associated with the NRC SE will be met. Prior to implementation of NGF, the new core design will be analyzed with applicable NRC staff approved codes and methods.

WCAP-12610-P-A and CENPD-404-P-A Addendum 1-A

The proposed change allows the use of methods required for the implementation of Optimized ZIRLO™ clad fuel rods. Entergy has demonstrated that the Limitations and Conditions associated with the NRC SE will be met.

WCAP-16523-P and Final Safety Evaluation

This topical report describes the departure from nucleate boiling correlations that will be used to account for the impact of the CE 16 x 16 NGF fuel assembly design. Entergy has demonstrated that the Limitations and Conditions associated with the NRC SE will be met. Prior to implementation of NGF, the new core design will be analyzed with applicable NRC staff approved codes and methods.

CENPD-387-P-A

The proposed addition of this topical report provides the departure from nucleate boiling (DNB) correlation that will be used to evaluate the DNB impact of non-mixing vane grid spans for CE 16 x 16 standard and NGF assemblies. Entergy has demonstrated that the Limitations and Conditions associated with the NRC SE will be met.

CENPD-132, Supplement 4-P-A, Addendum 1-P and Final Safety Evaluation

The addendum provides an optional steam cooling model that can be used for Emergency Core Cooling System (ECCS) Performance analyses to support the implementation of the CE 16 x 16 NGF fuel assembly design. The optional steam cooling model is not being used to support implementation of CE 16 x 16 NGF assemblies in ANO-2 at this time. However, Entergy has demonstrated that the Limitations and Conditions associated with the NRC SE will be met.

Assumptions used for accident initiators and/or safety analysis acceptance criteria are not altered by the addition of these topical reports.

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

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

Response: No.

The proposed change identifies changes in the codes used to confirm the values of selected cycle-specific reactor physics parameter limits. The proposed change allows the use of methods required for the implementation of CE 16 x 16 NGF. The proposed addition of the referenced topical reports has no impact on any plant configurations or on system performance that is relied upon to mitigate the consequences of an accident. These changes are administrative in nature and do not result in a change to the physical plant or to the modes of operation defined in the facility license.

<u>WCAP-16500-P and Final Safety Evaluation</u>

The proposed change adds Westinghouse topical report WCAP-16500-P, which describes the methods and models that will be used to evaluate the acceptability of CE 16 x 16 NGF at CE plants. Entergy has demonstrated that the Limitations and Conditions associated with the NRC SE will be met. Prior to implementation of NGF, the new core design will be analyzed with applicable NRC staff approved codes and methods.

<u>WCAP-12610-P-A and CENPD-404-P-A Addendum 1-A</u>

The proposed change allows the use of methods required for the implementation of Optimized ZIRLO™ clad fuel rods. Entergy has demonstrated that the Limitations and Conditions associated with the NRC SE will be met.

<u>WCAP-16523-P and Final Safety Evaluation</u>

This topical report describes the departure from nucleate boiling correlations that will be used to account for the impact of the CE 16 x 16 NGF fuel assembly design. Entergy has demonstrated that the Limitations and Conditions associated with the SE will be met.

<u>CENPD-387-P-A</u>

The proposed addition of this topical report provides the departure from nucleate boiling (DNB) correlation that will be used to evaluate the DNB impact of non-mixing vane grid spans for CE 16 x 16 standard and NGF assemblies. Entergy has demonstrated that the Limitations and Conditions associated with the NRC SE will be met.

<u>CENPD-132, Supplement 4-P-A, Addendum 1-P and Final Safety Evaluation</u>

The addendum provides an optional steam cooling model that can be used for ECCS Performance analyses to support the implementation of the CE 16 x 16 NGF fuel assembly design. The optional steam cooling model is not being used to support implementation of CE 16 x 16 NGF assemblies in ANO-2 at this time. However, Entergy has demonstrated that the Limitations and Conditions associated with the NRC SE will be met.

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

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

Response: No.

The proposed changes do not amend the cycle specific parameter limits located in the COLR from the values presently required by the TS. The individual specifications continue to require operation of the plant within the bounds of the limits specified in COLR.

The addition of the following topical reports to the list of analytical methods referenced in the COLR is administrative in nature:

- WCAP-16500-P and Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report (TR) WCAP-16500-P, Revision 0, "CE [Combustion Engineering] 16 x 16 Next Generation Fuel [(NGF)] Core Reference Report"
- WCAP-12610-P-A and CENPD-404-P-A Addendum 1-A
- WCAP-16523-P and Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report (TR), WCAP-16523-P, "Westinghouse Correlations WSSV and WSSV-T for Predicting Critical Heat Flux in Rod Bundles with Side-Supported Mixing Vanes"
- CENPD-387-P-A
- CENPD-132, Supplement 4-P-A, Addendum 1-P and Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report (TR) CENPD-132 Supplement 4-P-A, Addendum 1-P, "Calculative Methods for the CE [Combustion Engineering] Nuclear Power Large Break LOCA Evaluation Model – Improvement to 1999 Large Break LOCA EM Steam Cooling Model for Less Than 1 in/sec Core Reflood"

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

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

5.3 Environmental Considerations

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

6.0 REFERENCES

1. Entergy letter dated April 24, 2007 to the NRC, "License Amendment Request to Allow the Use of Optimized ZIRLO™ Fuel Rod Cladding," (2CAN040703)

2. Westinghouse Letter to the NRC, "Response to NRC's Request for Additional Information By the Office Nuclear Reactor Regulation Topical Report WCAP-16500-P, CE 16 x 16 Next Generation Fuel Core Reference Report (TAC No. MD0560, Proprietary/Non-proprietary)," LTR-NRC-06-66, November 29, 2006

3. CEN-356(V)-P-A Revision 01-P-A, "Modified Statistical Combination of Uncertainties," May 1988

4. Westinghouse Letter to the NRC, "Presentation Material on Audit Responses to Questions on Setpoints Supplement 1-P to WCAP-16500-P (TAC No. MD0560) (Proprietary/Non-proprietary)," LTR-NRC-07-20, April 5, 2007.

5. NRC Letter to Westinghouse dated March 15, 2007, "Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report (TR), WCAP-16523-P, "Westinghouse Correlations WSSV and WSSV-T for Predicting Critical Heat Flux in Rod Bundles with Side-Supported Mixing Vanes""

6. NRC Letter to Westinghouse dated June 27, 2007, "Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report (TR) CENPD-132 Supplement 4-P-A, Addendum 1-P, "Calculative Methods for the CE [Combustion Engineering] Nuclear Power Large Break LOCA Evaluation Model – Improvement to 1999 Large Break LOCA EM Steam Cooling Model for Less Than 1 in/sec Core Reflood""

7. NRC Letter to Westinghouse dated July 30, 2007, "Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report (TR) WCAP-16500-P, Revision 0, "CE [Combustion Engineering] 16x16 Next Generation Fuel [(NGF)] Core Reference Report""

Attachment 2

2CAN070701

Proposed Technical Specification Changes (mark-up)

6.6 REPORTING REQUIREMENTS

6.6.1 DELETED

6.6.2 Annual Radiological Environmental Operating Report

(Note: A single submittal may be made for ANO. The submittal should combine sections common to both units.)

The Annual Radiological Environmental Operating Report covering the operation of the unit during the previous calendar year shall be submitted by May 15 of each year. The report shall include summaries, interpretations, and analyses of trends of the results of the radiological environmental monitoring program for the reporting period. The material provided shall be consistent with the objectives outlined in the Offsite Dose Calculation Manual (ODCM), and in 10 CFR 50, Appendix I, Sections IV.B.2, IV.B.3, and IV.C.

The Annual Radiological Environmental Operating Report shall include the results of analyses of all radiological environmental samples and of all environmental radiation measurements taken during the period pursuant to the locations specified in the table and figures in the ODCM, as well as summarized and tabulated results of these analyses and measurements. In the event that some individual results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted in a supplementary report as soon as possible.

6.6.3 Radioactive Effluent Release Report

(Note: A single submittal may be made for ANO. The submittal shall combine sections common to both units. The submittal shall specify the releases of radioactive material from each unit.)

The Radioactive Effluent Release Report covering the operation of the unit in the previous year shall be submitted prior to May 1 of each year in accordance with 10 CFR 50.36a. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit. The material provided shall be consistent with the objectives outlined in the ODCM and Process Control Program and in conformance with 10 CFR 50.36a and 10 CFR 50, Appendix I, Section IV.B.1.

6.6.4 DELETED

~~6.6.3 Radioactive Effluent Release Report~~
~~(Note: A single submittal may be made for ANO. The submittal shall combine sections common to both units. The submittal shall specify the releases of radioactive material from each unit.)~~

~~The Radioactive Effluent Release Report covering the operation of the unit in the previous year shall be submitted prior to May 1 of each year in accordance with 10 CFR 50.36a. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit. The material provided shall be consistent with the objectives outlined in the ODCM and Process Control Program and in conformance with 10 CFR 50.36a and 10 CFR 50, Appendix I, Section IV.B.1.~~

~~6.6.4 DELETED~~

6.6.5 CORE OPERATING LIMITS REPORT (COLR)

a. Core operating limits shall be established prior to each reload cycle, or prior to any remaining part of a reload cycle, and shall be documented in the COLR for the following:

3.1.1.1 Shutdown Margin – T_{avg} > 200°F
3.1.1.2 Shutdown Margin - T_{avg} ≤ 200°F
3.1.1.4 Moderator Temperature Coefficient
3.1.3.1 CEA Position
3.1.3.6 Regulating and Group P CEA Insertion Limits
3.2.1 Linear Heat Rate
3.2.3 Azimuthal Power – Tq
3.2.4 DNBR Margin
3.2.7 Axial Shape Index

b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:

1) "Qualification of the PHOENIX-P/ANC Nuclear Design System for Pressurized Water Reactor Cores" (WCAP-11596-P-A), "ANC: A Westinghouse Advanced Nodal Computer Code" (WCAP-10965-P-A), and "ANC: A Westinghouse Advanced Nodal Computer Code: Enhancements to ANC Rod Power Recovery" (WCAP-10965-P-A Addendum 1) (Methodology for Specifications 3.1.1.1 and 3.1.1.2 for Shutdown Margins, 3.1.1.4 for MTC, 3.1.3.6 for Regulating and Group P CEA Insertion Limits, and 3.2.4.b for DNBR Margin).

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

3) "Modified Statistical Combination of Uncertainties, CEN-356(V)-P-A, Revision 01-P-A (Methodology for Specification 3.2.4.c and 3.2.4.d for DNBR Margin and 3.2.7 for ASI).

4) "Calculative Methods for the CE Large Break LOCA Evaluation Model," CENPD-132-P (Methodology for Specification 3.1.1.4 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 CE Small Break LOCA Evaluation Model," CENPD-137-P (Methodology for Specification 3.1.1.4 for MTC, 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Power Tilt, and 3.2.7 for ASI).

6) "CESEC-Digital Simulation of a Combustion Engineering Nuclear Steam Supply System" (Methodology for Specifications 3.1.1.1 and 3.1.1.2 for Shutdown Margin, 3.1.1.4 for MTC, 3.1.3.1 for CEA Position, 3.1.3.6 for Regulating CEA and Group P Insertion Limits, and 3.2.4.b for DNBR Margin).

6.6.5 CORE OPERATING LIMITS REPORT (COLR) (Continued)

~~3) "Modified Statistical Combination of Uncertainties, CEN-356(V)-P-A, Revision 01-P-A (Methodology for Specification 3.2.4.c and 3.2.4.d for DNBR Margin and 3.2.7 for ASI).~~

~~4) "Calculative Methods for the CE Large Break LOCA Evaluation Model," CENPD-132-P (Methodology for Specification 3.1.1.4 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 CE Small Break LOCA Evaluation Model," CENPD-137-P (Methodology for Specification 3.1.1.4 for MTC, 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Power Tilt, and 3.2.7 for ASI).~~

~~6) "CESEC-Digital Simulation of a Combustion Engineering Nuclear Steam Supply System" (Methodology for Specifications 3.1.1.1 and 3.1.1.2 for Shutdown Margin, 3.1.1.4 for MTC, 3.1.3.1 for CEA Position, 3.1.3.6 for Regulating CEA and Group P Insertion Limits, and 3.2.4.b for DNBR Margin).~~

7) "Technical Manual for the CENTS Code," CENPD 282-P-A (Methodology for Specifications 3.1.1.1 and 3.1.1.2 for Shutdown Margin, 3.1.1.4 for MTC, 3.1.3.1 for CEA Position, 3.1.3.6 for Regulating and Group P Insertion Limits, and 3.2.4.b for DNBR Margin.

8) "Implementation of ZIRLO Material Cladding in CE Nuclear Power Fuel Assembly Designs," CENPD-404-P-A (modifies CENPD-132-P and CENPD-137-P as methodology for Specification 3.1.1.4 for MTC, 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Power Tilt, and 3.2.7 for ASI).

9) "Qualification of the Two-Dimensional Transport Code PARAGON," WCAP-16045-P-A (may be used as a replacement for the PHOENIX-P lattice code as the methodology for Specifications 3.1.1.1 and 3.1.1.2 for Shutdown Margins, 3.1.1.4 for MTC, 3.1.3.6 for Regulating and Group P CEA Insertion Limits, and 3.2.4.b for DNBR Margin).

10) "Implementation of Zirconium Diboride Burnable Absorber Coatings in CE Nuclear Power Fuel Assembly Designs," WCAP-16072-P-A (Methodology for Specification 3.1.1.4 for MTC, 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Tilt, and 3.2.7 for ASI).

<u>11) "CE 16 x 16 Next Generation Fuel Core Reference Report," WCAP-16500-P and Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report (TR) WCAP-16500-P, Revision 0, "CE [Combustion Engineering] 16x16 Next Generation Fuel [(NGF)] Core Reference Report," (Methodology for Specification 3.1.1.4 for MTC, 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Power Tilt, 3.2.4.b, 3.2.4.c and 3.2.4.d for DNBR Margin, and 3.2.7 for ASI).</u>

12) "Optimized ZIRLO™," WCAP-12610-P-A and CENPD-404-P-A Addendum 1-A, (Methodology for Specification 3.1.1.4 for MTC, 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Power Tilt, and 3.2.7 for ASI).

13) "Westinghouse Correlations WSSV and WSSV-T for Predicting Critical Heat Flux in Rod Bundles with Side-Supported Mixing Vanes," WCAP-16523-P-A and Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report (TR), WCAP-16523-P, "Westinghouse Correlations WSSV and WSSV-T for Predicting Critical Heat Flux in Rod Bundles with Side-Supported Mixing Vanes," (Methodology for Specification 3.2.4.b, 3.2.4.c and 3.2.4.d for DNBR Margin).

14) "ABB Critical Heat Flux Correlations for PWR Fuel," CENPD-387-P-A (Methodology for Specification 3.2.4.b, 3.2.4.c and 3.2.4.d for DNBR Margin and 3.2.7 for ASI).

15) "Calculative Methods for the CE Nuclear Power large Break LOCA Evaluation Model – Improvement to 1999 Large Break LOCA EM Steam Cooling Model for Less Than 1 in/sec Core Reflood" CENPD-132 and Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report (TR) CENPD-132 Supplement 4-P-A, Addendum 1-P, "Calculative Methods for the CE [Combustion Engineering] Nuclear Power Large Break LOCA Evaluation Model – Improvement to 1999 Large Break LOCA EM Steam Cooling Model for Less Than 1 in/sec Core Reflood," Supplement 4-P-A, Addendum 1-P (Methodology for Specification 3.1.1.4 for MTC, 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Power Tilt, and 3.2.7 for ASI).

c. The core operating limits shall be determined such that all applicable limits (e.g. fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling System (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.

d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

Attachment 3

2CAN070701

List of Regulatory Commitments

List of Regulatory Commitments

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
Additional growth data will be obtained from future LTA exams ahead of the exposure achieved by batch implementation. This data will be provided to the NRC as it becomes available.			July 2009 after LTA programs have burnups that bound current ANO-2 burnup limits.
If required to maintain acceptable COLSS and CPC DNB operating margin throughout the transition cycle (Cycle 20), a portion of the potential DNB margin gain may be credited to reduce the DNB uncertainty addressable constants for COLSS and CPC. In this case even after applying a conservative 6% margin penalty, no more than one half of the net margin gain, will be credited to reduce the COLSS and CPC DNB uncertainty addressable constants.	x		
The 6% interim margin penalty described in the Limitations and Conditions of the NRC Safety Evaluation of WCP-16500-P will be applied to the resultant addressable constants until its removal has been approved by the NRC.		x	
For the transition cycle the COLSS on-line monitoring system and the CPC system will continue to utilize the current models and the CE-1 CHF correlation.	x		
The revised LOCA analyses for ECCS Performance including the implementation of CE 16 x 16 NGF assemblies in the transition core and for full core configurations are being finalized and will be submitted to NRC for review.	x		
If the optional steam cooling model described in CENPD-132, Supplement 4-P-A, Addendum 1-P and Final Safety Evaluation were to be used for ANO-2 ECCS Performance Analyses at some time in the future, then a license amendment request would be submitted including the analyses and comparison graphical results needed to confirm the acceptability of the use of the optional steam cooling model.	x		