Indiana Michigan
Power Company
Cook Nuclear Plant
500 Circle Drive
Buchanan, MI 49107
[illegible]

INDIANA MICHIGAN POWER

March 7, 2001

C0301-05
10 CFR 50.90

Docket No: 50-315
50-316

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, D. C. 20555-0001

Donald C. Cook Nuclear Plant Units 1 and 2
SUPPLEMENT TO TECHNICAL SPECIFICATION CHANGE REQUEST
ALLOWABLE POWER LEVEL
(TAC Nos. MB0699 and MB0700)

Reference: Letter from A. C. Bakken III (I&M) to U. S. Nuclear Regulatory Commission Document Control Desk, "Donald C. Cook Nuclear Plant Units 1 and 2, TECHNICAL SPECIFICATION CHANGE REQUEST, ALLOWABLE POWER LEVEL," Submittal C1100-05, dated November 15, 2000.

In the referenced letter, Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant Units 1 and 2, proposed to amend Facility Operating Licenses DPR-58 and DPR-74. I&M proposed to revise the Technical Specification (T/S) 3/4.2.6, "Allowable Power Level (APL)," and T/S 1.38, definition of APL, to remove a condition that limits APL to 100% of rated thermal power.

I&M discussed the proposed changes with the Nuclear Regulatory Commission (NRC) staff and determined that the proposed wording of T/S 3/4.2.6 should be enhanced and supplementary information provided. I&M is also proposing administrative changes. Attachments 1A and 1B provide revised mark-ups of the current T/S for Units 1 and 2, respectively. Attachments 2A and 2B provide the revised T/S pages with the revised text incorporated for Units 1 and 2, respectively. Attachments 1A, 1B, 2A, and 2B supercede Attachments 2A, 2B, 3A, and 3B to the referenced letter. Attachment 3 presents a detailed description of the T/S revisions, as well as additional APL background and clarification requested by the staff.

A001

I&M has reviewed the information provided in this letter. The evaluation performed in accordance with 10 CFR 50.92(c) provided in Attachment 4 to the referenced letter, which demonstrates that no significant hazard is involved, is not affected. This is described in detail in Section 9.0 of Attachment 3. I&M has reviewed the environmental assessment provided in Attachment 5 of the referenced letter and has concluded that it is not affected. No new commitments are made in this submittal.

Should you have any questions, please contact Mr. Ronald W. Gaston, Manager of Regulatory Affairs, at (616) 697-5020.

Sincerely,

M. W. Rencheck
Vice President Nuclear Engineering

/dmb

Attachments

c: J. E. Dyer
MDEQ – DW & RPD, w/o attachment
NRC Resident Inspector
R. Whale, w/o attachment

AFFIRMATION

I, Michael W. Rencheck, being duly sworn, state that I am Vice President of Indiana Michigan Power Company (I&M), that I am authorized to sign and file this request with the Nuclear Regulatory Commission on behalf of I&M, and that the statements made and the matters set forth herein pertaining to I&M are true and correct to the best of my knowledge, information, and belief.

Indiana Michigan Power Company

M. W. Rencheck
Vice President Nuclear Engineering

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 7 DAY OF March, 2001

Notary Public

My Commission Expires 5/26/05

JENNIFER L KERNOSKY
Notary Public, Berrien County, Michigan
My Commission Expires May 26, 2005

ATTACHMENT 1A TO C0301-05

TECHNICAL SPECIFICATIONS PAGES
MARKED TO SHOW PROPOSED CHANGES

REVISED PAGES
UNIT 1

1-7

3/4 2-15
3/4 2-16

B 3/4 2-6

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ALLOWABLE POWER LEVEL (APL)

1.38 ~~APL means "allowable power level"~~ ALLOWABLE POWER LEVEL (APL) ~~which~~ is that **maximum calculated** power level ~~less than or equal to 100% RATED THERMAL POWER,~~ at which ~~the plant may be operated to ensure that~~ power distribution limits are satisfied.

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ALLOWABLE POWER LEVEL - APL

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$$APL = \min \text{ over } Z \text{ of } \frac{CFQ \times K(Z)}{F_Q(Z) \times V(Z) \times F_P} \times 100\%, \text{ ~~or 100\%, whichever is less.~~}$$

- o CFQ is the F_Q limit at RATED THERMAL POWER specified in the COLR ~~for Westinghouse or Exxon fuel~~.
- o **K(Z) is the normalized $F_Q(Z)$ as a function of core height specified in the COLR.**
- o $F_Q(Z)$ is the measured hot channel factor including a 3% manufacturing tolerance uncertainty and a 5% measurement uncertainty.
- o V(Z) is the function specified in the COLR.
- o F_p = 1.00 except when successive steady-state power distribution maps indicate an increase in max over Z of $\frac{F_Q(Z)}{K(Z)}$ with exposure

  Then either of the penalties, F_p, shall be taken:

  F_p = burnup dependent penalty specified in the COLR, or,

  F_p = 1.00 provided that Surveillance Requirement 4.2.6.2 is satisfied once per 7 Effective Full Power Days until two successive maps indicate that the max over Z of $\frac{F_Q(Z)}{K(Z)}$ is not increasing.

- o The above limit is not applicable in the following core regions.

  1) Lower core region 0% to 10% inclusive.
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APPLICABILITY: MODE 1

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ACTION:

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~~b. THERMAL POWER may be increased to a new APL calculated at the reduced power by either redefining the target axial flux difference or by correcting the cause of the high $F_Q(Z)$ condition.~~

SURVEILLANCE REQUIREMENTS

4.2.6.1 The provisions of Specification 4.0.4 are not applicable.

4.2.6.2 APL shall be determined by measurement in conjunction with the target flux difference and target band determination* above 15% of RATED THERMAL POWER, according to the following schedule:

a. Upon achieving equilibrium conditions after exceeding by 10% or more of RATED THERMAL POWER, the THERMAL POWER at which APL was last determined**, or

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*APL can be redefined by remeasuring the target axial flux difference ~~in accordance with ACTION statement b of Specification 3.2.6~~.

**During power escalation at the beginning of each cycle, the design target may be used until a power level for extended operation has been achieved.

3/4.2.5 DNB PARAMETERS

The limits on the DNB related parameters assure that each of the parameters are maintained within the normal steady state envelope of operation assumed in the transient and accident analyses. The limits are consistent with the initial FSAR assumptions and have been analytically demonstrated to be adequate to maintain the applicable design limit DNBR values for each fuel type (which are listed in the bases for Section 2.1.1) throughout each analyzed transient. The indicated values of T_{avg} and flow include allowances for instrument errors. Measurement uncertainties have been accounted for in determining the DNB parameters' limit values.

The 12 hour periodic surveillance of these parameters through instrument readout is sufficient to ensure that the parameters are restored within their limits following load changes and other expected transient operation. The 12-hour surveillance of the RCS flow measurement is adequate to detect flow degradation. The CHANNEL CALIBRATION performed after refueling ensures that accuracy of the 12-hour surveillance of the RCS flow measurement. The total flow is measured after each refueling based on a secondary side calorimetric and measurements of primary loop temperature.

3/4.2.6 ALLOWABLE POWER LEVEL - APL

~~Constant Axial Offset Control (CAOC) operation manages core power distributions such that Technical Specification limits on $F_Q(Z)$ are not violated during normal operation and limits on MDNBR are not violated during steady state, load follow, and anticipated transients. The V(Z) factor given in the Peaking Factor Limit Report and applied by the Technical Specifications provides the means for predicting the maximum $F_Q(Z)$ distribution anticipated during operation using CAOC taking into account the incore measured equilibrium power distribution. A comparison of the maximum $F_Q(Z)$ with the Technical Specification limit determines the power level (APL) below which the Technical Specification limit can be protected by CAOC. This comparison is done by calculating APL, as defined in Specification 3.2.6.~~

The nuclear design process includes calculations performed to determine that the core can be operated within the $F_Q(Z)$ limits. Because flux maps are taken in steady state conditions, the variations in power distribution resulting from normal operational maneuvers are not present in the flux map data. These variations are, however, conservatively calculated by considering a wide range of unit maneuvers in normal operation allowed by constant axial offset control (CAOC). The maximum peaking factor increase over steady state values, calculated as a function of core elevation, Z, is called V(Z). V(Z) is contained in the COLR.

Multiplying the measured $F_Q(Z)$ by V(Z) gives the maximum $F_Q(Z)$ calculated to occur in normal operation. For further protection, if the steady state $F_Q(Z)$ as determined from a flux map has increased since it was last taken, a penalty, Fp, must be applied or more frequent flux maps must be taken. This is to ensure that $F_Q(Z)$ will not exceed its limit for any significant period of time without detection.

The difference between APL and THERMAL POWER represents the margin between $F_Q(Z)$ during normal operational maneuvers as discussed above and the $F_Q(Z)$ limit assumed in the accident analyses. Thus, if APL is calculated to be greater than the power level at which the flux map was taken, margin exists. If APL is calculated to be lower than the power at which the flux map was taken, margin does not exist, and action must be taken to reduce THERMAL POWER. THERMAL POWER may then be increased by either redefining the target axial flux difference which affects V(Z) or by correcting the cause of the high $F_Q(Z)$ condition.

ATTACHMENT 1B TO C0301-05

TECHNICAL SPECIFICATIONS PAGES
MARKED TO SHOW PROPOSED CHANGES

REVISED PAGES
UNIT 2

1-8

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- o V(Z) is the function specified in the COLR.
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  F_P = burnup dependent penalty specified in the COLR, or

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ATTACHMENT 2A TO C0301-05

PROPOSED TECHNICAL SPECIFICATIONS PAGES

REVISED PAGES
UNIT 1

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ATTACHMENT 2B TO C0301-05

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LIMITING CONDITION FOR OPERATION (Continued)

ACTION:

With APL less than THERMAL POWER, reduce THERMAL POWER to APL or less of RATED THERMAL POWER within 15 minutes. Then reduce the Power Range Neutron Flux-High Trip Setpoints by the same percentage which APL is below RATED THERMAL POWER within the next 4 hours; POWER OPERATION may proceed for up to a total of 72 hours; subsequent POWER OPERATION may proceed provided the Overpower ΔT Trip Setpoints have been reduced the same percentage which APL is below RATED THERMAL POWER.

SURVEILLANCE REQUIREMENTS

4.2.6.1 The provisions of Specification 4.0.4 are not applicable.

4.2.6.2 APL shall be determined by measurement in conjunction with the target flux difference and target band determination* above 15% of RATED THERMAL POWER, according to the following schedule:

a. Upon achieving equilibrium conditions after exceeding by 10% or more of RATED THERMAL POWER, the THERMAL POWER at which APL was last determined**, or

b. At least once per 31 effective full power days, whichever occurs first.

* APL can be redefined by remeasuring the target axial flux difference.

** During power escalation at the beginning of each cycle, the design target may be used until a power level for extended operation has been achieved.

3/4.2.6 ALLOWABLE POWER LEVEL - APL

The nuclear design process includes calculations performed to determine that the core can be operated within the $F_Q(Z)$ limits. Because flux maps are taken in steady state conditions, the variations in power distribution resulting from normal operational maneuvers are not present in the flux map data. These variations are, however, conservatively calculated by considering a wide range of unit maneuvers in normal operation allowed by constant axial offset control (CAOC). The maximum peaking factor increase over steady state values, calculated as a function of core elevation, Z, is called V(Z). V(Z) is contained in the COLR.

Multiplying the measured $F_Q(Z)$ by V(Z) gives the maximum $F_Q(Z)$ calculated to occur in normal operation. For further protection, if the steady state $F_Q(Z)$ as determined from a flux map, has increased since it was last taken, a penalty, Fp, must be applied or more frequent flux maps must be taken. This is to ensure that $F_Q(Z)$ will not exceed its limit for any significant period of time without detection.

The difference between APL and THERMAL POWER represents the margin between $F_Q(Z)$ during normal operational maneuvers as discussed above and the $F_Q(Z)$ limit assumed in the accident analyses. Thus, if APL is calculated to be greater than the power level at which the flux map was taken, margin exists. If APL is calculated to be lower than the power at which the flux map was taken, margin does not exist, and action must be taken to reduce THERMAL POWER. THERMAL POWER may then be increased by either redefining the target axial flux difference which affects V(Z) or by correcting the cause of the high $F_Q(Z)$ condition.

ATTACHMENT 3 TO C0301-05

SUPPLEMENT TO TECHNICAL SPECIFICATION CHANGE
ALLOWABLE POWER LEVEL

1.0 INTRODUCTION

On November 15, 2000, Indiana Michigan Power Company (I&M) submitted proposed changes to the Technical Specifications (T/S) for Donald C. Cook Nuclear Plant (CNP) Units 1 and 2. The proposed changes involved allowable power level (APL). I&M discussed the proposed changes with the Nuclear Regulatory Commission (NRC) staff and determined that the proposed wording of T/S 3/4.2.6 should be enhanced and supplementary information provided. The purpose of this supplement is to provide the enhancement to the wording for the proposed change to T/S 3/4.2.6. I&M is also proposing administrative changes. The original No Significant Hazards Consideration Evaluation remains valid for the wording enhancement, as described in Section 9 of this attachment.

The subject of the Limiting Condition for Operation (LCO) for T/S 3.2.6 is thermal power. However, the purpose of this T/S is to protect the peaking factor limit, $F_Q(Z)$, assumed in the accident analyses. Thus, it is appropriate to have APL as the subject of the LCO. That eliminates any implication that thermal power, in and of itself, is what is protecting $F_Q(Z)$ or that thermal power requires its own T/S. Consistent with NUREG-1431, "Standard Technical Specifications," thermal power is not the subject of an LCO, as it is limited by a condition in the operating license. To demonstrate why it is more appropriate to have APL as the subject of the LCO as opposed to thermal power, a description of how the APL equation protects peaking factors must be reviewed.

2.0 BACKGROUND ON F_Q AND APL

Power distribution by design is not equal throughout the core. The accident analyses include limits for the peak to average power levels that exist in the core. These are referred to as peaking factor limits. As long as the peaking factors measured in the core are less than the peaking factor limits assumed in the accident analyses, the analyses are protected.

The peaking factor related to the T/S change is F_Q. F_Q is defined as the maximum local fuel rod linear power density divided by the average fuel rod linear power density. Thus, F_Q is a measure of the peak-to-average fuel pellet power within the core. As stated above, F_Q is measured and then compared to the F_Q limit assumed in the accident analyses. As long as the measured F_Q is below the limit, the plant remains bounded by the analyses. F_Q is measured by performing a flux map. Since an F_Q value is evaluated for different heights, Z, in the core it is written as $F_Q(Z)$.

The equation contained in T/S 3/4.2.2, "Heat Flux Hot Channel Factor," addresses $F_Q(Z)$. It states:

$F_Q(Z) \leq [CFQ * K(Z)] / P$

Where,

$F_Q(Z)$ is the measured $F_Q(Z)$ from a flux map adjusted for measurement uncertainties and fuel manufacturing tolerances.

CFQ is the $F_Q(Z)$ limit at rated thermal power (RTP) provided in the Core Operating Limits Report (COLR).

K(Z) is the normalized $F_Q(Z)$ as a function of core height.

P is the fractional power level (thermal power/RTP) when the flux map was taken.

The $F_Q(Z)$ listed in the above equation is an excellent approximation for $F_Q(Z)$ at the steady state power at which the flux map was taken. However, the steady-state $F_Q(Z)$ equation listed above does not account for power distribution transients encountered during normal operational maneuvers. From now on, the $F_Q(Z)$ in the above equation will be referred to as $F_Q(Z)ss$, to denote steady-state.

To account for the variations in power distribution during normal operational maneuvers, a peaking factor multiplier, V(Z), that is determined on a cycle specific basis, as contained in the COLR is applied. This multiplier is analogous to W(Z) referred to in NUREG-1431. Using V(Z) gives:

$F_Q(Z) = F_Q(Z)ss * V(Z)$

If the measured $F_Q(Z)ss$ is shown to have increased over the previously measured value, a penalty factor, Fp, must be taken, or more frequent evaluation must occur. These alternative requirements prevent $F_Q(Z)$ from exceeding its limit for any significant period of time without detection. This additional penalty is similar to a penalty described in NUREG-1431 and gives:

$F_Q(Z) = F_Q(Z)ss * V(Z)* Fp$, where Fp equals one unless $F_Q(Z)ss$ is increasing.

This $F_Q(Z)$ will be referred to as $F_{QV}(Z)$.

$F_{QV}(Z)$, defined above, must meet the same limits as the $F_Q(Z)ss$ except at the very top and bottom of the core, where $F_{QV}(Z)$ does not apply. Knowing that this $F_{QV}(Z)$ must meet the same limits gives the following:

$F_{QV}(Z) \leq [CFQ * K(Z)] / P$

Or

$F_Q(Z)ss * V(Z) * Fp \leq [CFQ * K(Z)] / P$

This equation appears to be similar to the APL equation with the following exceptions: (1) the inequality is present instead of the equality, and (2) the power term, P, is present instead of an APL term.

The equation may be made into an equality by multiplying the left hand side, $F_{QV}(Z)$, by a constant, X, that defines the amount of margin between the left and the right hand sides of the equation:

$F_{QV}(Z) * X = [CFQ * K(Z)] / P$

If $F_{QV}(Z)$ is less than or equal to the right hand side of the equation, X will be greater than or equal to one. If $F_{QV}(Z)$ is greater than the right hand side of the equation, then X will be less than one, which means that the peaking factor does not meet its limit.

Now, understanding that X represents the amount of margin between $F_{QV}(Z)$ and its limit, the equation can be mathematically manipulated. Both sides of the equation may be divided by X to obtain the following:

$F_{QV}(Z) = [CFQ * K(Z)] / [P * X]$

Further, mathematical manipulations give:

$P * X = [CFQ * K(Z)] / F_{QV}(Z)$

Or,

$P * X = [CFQ * K(Z)] / [F_Q(Z)ss * V(Z) * Fp]$

Substituting the term, APL for P*X and multiplying by 100% to convert P, which is a fractional power level, to a percentage gives:

$APL = [[CFQ * K(Z)] / [F_Q(Z)ss * V(Z) * Fp]] * 100\%$

APL is the power multiplied by the amount of margin that exists between $F_{QV}(Z)$ and the limit. Thus, if APL comes out to be greater than the power level at which the flux map was taken, it is known that X must be greater than one and thus, $F_{QV}(Z)$ has margin to its limit. On the other hand,

if APL is less than the power level at which the flux map was taken, it is known that X must be less than one, and $F_{QV}(Z)$ does not meet its limit.

If $F_{QV}(Z)$ is determined not to have met its limit, one of the variables in the equation must be adjusted to regain peaking factor margin. T/S 3.2.6 requires power to be reduced so that the margin is regained.

3.0 CNP SPECIFIC T/S 3.2.6 HISTORY

In the original CNP Unit 1 T/S, $F_Q(Z)$, as discussed above, was included in the F_Q T/S 3/4.2.2 and T/S 3/4.2.4 (now 3/4.2.6). The original T/S 3.2.6, titled "Axial Power Distribution" (APD), provided additional flux shape monitoring to ensure F_Q was protected. The LCO limited APD, which was determined as monitored by the APD monitoring system (APDMS). APL was not a defined term in the original T/S.

When APL first appeared in the T/S, it existed in the applicability section of the APD T/S to define the power level at which the APD was applicable. The use of APL came from the use of Exxon nuclear fuel methodology, although whether this was standard methodology for Exxon is not known.

When the APDMS was retired, the T/S for APD was redefined and the format was completely changed. The NRC approved changes to modify T/S 3.2.6 to its present format in 1986 for Unit 2 and 1989 for Unit 1. The title of the T/S 3/4.2.6 was changed to APL and thermal power became the subject of the LCO.

4.0 NEED TO REVISE ORIGINAL REQUEST

The original license amendment request (LAR), submitted to the NRC staff on November 15, 2000, proposed removing "or 100%, whichever is less" from T/S 3.2.6. The APL definition in T/S 1.38 was also modified. The intent of removing "or 100%, whichever is less" was to more accurately reflect that APL is a margin indicator for $F_Q(Z)$, and must be the output of an equation where $F_Q(Z)$ as measured is the input. Thus, to force a 100% limit on APL does not correctly reflect the margin that exists and does not add protection for $F_Q(Z)$, as no action is required unless APL is below 100%.

Discussions with the NRC staff revealed that the requested change appeared to allow thermal power to be above 100%. This was never the intent of the LAR, as the maximum power level is clearly presented in the operating license condition 2.C.1. However, since there is no other T/S where thermal power is the subject of an LCO, the original LAR wording is undesirable due to the potential for misinterpretation.

5.0 PROPOSED TEXT ENHANCEMENT
(Refer to T/S Pages in Attachments 1A, 1B, 2A and 2B)

I&M proposes revised changes to correct the definition for APL, correct the issue of presenting the appearance of thermal power being allowed to exceed 100%, and maintain the same level of safe operation within the original T/S. The revised LCO rearranges the words of the LCO so that APL, and not thermal power, is the subject of the T/S. This presents a more accurate reflection of what is protecting the $F_Q(Z)$ assumed in the accident analyses, which is the requirement.

For consistency with the LCO change, a change has been made to the action section of T/S 3/4.2.6 to place APL as the subject of the sentence. In addition, T/S 3/4.2.6, action b has been eliminated. Action b allowed thermal power to be increased to a new APL calculated at the reduced power by redefining the target axial flux difference (AFD) or by correcting the cause of the high $F_Q(Z)$. The action statement does not restrict operation and only provides a permission that is not explicitly required. Adjusting target AFD and reflecting it in new V(Z) values to gain margin in the equation is allowable with or without this statement as target AFD and V(Z) are both in the COLR. As always, manipulating the plant within the T/S and operating license to eliminate the condition that places the plant in the action statement is allowable. Thus, action b is not necessary and is removed to ensure it is not misinterpreted as permission to allow thermal power to be increased beyond that specified in the operating license. In addition, the part of the footnote that references action b is eliminated for consistency.

Two administrative changes to T/S 3.2.6 have been included. I&M proposes to define the term K(Z) and remove the references to fuel vendors. The proposed change to define K(Z) is administrative as K(Z) is already defined in T/S 3.2.2. It is added to T/S 3.2.6 for completeness. The proposed change to delete references to fuel vendors in the CFQ definition in T/S 3.2.6 is administrative. The APL equation uses the CFQ value provided in the COLR. These values are accounted for in the accident analyses and core design process. The CFQ limit itself is the concern, rather than the fuel vendor. Therefore, this vendor information should not be included in the T/S. This information has already been deleted from the same CFQ definition in T/S 3.2.2.

6.0 THE BASIS FOR THE PROPOSED TEXT ENHANCEMENT

The text enhancement addresses the concern that a T/S would allow thermal power to exceed limits stated in the operating license. The enhancement is consistent with the intent of the originally proposed change, in that it will have APL accurately defined as it is needed to protect $F_Q(Z)$ without reducing the level of protection. The original no significant hazards evaluation remains valid for these changes.

Having $F_Q(Z)$ protected in the T/S is consistent with NUREG-1431 (Section 3.2.1B and associated bases), albeit having $F_Q(Z)$ covered by two T/S is unique to CNP. Having thermal power as the subject of an LCO is inconsistent with NUREG-1431. Protecting $F_Q(Z)$, as it is assumed in the accident analyses is the basis of this T/S. Thus, APL should be the subject of the T/S as it

represents the existing $F_Q(Z)$ margin. Thermal power limitations will continue to be protected as a part of the operating license.

It is an undue operator burden to have thermal power as the subject of an LCO, because anytime power level goes beyond that listed in the LCO, an action statement must be entered and documented. To avoid unplanned LCO entries, control room operators at CNP have been operating at a power level less than that allowed by the operating license. Since operating at a less than rated thermal power if calculated APL is above 100% is not required for $F_Q(Z)$ protection, there is no benefit by having thermal power as the subject of the LCO for APL. APL is the parameter that determines if $F_Q(Z)$ requirements are met. Therefore, APL should be the subject of T/S 3.2.6.

7.0 NRC REQUESTED CLARIFICATIONS

The NRC requested clarification for page 2 of Attachment 1 to C1100-05 (the original submittal), Section D, which discusses an inconsistency between APL and rod misalignment limits. APL represents the margin between the measured $F_Q(Z)$ and the F_Q limit. The higher the APL, the more margin that exists. Given this, the rod misalignment above 85% power is variable and is dependent on how much margin exists with the peaking factors. If the plant is operating with sufficient peaking factor margin, a greater rod misalignment allowance is supported. This is why the rod misalignment allowance above 85% power is dependent in part on how much $F_Q(Z)$ margin exists.

As stated in Section D, the APL values listed in T/S 3/4.1.3.1 for rod misalignment outside of $\pm$ 12 steps refer to APL values that are greater than 100%. The NRC Safety Evaluation Report (SER) for Amendment 193/179, which establishes the current rod misalignment requirements in T/S 3/4.1.3.1, states that if 6% margin in $F_Q(Z)$ exists, an additional misalignment of 6 steps (18 steps total) is allowed at 100% rated thermal power. This SER, issued in 1995, incorporated the APL values above 100% into T/S 3/4.1.3.1. At the time this SER was issued, APL was defined as an equation or 100%, whichever is less. Thus, T/S 3/4.1.3.1, approved in the SER for rod misalignment margin, was intended to be based on the APL equation only, as the APL values listed in T/S 3/4.1.3.1 are greater than 100%. The proposed change clarifies this by eliminating the 100% cap on APL.

The NRC also requested clarification for Attachment 1 to C1100-05, last line in Section F. The last line of Section F addresses the need for an APL T/S in addition to the current $F_Q(Z)$ T/S. This is because the current $F_Q(Z)$ T/S, T/S 3/4.2.2, only addresses a steady-state $F_Q(Z)$. The explanation for why this is not enough is addressed in the background section of this supplement.

8.0 REVISED T/S 3/4.2.6 BASES WORDING

I&M proposes additional changes to the Bases to explain the purpose and protection afforded by the T/S. These changes may be seen in Attachments 1A, 1B, 2A, and 2B of this submittal.

9.0 COMPARISON TO NO SIGNIFICANT HAZARDS EVALUATION

The proposed changes do not affect the original evaluation performed in accordance with 10 CFR 50.92. The basis for this conclusion is provided below.

The original response to Question 1 remains valid due to the following:

The definition section remains the same as it was originally submitted. T/S 3/4.2.6 continues to require thermal power to be less than APL, but will be stated as APL must be greater than or equal to thermal power. Thus, the LCO will be violated if thermal power were to be greater than APL.

The proposed changes would still clarify the meaning of APL by removing the limitation of "100% or rated thermal power, whichever is less." The equation in the APL definition would remain the same as originally submitted and continues to be a calculated value that establishes power distribution limits and reflects available margin in the heat flux hot channel factor.

The elimination of T/S 3.2.6, action b does not impact the original evaluation in that it granted permission and did not restrict operation.

Since the APL equation is unchanged from the original submittal, power distribution limits continue to be maintained by compliance with the APL calculation. The enhanced text continues to separate the limitation on rated thermal power and the APL T/S. The remaining changes are administrative and have no impact on accidents previously evaluated.

The text enhancement does not require a different response to this question as the basis for the response remains the same and continues to be valid. The proposed changes do not increase the probability of occurrence or the consequences of accidents previously evaluated.

The original response to Question 2 remains valid due to the following:

The changes do not change the fact that reactor thermal power and power distribution within the reactor core cannot be an initiator or a precursor to an accident. This is the basis for the original response to this question. The proposed changes are in line with the originally proposed change and as such, do not to create the possibility of a new or different kind of accident from any accident previously evaluated.

The original response to question 3 remains valid due to the following:

The proposed changes do not change the overall maximum reactor thermal power or power distribution. This is the basis for the original response to this question. The calculation for APL remains unchanged. The proposed change does not involve a significant reduction in a margin of safety.