PSE&G

Public Service Electric and Gas Company P.O. Box 236 Hancocks Bridge, New Jersey 08038-0236

Nuclear Business Unit

APR 1 0 2000

LR-N99320
LCR S99-15

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

REQUEST FOR ONE-TIME CHANGE TO TECHNICAL SPECIFICATIONS
MOVABLE INCORE DETECTORS
SALEM GENERATING STATION UNIT NO. 2
FACILITY OPERATING LICENSE DPR-75
DOCKET NO. 50-311

In accordance with 10CFR50.90, Public Service Electric & Gas (PSE&G) Company hereby requests a revision to the Technical Specifications (TS) for Salem Generating Station Unit No. 2. Pursuant to the requirements of 10CFR50.91(b)(1), a copy of this request for amendment has been sent to the State of New Jersey.

The proposed TS changes contained herein modify the requirements contained in Technical Specifications regarding the operation of the movable incore detector system. This change would be a one-time change to allow use of the movable incore detector system for measurement of core peaking factors with less than 75% and greater than or equal to 50% of the detector thimbles available. This amendment request is being submitted in response to degradation of the Salem Unit No. 2 movable incore detector system. There are currently 75.8% of the detector thimble locations available for use. Based on industry experience, the number of available detector thimbles may drop below the 75% requirement of Technical Specification 3.3.3.2.a before the end of the current operating cycle. The proposed changes would allow continued operation of Salem Unit No. 2 through the remainder of Cycle 11

The proposed changes are similar to changes approved by the NRC for the Prairie Island Nuclear Generating Plant on October 10, 1996 and on July 28, 1998.

The proposed change has been evaluated in accordance with 10CFR50.91(a)(1), using the criteria in 10CFR50.92(c), and it has been determined that this request involves no significant hazards considerations.

PSE&G has reviewed the proposed License Change Request (LCR) against the criteria of 10 CFR 51.22 for environmental considerations. The proposed changes do not

ATTACHMENT 5 OF THIS LETTER CONTAINS PROPRIETARY INFORMATION
- NOT FOR PUBLIC DISCLOSURE -

involve a significant hazards consideration, nor increase the types and amounts of effluents that may be released offsite, nor significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, PSE&G concludes that the proposed change meets the criteria delineated in 10 CFR 51.22(c)(9) for a categorical exclusion from the requirements for an Environmental Impact Statement.

A description of the requested change, the reason for the changes, and the justification for the changes are provided in Attachment 1. The basis for no significant hazards consideration determination is provided in Attachment 2. The marked up Technical Specification pages affected by the proposed changes are provided in Attachment 3. Attachment 4 contains revised Technical Specification pages with the proposed changes incorporated.

Attachment 5 contains the Westinghouse Thimble Deletion Study for Salem Unit 2 Cycle 11. Attachment 6 is an application and affidavit by Westinghouse Electric Company for withholding proprietary information contained in Attachment 5 from public disclosure in accordance with 10 CFR 2.790. Westinghouse is the owner of the information for which withholding is requested. A non-proprietary version of the Westinghouse Thimble Deletion Study for Salem Unit 2 Cycle 11 is provided as Attachment 7 of this letter.

Correspondence with respect to the copyright or proprietary aspects of the reports in Attachments 5 and 7 or the supporting affidavit in Attachment 6 should reference CAW-00-1392 and should be addressed to H. A. Sepp, Manager of Regulatory and Licensing Engineering, Westinghouse Electric Company, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

Based on industry experience with movable incore detector thimbles, PSE&G requests that the NRC complete its review of the proposed change no later than May 15, 2000. Upon NRC approval of this proposed change, PSE&G requests that the amendment be made effective on the date of issuance, but allow an implementation period of sixty days to provide sufficient time for associated administrative activities.

Should you have any questions regarding this request, please contact Paul Duke at (856) 339-1466.

Sincerely,

M. B. Bezilla
Vice President - Operations

Affidavit
Attachments (7)

ATTACHMENT 5 OF THIS LETTER CONTAINS PROPRIETARY INFORMATION - NOT FOR PUBLIC DISCLOSURE -

C Mr. H. J. Miller, Administrator - Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr R. Fretz
Licensing Project Manager - Salem
U. S. Nuclear Regulatory Commission
One White Flint North
Mail Stop 4D3
11555 Rockville Pike
Rockville, MD 20852

USNRC Senior Resident Inspector - Salem (X24)

Mr. K. Tosch, Manager IV
Bureau of Nuclear Engineering
P.O. Box 415
Trenton, NJ 08625

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REF: LR-N99320
LCR S99-15

STATE OF NEW JERSEY)
) SS.
COUNTY OF SALEM)

M. Bezilla, being duly sworn according to law deposes and says:

I am Vice President - Operations of Public Service Electric and Gas Company, and as such, I find the matters set forth in the above referenced letter, concerning Salem Generating Station, Unit 2, are true to the best of my knowledge, information and belief.

M. B. Bezilla

Subscribed and Sworn to before me
this 10th day of April, 2000

Jennifer M. Turner
Notary Public of New Jersey

JENNIFER M. TURNER
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires July 25, 2000

My Commission expires on _____

SALEM GENERATING STATION
UNIT NO. 2
FACILITY OPERATING LICENSE DPR – 75
DOCKET NO. 50-311
CHANGE TO TECHNICAL SPECIFICATIONS
MOVABLE INCORE DETECTORS

DESCRIPTION OF THE PROPOSED CHANGES

Public Service Electric and Gas (PSE&G) proposes to revise the Salem Unit 2 Technical Specifications as follows to allow the use of the movable incore detector system to perform measurements of core peaking factors with less than 75% of the detector thimbles available. The following notes would be added to applicable Technical Specifications.

Add footnote to Surveillance Requirements 4.2.2.2.b and 4.2.2.3

> For Cycle 11, when the number of available movable detector thimbles is greater than or equal to 50% and less than 75% of the total, the 5% measurement uncertainty shall be increased to [5% + (3-T/14.5)(1%)] where T is the number of available thimbles.

Add footnote to Surveillance Requirement 4.2.3.2

> For Cycle 11, when the number of available movable detector thimbles is greater than or equal to 50% and less than 75% of the total, the 4% measurement uncertainty shall be increased to [4% + (3-T/14.5)(1%)] where T is the number of available thimbles.

Add footnote to Limiting Condition of Operation 3.3.3.2

> For Cycle 11, when the number of available movable detector thimbles is greater than 50% but less than 75% of the total, the movable incore system can be considered OPERABLE provided the $F^N_{\Delta H}$, $F_Q(z)$, and F_{xy} uncertainties are appropriately adjusted. Also there should be a minimum of four thimbles available per quadrant, where quadrant includes both horizontal-vertical and diagonally-bounded quadrants (eight individual quadrants in total).

BACKGROUND AND REASON FOR THE PROPOSED CHANGES

The movable incore detector system consists of 58 incore flux thimbles to permit the measurement of axial and radial neutron flux distribution within the reactor core. Movable fission chamber detectors are used to scan the length of the 58 core locations. Technical Specification (TS) 3.3.3.2.a requires at least 75% of the detector thimbles to

be operable when performing a flux map to ensure compliance with the peaking factor requirements of TS 3.2.2 and 3.2.3. In accordance with the surveillance requirements of TS 3.2.2 and 3.2.3, the peaking factors must be determined to be within limits at least once per 31 effective full power days. If the movable incore detector system is degraded to the extent that less than 75% of the detector thimbles are available, the system is inoperable and cannot be used for monitoring or calibration functions as directed by the action statements of TS 3.3.3.2.

At the completion of maintenance activities during the last refueling outage, nine incore detector locations were inaccessible. During the first Cycle 11 flux map, four additional locations were found to be inaccessible. Three of the additional locations had been reworked during the outage after they were found to be obstructed at the detector seal table area.

The following table illustrates the actual number of accessible thimbles to date for Unit 2 Cycle 11:

Flux Map	Date	Rated Thermal Power	Accessible Thimbles
1	5/28/99	14%	45
2	5/29/99	45%	46
3	6/3/99	74%	46
4	6/6/99	100%	46
5	6/28/99	100%	46
6	7/26/99	100%	47
7	8/17/99	100%	47
8	9/13/99	100%	46
9	10/11/99	100%	45
10	11/8/99	100%	45
11	11/9/99	100%	46
12	12/6/99	100%	45
13	1/3/00	100%	45
14	1/31/00	100%	44
15	2/26/00	100%	45
16	3/27/00	100%	44

During the flux map performed on March 27, 2000, 75.8%% (44 of 58) of the incore thimbles would allow passage of the movable detectors. Figure 1 shows the thimble locations inaccessible during the performance of flux map 14 for Unit 2 Cycle 11. The number of available locations has changed throughout Unit 2 Cycle 11. However, as can be seen in Figure 1, the available thimbles were well distributed throughout the core and thimble coverage was adequate.

Until corrective actions can be taken, in view of the recent decline in the number of detector thimbles available, PSE&G is concerned with meeting the 75% criterion of TS 3.3.3.2.a for future required movable incore detection system monitoring and calibration

activities. PSE&G believes detector thimble availability may degrade further through the remainder of Unit 2 Cycle 11 operation. Failure to have at least 44 thimbles accessible (~75%) would eventually result in a forced Unit 2 shutdown due to the inability to determine the peaking factors per the requirements of TS 3.2.2 and 3.2.3.

To prepare for the possibility that the number of available detector thimbles may fall below 75%, PSE&G commissioned Westinghouse to evaluate the measurement error allowance due to flux mapping with less than 75% of the detector thimbles available. As part of this evaluation, Westinghouse assessed the incremental peaking factor measurement uncertainties and excore calibration impact associated with a reduction to a minimum of 29 (50%) of the 58 detector thimbles during Unit 2 Cycle 11. The results of the Westinghouse evaluation are provided in Attachment 5.

Based upon the results of the Westinghouse evaluation, this request for amendment proposes changes to the power distribution limit requirements in TS 3.2.2 and 3.2.3 to increase the uncertainty factors applied to the peaking factors when a flux map is performed with less than 75% of the thimbles. Changes are also proposed to TS 3.3.3.2 to reflect that the movable incore detector system will remain OPERABLE with less than 75% but greater than or equal to 50% of the detector thimbles available. The proposed changes are one-time only changes, applicable to the remainder of Salem Unit 2 Cycle 11. The changes would allow continued operation of Unit 2 until the end of Cycle 11 at which time actions can be taken to restore the unavailable detector thimbles.

JUSTIFICATION FOR THE PROPOSED CHANGES

The movable incore detector system is used for confirmatory information and is not required for the day-to-day safe operation of the reactor (daily core power performance is monitored by the excore detectors). The system does not provide any automatic control or protective functions for the operation of the plant. The measured power distribution is affected by the true power distribution that exists in the core, the predicted power distribution in the core, and the instrument thimble pattern. The thimbles are distributed nearly uniformly over the core with approximately the same number of thimbles in each quadrant. The number and location of these thimbles allows measurement of the nuclear enthalpy rise hot channel factor ($F^N_{\Delta H}$) to within 4% and the heat flux hot channel factor ($F_Q(z)$) and radial peaking factor (F_{xy}) to within 5% with at least 75% of the detector thimble locations available.

As shown by the attached Westinghouse evaluation, the reduction of the available detector thimbles to 50%, as proposed by this amendment request, does not significantly affect the ability of the movable incore detector system to measure core power distributions. However, use of the movable incore detector system with less than 75% of the detector thimbles available requires the core peaking factor measurement uncertainties to be increased to compensate for the reduction in the number of available detector thimble locations. The Westinghouse evaluation shows that additional uncertainties of 1% for $F^N_{\Delta H}$, $F_Q(z)$ and F_{xy} are appropriate when the number of available

detector thimbles is reduced from 58 to 29. The additional uncertainties are applied linearly from 75% to 50% available detector thimbles. [Uncertainty $F^N_{\Delta H}$ = 4% + (3-T/14.5)*1%; $F_Q(z)$ = 5% + (3-T/14.5)*1%; and F_{xy} = 5% + (3-T/14.5)*1%, where T is the number of available thimbles].

The reduction in the number of available detector thimbles is also shown in the Westinghouse evaluation to have a negligible impact on the core average axial power shape measurements. Excore neutron flux detector calibration will not be adversely affected.

In addition to the uncertainty changes, the Westinghouse evaluation also specifies that whenever greater than or equal to 50% and less than 75% of the detector thimbles are available, there should be a minimum of four thimbles available per quadrant, where quadrant includes both horizontal-vertical quadrants and diagonally bounded quadrants (eight individual quadrants in total). This requirement improves the ability to distinguish between random and systematic thimble deletion events and establishes the bounds of applicability of the peaking factor uncertainties. The peaking factor measurement uncertainty analysis in the Westinghouse evaluation makes the assumption that thimbles were randomly deleted from the core. If the thimbles are somehow systematically deleted from use, then the calculated peaking factor measurement uncertainties will not apply. TS 3.3.3.2.b requires a minimum of two detector thimbles per quadrant. However, the current requirement is not sufficient to distinguish between random and systematic deletion events with high confidence. To ensure that thimble deletion is random, a footnote would be added to Technical Specification 3.3.3.2.b to provide the more restrictive quadrant requirements necessary for Unit 2 Cycle 11 with greater than or equal to 50% and less than 75% detector thimbles available. This footnote will establish the bounds on the number of detector thimbles per quadrant to be consistent with the Westinghouse evaluations and will significantly enhance the ability to distinguish between random and systematic events.

While Figure 1 shows a large number of the inaccessible thimbles located in a single quadrant (quadrant IV), the remaining accessible locations satisfy the criterion for random thimble deletion. Our analysis of the failed locations indicates there is no systematic failure mode associated with a particular quadrant.

The Westinghouse evaluation concludes that with the inclusion of the additional peaking factor uncertainties, operation of the movable incore detector system with a minimum of 50% of the thimbles available is acceptable with the above provisions on the number of detector thimbles per quadrant.

Current burnup in Unit 2 Cycle 11 is approximately 11,500 MWD/MTU in the planned 19,000 MWD/MTU cycle. At this point in cycle operation, the core characteristics have been well established and core power distribution is well behaved. All power distribution surveillance parameters ($F^N_{\Delta H}$, $F_Q(z)$ and F_{xy}) currently have sufficient margin to their limits after the current TS required uncertainties are applied. From the flux map taken on March 27, 2000, there is approximately 8.1% margin for $F^N_{\Delta H}$ (i.e.,

measured $F^N_{\Delta H}$ plus its measurement uncertainty in comparison to its TS limit), approximately 23.6% margin for $F_Q(z)$ and approximately 6.7% margin for $F_{xy}(z)$. Table 1 contains a summary of the results of the flux maps taken to date during Unit 2 Cycle 11. The predicted peaks ($F^N_{\Delta H}$, $F_Q(z)$ and F_{xy}) provide adequate margin for implementation of the additional measurement uncertainties resulting from the Westinghouse evaluation to meet TS limits through the remainder of the cycle.

Table 2 contains a summary of results of the Salem Unit 2 low power physics testing. The results show good agreement between predicted and measured values.

Similar requests for relaxation of the 75% detector thimble requirement have been reviewed and found acceptable in the past. Similar license amendments approved by the NRC include: Beaver Valley Unit 1 Amendment 61 approved on January 19, 1983; McGuire Unit 1 Amendment 101 approved on December 14, 1989; McGuire Unit 1 Amendment 117 approved on February 27, 1991; Prairie Island Unit 1 Amendment 124 approved on October 10, 1996; and Prairie Island Unit 1 Amendment 136 approved on July, 28, 1998.

ENVIRONMENTAL IMPACT:

The proposed TS changes were reviewed against the criteria of 10CFR51.22 for environmental considerations. The proposed changes do not involve a significant hazards consideration, a significant increase in the amounts of effluents that may be released offsite, or a significant increase in the individual or cumulative occupational radiation exposures. Based on the foregoing, PSE&G concludes that the proposed TS changes meet the criteria given in 10CFR51.22(c)(9) for a categorical exclusion from the requirements for an Environmental Impact Statement.

Figure 1

S2C11 Inaccessible Incore Thimble Locations (thru 1/31/00)

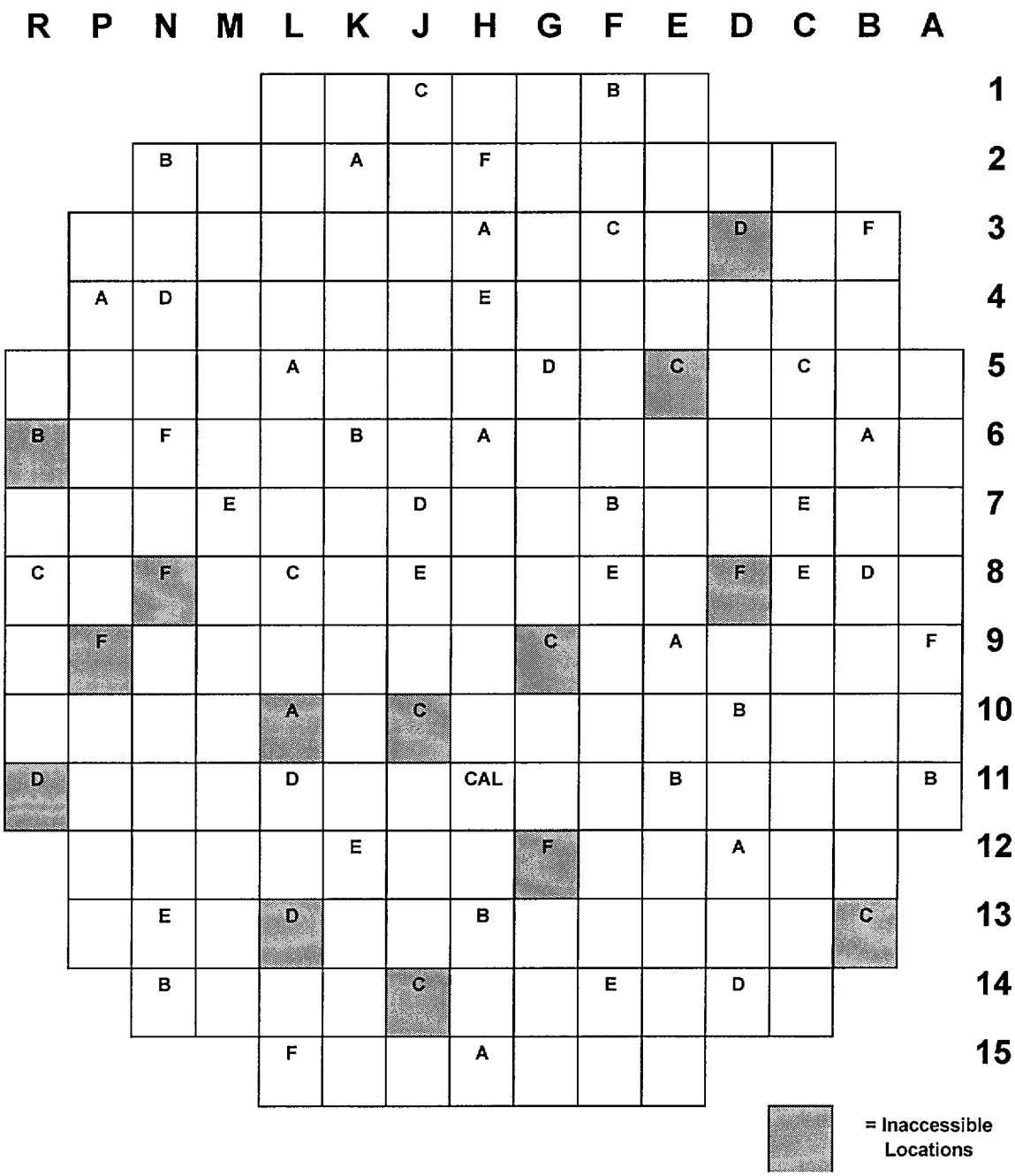

Table 1
Salem Unit No. 2
Summary of Cycle 11 Flux Maps

Flux Map Number	Burnup (MWD/MTU)	% Power	$F^N_{\Delta H}$ Margin to Limit	$F_Q(z)$ Margin to Limit	$F_{xy}(z)$ Margin to Limit
1	7	14%	23.3%	55.8%	24.9%
2	27	45%	19.7%	58.5%	19.3%
3	118	74%	12.8%	40.5%	11.6%
4	249	100%	8.1%	22.2%	8.1%
5	1069	100%	10.4%	20.8%	9.2%
6	2136	100%	9.8%	19.7%	8.9%
7	2985	100%	10.1%	20.2%	9.0%
8	3999	100%	10.0%	21.1%	10.0%
9	5073	100%	10.4%	21.7%	9.3%
10	6148	100%	9.7%	21.9%	7.3%
11	6186	100%	10.0%	21.9%	7.8%
12	7196	100%	9.3%	22.2%	7.1%
13	8267	100%	8.7%	22.2%	6.5%
14	9342	100%	8.2%	23.4%	6.2%
15	10333	100%	7.9%	23.7%	6.8%
16	11473	100%	8.1%	23.6%	6.7%

Table 2
Salem Unit No. 2
Cycle 11 Low Power Physics Testing

Parameter	Measured Value	Predicted Value	Review Criteria	Error
Critical Boron Concentration, ARO (ppm)	1684	1718	±50	-34
Isothermal Temperature Coefficient, ARO (pcm/°F)	-3.99	-3.88	±2.0	-0.11

Dynamic Rod Worth Measurement (DRWM) Results

Rod Bank	Measured Worth (pcm)	Design Value (pcm)	Review Criteria	Error
D	726.4	731.1	±15%	-0.6%
C	938.1	924.3	±15%	1.5%
B	930.7	916.9	±15%	1.5%
A	472.2	485.3	±100pcm	-13.1 pcm
SD	407.7	405.8	±100pcm	1.9 pcm
SC	394.3	399.6	±100pcm	-5.3 pcm
SB	866.2	874.0	±15%	-0.9%
SA	218.9	227.5	±100pcm	-8.6 pcm
Total	4954	4965	±8%	-0.2%

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CHANGE TO TECHNICAL SPECIFICATIONS

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

Public Service Electric and Gas (PSE&G) has determined that operation of Salem Generating Station Unit No. 2, in accordance with the proposed changes does not involve a significant hazards consideration. In support of this determination, an evaluation of each of the three standards of 10CFR50.92 is provided below.

REQUESTED CHANGE

The proposed change permits the use of the Movable Incore Detector system with less than 75% but greater than or equal to 50% of the detector thimbles available.

BASIS

1. *The proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.*

   The movable incore detector system is used only to provide confirmatory information on the neutron flux distribution of the core. This system does not provide any automatic control functions or protective functions for the operation of the plant. The only accident that the movable incore detector system could be involved in is the breaching of the detector thimbles which is bounded by the small break loss of coolant accident (LOCA) analysis. As the proposed changes do not involve any changes to the physical equipment or operation of the system, there is no increase in the probability of an accident previously evaluated.

   The movable incore detector system provides a monitoring function that is not used for accident mitigation. The small break LOCA analysis continues to bound potential breaching of the system's detector thimbles. With less than 75% but greater than or equal to 50% of the detector thimbles available, core peaking factor measurement uncertainties will be increased. This can impact core peaking factors and as a result could affect the consequences of certain accidents. However, any changes in the core peaking factors resulting from increased measurement uncertainties will be compensated for by conservative measurement uncertainty adjustments in the Technical Specifications to ensure that pertinent core design parameters are maintained. Sufficient additional penalty is added to the power distribution measurements such that this change will not impact the consequences of any accident previously evaluated.

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

2. *The proposed changes do not create the possibility of a new or different kind of accident from any accident previously analyzed.*

   There are no changes to the physical plant or operation of the movable incore systems as a result of the proposed changes. Since no changes are being made to the way the system is operated and no changes are being made to the system equipment, no new accidents or different accidents than previously analyzed are introduced by the proposed changes.

   Therefore, the proposed changes will not create the possibility of a new or different kind of accident from any accident previously analyzed.

3. *The proposed changes do not involve a significant reduction in a margin of safety.*

   The reduction in the minimum complement of equipment necessary for the operability of the movable incore detector system only impacts the monitoring and calibration functions of the system. Reduction of the number of available moveable incore detector thimbles to the 50% level does not significantly degrade the ability of the system to measure core power distributions. With less than 75% but greater than or equal to 50% of the detector thimbles available, core peaking factor measurement uncertainties will be increased but will be compensated for by conservative measurement uncertainty adjustments in the Technical Specifications to ensure that pertinent core design parameters are maintained. Sufficient additional penalty is added to the power distribution measurements such that this change does not impact the safety margins that currently exist. Also, the reduction of available detector thimbles has negligible impact on the quadrant power tilt and core average axial power shape measurements and will not adversely affect excore detector calibration. Sufficient detector thimbles will be available to ensure that no quadrant will be unmonitored.

   Based on the above, the proposed changes will not result in a reduction in the margin of safety.

CONCLUSION

Based on the preceding discussion, PSE&G has concluded that the proposed changes to the Technical Specifications do not involve a significant hazards consideration insofar as the changes: (i) do not involve a significant increase in the probability or consequences of an accident previously evaluated, (ii) do not create the possibility of a new or different kind of accident from any accident previously evaluated, and (iii) do not involve a significant reduction in a margin of safety.

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CHANGE TO TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATION PAGES WITH PROPOSED CHANGES

The following Technical Specifications for Facility Operating License No. DPR-75 are affected by this change request:

Technical Specification	Page
4.2.2.2.b	3/4 2-6
4.2.2.3	3/4 2-7
4.2.3.2	3/4 2-10
3.3.3.2	3/4 3-42

SURVEILLANCE REQUIREMENTS

4.2.2.1 The provisions of Specification 4.0.4 are not applicable.

4.2.2.2 F_{xy} shall be evaluated to determine if $F_Q(Z)$ is within its limit by:

a. Using the movable incore detectors to obtain a power distribution map at any THERMAL POWER greater than 5% of RATED THERMAL POWER.

b. Increasing the measured F_{xy} component of the power distribution map by 3% to account for manufacturing tolerances and further increasing the value by 5% to account for measurement uncertainties.

c. Comparing the F_{xy} computed (F^C_{xy}) obtained in b, above to:

1. The F_{xy} limits for RATED THERMAL POWER (F^{RTP}_{xy}) for the appropriate measured core planes given in e. and f., below, and

2. The relationship:

$$F^L_{xy} = F^{RTP}_{xy} \; [1 + PF_{xy}(1-P)]$$

where F^L_{xy} is the limit for fractional THERMAL POWER operation expressed as a function of F^{RTP}_{xy}, PF_{xy} is the power factor multiplier for F_{xy} in the CORL, and P is the fraction of RATED THERMAL POWER at which F_{xy} was measured.

d. Remeasuring F_{xy} according to the following schedule:

1. When F^C_{xy} is greater than the F^{RTP}_{xy} limit for the appropriate measured core plane but less than the F^L_{xy} relationship, additional power distribution maps shall be taken and F^C_{xy} compared to F^{RTP}_{xy} and F^L_{xy} :

a) Either within 24 hours after exceeding by 20% of RATED THERMAL POWER or greater, the THERMAL POWER at which F^C_{xy} was last determined, or

(*) INSERT 1

b) At least once per 31 EFPD, whichever occurs first.

2. When the F^C_{xy} is less than or equal to the F^{RTP}_{xy} limit for the appropriate measured core plane, additional power distribution maps shall be taken and F^C_{xy} compared to F^{RTP}_{xy} and F^L_{xy} at least once per 31 EFPD.

e. The F_{xy} limit for Rated Thermal Power (F^{RTP}_{xy}) shall be provided for all core planes containing bank "D" control rods and all unrodded core planes in the COLR per specification 6.9.1.9.

f. The F_{xy} limits of e., above, are not applicable in the following core plane regions as measured in percent of core height from the bottom of the fuel:

1. Lower core region from 0% to 15%, inclusive.
2. Upper core region from 85% to 100%, inclusive.
3. Grid plane regions at 17.8% ± 2%, 32.1% ± 2%, 46.4% ± 2%, 60.6% ± 2% and 74.9% ± 2%, inclusive.
4. Core plane regions within ± 2% of core height (± 2.88 inches) about the bank demand position of the bank "D" control rods.

g. Evaluating the effects of F_{xy} on $F_Q(Z)$ to determine if $F_Q(Z)$ is within its limit whenever F^C_{xy} exceeds F^L_{xy}.

4.2.2.3 When $F_Q(Z)$ is measured pursuant to specification 4.10.2.2, an overall measured $F_Q(Z)$ shall be obtained from a power distribution map and increased by 3% to account for manufacturing tolerances and further increased by 5% to account for measurement uncertainty.

* INSERT 1

SURVEILLANCE REQUIREMENTS

4.2.3.1 $F_{\Delta H}^{N}$ shall be determined to be within its limit by using the movable incore detectors to obtain a power distribution map:

a. Prior to operation above 75% of RATED THERMAL POWER after each fuel loading, and

b. At least once per 31 Effective Full Power Days.

c. The provisions of Specification 4.0.4 are not applicable.

4.2.3.2 The measured $F_{\Delta H}^{N}$ of 4.2.3.1 above, shall be increased by 4% * for measurement uncertainty.

* INSERT 2

INSTRUMENTATION

MOVABLE INCORE DETECTORS

LIMITING CONDITION FOR OPERATION

3.3.3.2 The movable incore detection system shall be OPERABLE with:

a. At least 75% * of the detector thimbles,

b. A minimum of 2 detector thimbles per core quadrant, and

c. Sufficient movable detectors, drive, and readout equipment to map these thimbles.

APPLICABILITY: When the movable incore detection system is used for:

a. Recalibration of the excore neutron flux detection system,

b. Monitoring the QUADRANT POWER TILT RATIO, or

c. Measurement of $F^N_{\Delta H}$, $F_Q(Z)$ and F_{xy}.

ACTION:

With the movable incore detection system inoperable, do not use the system for the above applicable monitoring or calibration functions. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.2 The movable incore detection system shall be demonstrated OPERABLE at least once per 24 hours by normalizing each detector output to be used during its use when required for:

a. Recalibration of the excore neutron flux detection system, or

b. Monitoring the QUADRANT POWER TILT RATIO, or

c. Measurement of $F^N_{\Delta H}$, $F_Q(Z)$ and F_{xy}.

* INSERT 3

INSERT 1

For Cycle 11, when the number of available movable detector thimbles is greater than or equal to 50% and less than 75% of the total, the 5% measurement uncertainty shall be increased to [5% + (3-T/14.5)(1%)] where T is the number of available thimbles.

INSERT 2

For Cycle 11, when the number of available movable detector thimbles is greater than or equal to 50% and less than 75% of the total, the 4% measurement uncertainty shall be increased to [4% + (3-T/14.5)(1%)] where T is the number of available thimbles.

INSERT 3

For Cycle 11, when the number of available movable detector thimbles is greater than 50% but less than 75% of the total, the movable incore system can be considered OPERABLE provided the $F^N_{\Delta H}$, $F_Q(z)$ and F_{xy} uncertainties are appropriately adjusted. Also there should be a minimum of four thimbles available per quadrant, where quadrant includes both horizontal-vertical and diagonally-bounded quadrants (eight individual quadrants in total).

Proposed Revised Technical Specification Pages

SURVEILLANCE REQUIREMENTS

4.2.2.1 The provisions of Specification 4.0.4 are not applicable.

4.2.2.2 F_{xy} shall be evaluated to determine if $F_Q(Z)$ is within its limit by:

a. Using the movable incore detectors to obtain a power distribution map at any THERMAL POWER greater than 5% of RATED THERMAL POWER.

b. Increasing the measured F_{xy} component of the power distribution map by 3% to account for manufacturing tolerances and further increasing the value by 5%* to account for measurement uncertainties.

c. Comparing the F_{xy} computed (F^C_{xy}) obtained in b, above to:

1. The F_{xy} limits for RATED THERMAL POWER (F^{RTP}_{xy}) for the appropriate measured core planes given in e. and f., below, and

2. The relationship:

$$F^L_{xy} = F^{RTP}_{xy} \quad [1 + PF_{xy}(1-P)]$$

where F^L_{xy} is the limit for fractional THERMAL POWER operation expressed as a function of F^{RTP}_{xy}, PF_{xy} is the power factor multiplier for F_{xy} in the CORL, and P is the fraction of RATED THERMAL POWER at which F_{xy} was measured.

d. Remeasuring F_{xy} according to the following schedule:

1. When F^C_{xy} is greater than the F^{RTP}_{xy} limit for the appropriate measured core plane but less than the F^L_{xy} relationship, additional power distribution maps shall be taken and F^C_{xy} compared to F^{RTP}_{xy} and F^L_{xy}:

a) Either within 24 hours after exceeding by 20% of RATED THERMAL POWER or greater, the THERMAL POWER at which F^C_{xy} was last determined, or

b) At least once per 31 EFPD, whichever occurs first.

* For Cycle 11, when the number of available movable detector thimbles is greater than or equal to 50% and less than 75% of the total, the 5% measurement uncertainty shall be increased to [5% + (3-T/14.5)(1%)] where T is the number of available thimbles.

SURVEILLANCE REQUIREMENTS (Continued)

2. When the F^{C}_{xy} is less than or equal to the F^{RTP}_{xy} limit for the appropriate measured core plane, additional power distribution maps shall be taken and F^{C}_{xy} compared to F^{RTP}_{xy} and F^{L}_{xy} at least once per 31 EFPD.

e. The F_{xy} limit for Rated Thermal Power (F^{RTP}_{xy}) shall be provided for all core planes containing bank "D" control rods and all unrodded core planes in the COLR per specification 6.9.1.9.

f. The F_{xy} limits of e., above, are not applicable in the following core plane regions as measured in percent of core height from the bottom of the fuel:

1. Lower core region from 0% to 15%, inclusive.

2. Upper core region from 85% to 100%, inclusive.

3. Grid plane regions at 17.8% ± 2%, 32.1% ± 2%, 46.4% ± 2%, 60.6% ± 2% and 74.9% ± 2%, inclusive.

4. Core plane regions within ± 2% of core height (± 2.88 inches) about the bank demand position of the bank "D" control rods.

g. Evaluating the effects of F_{xy} on $F_Q(Z)$ to determine if $F_Q(Z)$ is within its limit whenever F^{C}_{xy} exceeds F^{L}_{xy}.

4.2.2.3 When $F_Q(Z)$ is measured pursuant to specification 4.10.2.2, an overall measured $F_Q(Z)$ shall be obtained from a power distribution map and increased by 3% to account for manufacturing tolerances and further increased by 5%* to account for measurement uncertainty.

* For Cycle 11, when the number of available movable detector thimbles is greater than or equal to 50% and less than 75% of the total, the 5% measurement uncertainty shall be increased to [5% + (3-T/14.5)(1%)] where T is the number of available thimbles.

4.2.3.1 $F^N_{\Delta H}$ shall be determined to be within its limit by using the movable incore detectors to obtain a power distribution map:

a. Prior to operation above 75% of RATED THERMAL POWER after each fuel loading, and

b. At least once per 31 Effective Full Power Days.

c. The provisions of Specification 4.0.4 are not applicable.

4.2.3.2 The measured $F^N_{\Delta H}$ of 4.2.3.1 above, shall be increased by 4%* for measurement uncertainty.

* For Cycle 11, when the number of available movable detector thimbles is greater than or equal to 50% and less than 75% of the total, the 4% measurement uncertainty shall be increased to [4% + (3-T/14.5)(1%)] where T is the number of available thimbles.

INSTRUMENTATION

MOVABLE INCORE DETECTORS

LIMITING CONDITION FOR OPERATION

3.3.3.2 The movable incore detection system shall be OPERABLE with:

a. At least 75%* of the detector thimbles,

b. A minimum of 2 detector thimbles per core quadrant, and

c. Sufficient movable detectors, drive, and readout equipment to map these thimbles.

APPLICABILITY: When the movable incore detection system is used for:

a. Recalibration of the excore neutron flux detection system,

b. Monitoring the QUADRANT POWER TILT RATIO, or

c. Measurement of $F^N_{\Delta H}$, $F_Q(Z)$ and F_{xy}.

ACTION:

With the movable incore detection system inoperable, do not use the system for the above applicable monitoring or calibration functions. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.2 The movable incore detection system shall be demonstrated OPERABLE at least once per 24 hours by normalizing each detector output to be used during its use when required for:

a. Recalibration of the excore neutron flux detection system, or

b. Monitoring the QUADRANT POWER TILT RATIO, or

c. Measurement of $F^N_{\Delta H}$, $F_Q(Z)$ and F_{xy}.

* For Cycle 11, when the number of available movable detector thimbles is greater than 50% but less than 75% of the total, the movable incore system can be considered OPERABLE provided the $F^N_{\Delta H}$, $F_Q(z)$ and F_{xy} uncertainties are appropriately adjusted. Also there should be a minimum of four thimbles available per quadrant, where quadrant includes both horizontal-vertical and diagonally-bounded quadrants (eight individual quadrants in total).

Affidavit and Basis for Withholding Information Contained in Attachment 5 to LCR S99-15 from Public Disclosure