Attachment 1a

Improved Technical Specifications for McGuire Units 1 and 2 Marked Copy

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Figure 2.1.1-1

Reactor Core Safety Limits -Four Loops in Operation

McGuire Units 1 and 2

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Amendment Nos. 184/166

SLs 2.0

F_Q(X,Y,Z) 3.2.1

SURVEILLANCE REQUIREMENTS (continued)

. . ..

		SURVEILLANCE	FREQUENCY
SR 3.2.1.2	1.	NOTE	
		$F_{Q}^{M}(X,Y,Z)_{EXTRAPOLATED} \geq F_{Q}^{L}(X,Y,Z)^{OP}_{EXTRAPOLATED}$	
		$\frac{F_{Q}^{M}(X,Y,Z)_{\text{extrapolated}} > F_{Q}^{M}(X,Y,Z)}{F_{Q}^{L}(X,Y,Z)^{\text{OP}}}$	
		then:	(specified in
		a. Increase $F^{M}_{O}(X,Y,Z)$ by G factor G and reverify $F^{M}_{O}(X,Y,Z) \leq F^{L}_{O}(X,Y,Z)^{OP}$; or	the count
		b. Repeat SR 3.2.1.2 prior to the time at which $F^{M}_{\Omega}(X,Y,Z) \leq F^{L}_{\Omega}(X,Y,Z)^{OP}$ is extrapolated to not be met.	
	2.	Extrapolation of $F^{M}_{Q}(X,Y,Z)$ is not required for the initial flux map taken after reaching equilibrium conditions.	
	Verify	$(F_Q^M(X,Y,Z) \leq F_Q^L(X,Y,Z)^{OP})$	Once within 12 hours after achieving equilibrium conditions after exceeding, by \geq 10% RTP, the THERMAL POWER at which $F_{O}^{M}(X,Y,Z)$ was last verified
			31 EFPD
			thereafter

McGuire Units 1 and 2

Amendment Nos. 184/166

 $F_{\alpha}(X,Y,Z)$ 3.2.1

SURVEILLANCE REQUIREMENTS (continued)

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		SURVEILLANCE	FREQUENCY
SR 3.2.1.3	1.	NOTES Extrapolate $F_{Q}^{M}(X,Y,Z)$ using at least two measurements to 31 EFPD beyond the most recent measurement. If $F_{Q}^{M}(X,Y,Z)$ is within limits and the 31 EFPD extrapolation indicates: $F_{Q}^{M}(X,Y,Z)_{EXTRAPOLATED} \ge F_{Q}^{L}(X,Y,Z)^{RPS}_{EXTRAPOLATED}$, and $F_{Q}^{M}(X,Y,Z)_{EXTRAPOLATED} \ge F_{Q}^{M}(X,Y,Z)$ $F_{Q}^{L}(X,Y,Z)_{EXTRAPOLATED} \ge F_{Q}^{M}(X,Y,Z)$ $F_{Q}^{L}(X,Y,Z)_{EXTRAPOLATED} \ge F_{Q}^{M}(X,Y,Z)$ $F_{Q}^{L}(X,Y,Z)_{EXTRAPOLATED} = F_{Q}^{M}(X,Y,Z)$ $F_{Q}^{L}(X,Y,Z)_{EXTRAPOLATED} = F_{Q}^{L}(X,Y,Z)_{RPS}$ then: a. Increase $F_{Q}^{M}(X,Y,Z)$ by $F_{Q}^{L}(X,Y,Z)_{RPS}^{RPS}$; or b. Repeat SR 3.2.1.3 prior to the time at which $F_{Q}^{M}(X,Y,Z) \le F_{Q}(X,Y,Z)_{RPS}^{RPS}$ is extrapolated to not be met.	priate (specifiel in the COLR
	Verif	initial flux map taken after reaching equilibrium conditions. $Y F^{M}_{Q}(X,Y,Z) \leq F^{L}_{Q}(X,Y,Z)^{RPS}$.	Once within 12 hours after achieving equilibrium conditions after exceeding, by \geq 10% RTP, the THERMAL POWER at which $F_{0}^{M}(X,Y,Z)$ was last verified <u>AND</u> 31 EFPD thereafter



F_{∆H}(X,Y) 3.2.2

SURVEILLANCE REQUIREMENTS (continued)

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		SURVEILLANCE	FREQUENCY
SR 3.2.2.2	1.	NOTES- Extrapolate $F_{\Delta H}^{M}(X, Y)$ using at least two measurements to 31 EFPD beyond the most recent measurement. If $F_{\Delta H}^{M}(X, Y)$ is within limits and the 31 EFPD extrapolation indicates: $F_{\Delta H}^{M}(X, Y)_{EXTRAPOLATED} \ge F_{\Delta H}^{L}(X, Y)^{SURV}_{EXTRAPOLATED}$ and $E_{\Delta H}^{M}(X, Y)_{EXTRAPOLATED} \ge E_{\Delta H}^{M}(X, Y)$ $F_{\Delta H}^{L}(X, Y)^{SURV}_{EXTRAPOLATED} \ge F_{\Delta H}^{M}(X, Y)^{SURV}_{EXTRAPOLATED}$ then: a. Increase $F_{\Delta H}^{M}(X, Y)$ by tractor $F_{\Delta H}^{L}(X, Y)^{SURV}_{SURV}$; or b. Repeat SR 3.2.2.2 prior to the time at which $F_{\Delta H}^{M}(X, Y) \le F_{\Delta H}^{L}(X, Y)^{SURV}_{SURV}$ is extrapolated to not be met. Extrapolation of $F_{\Delta H}^{M}(X, Y)$ is not required for the initial flux map taken after reaching equilibrium	specifiel in the COLR
	Veri	conditions. fy $F^{M}_{\Delta H}(X,Y) \leq F^{L}_{\Delta H}(X,Y)^{SURV}$.	Once within 12 hours after achieving equilibrium conditions after exceeding, by \geq 10% RTP, the THERMAL POWER at which $F^{M}_{\Delta H}(X,Y)$ was last verified <u>AND</u> 31 EFPD thereafter

McGuire Units 1 and 2

Amendment Nos. 184/166

ZIRLOTA

4.0 DESIGN FEATURES

4.1 Site Location

The McGuire Nuclear Station site is located at latitude 35 degrees, 25 minutes, 59 seconds north and longitude 80 degrees, 56 minutes, 55 seconds west. The Universal Transverse Mercator Grid Coordinates are E 504, 669, 256, and N 3, 920, 870, 471. The site is in northwestern Mecklenburg County, North Carolina, 17 miles north-northwest of Charlotte, North Carolina.

4.2.1 Fuel Assemblies

The reactor shall contain 193 fuel assemblies. Each assembly shall consist of a matrix of Zircalloy fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

4.2.2 Control Rod Assemblies

The reactor core shall contain 53 control rod assemblies. The control material shall be silver indium cadmium (Unit 1) silver indium cadmium and boron carbide (Unit 2) as approved by the NRC.

4.3 Fuel Storage

- 4.3.1 Criticality
 - 4.3.1.1 The spent fuel storage racks are designed and shall be maintained with:
 - a. Fuel assemblies having a maximum cominal U-235 enrichment of 4.75 weight percent;
 - k_{eff} ≤ 0.95 if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR;

(continued)

.5.6 Reporting Requirements

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5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

- DPC-NE-2011PA, "Duke Power Company Nuclear Design Methodology for Core Operating Limits of Westinghouse Reactors," March, 1990 (DPC Proprietary).
- DPC-NE-3001PA, "Multidimensional Reactor Transients and Safety Analysis Physics Parameter Methodology," November, 1991 (DPC Proprietary).
- DPC-NF-2010A, "Duke Power Company McGuire Nuclear Station Catawba Nuclear Station Nuclear Physics Methodology for Reload Design," June, 1985.
- 8. DPC-NE-3002A, Through Rev. 2 "FSAR Charter 15 System Transient Analysis Methodology," SER dated April 26, 1996.
- 9. DPC-NE-3000P-A, Rev. 1 "Thermal-Hydraulic Transient Analysis Methodology," SER dated December 27, 1995.
- 10. DPC-NE-1004A, Rev. 1, "Nuclear Design Methodology Using CASMO-3/SIMULATE-3P," SER dated April 26, 1996.
- DPC-NE-2004P-A, Rev. 1, "Duke Power Company McGuire and Catawba Nuclear Stations Core Thermal-Hydraulic Methodology using VIPRE-01," SER dated February 20, 1997 (DPC Proprietary).
- 12. DPC-NE-2001P-A, Rev. 1, "Fuel Mechanical Reload Analysis Methodology for Mark-BW fuel," October 1990 (DPC Proprietary).
- DPC-NE-2005P-A, Rev. 1, "Thermal Hydraulic Statistical Core Design Methodology," SER dated November 7, 1996 (DPC Proprietary).
- DPC-NE-2008P-A, "Fuel Mechanical Reload Analysis Methodology Using TACO3," SER dated April 3, 1995 (DPC Proprietary).
- 15. BAW-10183P-A, Fuel Rod Gas Pressure Criterion, B&W Fuel Company, July, 1995.

16. DRC-NE-2009RA, "Westinghouse Fuel Transition Report, " SER dated _____ (DRC Proprietary).

(continued)

McGuire Units 1 and 2

Amendment Nos. 184/166

BASES

1.4

 $F_{Q}(X,Y,Z)$ B 3.2.1

Specifiel in

the COLR

SURVEILLANCE REQUIREMENTS (continued)

than the measured factor is of the current limit, additional actions must be taken. These actions are to meet the Fo(X,Y,Z) limit with the last $F^{M}_{Q}(X,Y,Z)$ increased by (a) factor (of 1.02) or to evaluate $F_{Q}(X,Y,Z)$ prior to the projected point in time when the extrapolated values are expected to exceed the extrapolated limits. These alternative requirements attempt to prevent Fo(X,Y,Z) from exceeding its limit for any significant period of time without detection using the best available data. F^M_o(X,Y,Z) is not required to be extrapolated for the initial flux map taken after reaching equilibrium conditions since the initial flux map establishes the baseline measurement for future trending. Also, extrapolation of F^M_Q(X,Y,Z) limits are not valid for core locations that were previously rodded, or for core locations that were previously within ±2% of the core height about the demand position of the rod tip.

the appropriate

 $F_{O}(X,Y,Z)$ is verified at power levels $\geq 10\%$ RTP above the THERMAL. POWER of its last verification, 12 hours after achieving equilibrium conditions to ensure that Fo(X,Y,Z) is within its limit at higher power levels.

The Surveillance Frequency of 31 EFPD is adequate to monitor the change of power distribution with core burnup. The Surveillance may be done more frequently if required by the results of Fo(X,Y,Z) evaluations.

The Frequency of 31 EFPD is adequate to monitor the change of power distribution because such a change is sufficiently slow, when the plant is operated in accordance with the TS, to preclude adverse peaking factors between 31 day surveillances.

- REFERENCES 1. 10 CFR 50.46, 1974.
 - 2 UFSAR Section 15.4.8.
 - 3. 10 CFR 50, Appendix A, GDC 26.
 - 4. 10 CFR 50.36, Technical Specifications, (c)(2)(ii).
 - 5. DPC-NE-2011PA "Duke Power Company Nuclear Design Methodology for Core Operating Limits of Westinghouse Reactors", March 1990.

SURVEILLANCE REQUIREMENTS (continued)

channel factor to the surveillance limit is likely to decrease below the value of that ratio when the measurement was taken. $f = \frac{1}{2} e^{\frac{1}{2} e^{\frac$

Each of these extrapolations is applied separately to the enthaloy rise hot channel factor surveillance limit. If both of the extrapolations are unfavorable, i.e., if the extrapolated factor is expected to exceed the extrapolated limit and the extrapolated factor is expected to become a larger fraction of the extrapolated limit than the measured factor is of the current limit, additional actions must be taken. These actions are to meet the $F^{M}_{\Delta H}(X,Y)$ limit with the last $F^{M}_{\Delta H}(X,Y)$ increased by effector of 1.02 or to evaluate $F^{M}_{AH}(X,Y)$ prior to the point in time when the extrapolated values are expected to exceed the extrapolated limits. These alternative requirements attempt to prevent $F^{M}_{\Delta H}(X,Y)$ from exceeding its limit for any significant period of time without detection using the best available data. $F^{M}_{AH}(X,Y)$ is not required to be extrapolated for the initial flux map taken after reaching equilibrium conditions since the initial flux map establishes specified. the COLR in the baseline measurement for future trending.

 $F^{M}_{\Delta H}(X,Y)$ is verified at power levels 10% RTP above the THERMAL POWER of its last verification, 12 hours after achieving equilibrium conditions to ensure that $F^{M}_{\Delta H}(X,Y)$ is within its limit at high power levels.

The Surveillance Frequency of 31 EFPD is adequate to monitor the change of power distribution with core burnup. The Surveillance may be done more frequently if required by the results of $F^{M}_{AH}(X,Y)$ evaluations.

The Frequency of 31 EFPD is adequate to monitor the change of power distribution because such a change is sufficiently slow, when the plant is operated in accordance with the TS, to preclude adverse peaking factors between 31 day surveillances.

REFERENCES 1. UFSAR Section 15.4.8

- 2. 10 CFR 50, Appendix A, GDC 26.
- 3. 10 CFR 50.46.
- 4. 10 CFR 50.36, Technical Specifications, (c)(2)(ii).
- 5. DPC-NE-2005P, "Duke Power Company Thermal Hydraulic Statistical Core Design Methodology", September 1992.

Attachment 1b

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Improved Technical Specifications for Catawba Units 1 and 2 Marked Copy



Figure 2.1.1-1

(UNIT 1 ONLY)

Reactor Core Safety Limits -Four Loops in Operation

Catawba Units 1 and 2

2.0-2

Amendment Nos. 173/165



Figure 2.1.1-1

(UNIT 2 ONLY)

Reactor Core Safety Limits -Four Loops in Operation

Catawba Units 1 and 2

Amendment Nos. 173/165

SURVEILLANCE REQUIREMENTS (continued)

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		SURVEILLANCE	FREQUENCY
SR 3.2.1.2	1.	NOTE Extrapolate $F_Q^M(X,Y,Z)$ using at least two measurements to 31 EFPD beyond the most recent measurement. If $F_Q^M(X,Y,Z)$ is within limits and the 31 EFPD extrapolation indicates: $F_Q^M(X,Y,Z)_{EXTRAPOLATED} \ge F_Q^L(X,Y,Z)^{OP}_{EXTRAPOLATED}$, and $F_Q^M(X,Y,Z)_{EXTRAPOLATED} \ge F_Q^M(X,Y,Z)$ $F_Q^L(X,Y,Z)_{EXTRAPOLATED} \ge F_Q^L(X,Y,Z)^{OP}$ $F_Q^L(X,Y,Z)_{EXTRAPOLATED} \ge F_Q^L(X,Y,Z)^{OP}$ then:	oriate (specified in
	2.	 a. Increase F^M_Q(X,Y,Z) by Gractor Gt 102 and reverify F^M_Q(X,Y,Z) ≤ F^L_Q(X,Y,Z)^{OP}; or b. Repeat SR 3.2.1.2 prior to the time at which F^M_Q(X,Y,Z) ≤ F^L_Q(X,Y,Z)^{OP} is extrapolated to not be met. Extrapolation of F^M_Q(X,Y,Z) is not required for the initial flux map taken after reaching equilibrium 	the COLI
	Verif	conditions. $y F^{M}_{Q}(X,Y,Z) \leq F^{L}_{Q}(X,Y,Z)^{OP}$.	Once within 12 hours after achieving equilibrium conditions after exceeding, by \geq 10% RTP, the THERMAL POWER at which $F_{Q}^{M}(X,Y,Z)$ was last verified
			AND 31 EFPD thereafter

SURVEILLANCE REQUIREMENTS (continued)

. . . .

		SURVEILLANCE	FREQUENCY
SR 3.2.1.3	1.	NOTES Extrapolate $F_{Q}^{M}(X,Y,Z)$ using at least two measurements to 31 EFPD beyond the most recent measurement. If $F_{Q}^{M}(X,Y,Z)$ is within limits and the 31 EFPD extrapolation indicates: $F_{Q}^{M}(X,Y,Z)_{EXTRAPOLATED} \ge F_{Q}^{L}(X,Y,Z)^{RPS}_{EXTRAPOLATED}$, and $F_{Q}^{M}(X,Y,Z)_{EXTRAPOLATED} \ge F_{Q}^{M}(X,Y,Z)$ $F_{Q}^{M}(X,Y,Z)_{EXTRAPOLATED} \ge F_{Q}^{M}(X,Y,Z)$ $F_{Q}^{M}(X,Y,Z)_{EXTRAPOLATED} \ge F_{Q}^{M}(X,Y,Z)$ $F_{Q}^{M}(X,Y,Z)_{EXTRAPOLATED} \xrightarrow{F_{Q}}(X,Y,Z)_{RPS}$ then: a. Increase $F_{Q}^{M}(X,Y,Z)$ by G factor G G and reverify $F_{Q}^{M}(X,Y,Z) \le F_{Q}(X,Y,Z)^{RPS}$; or b. Repeat SR 3.2.1.3 prior to the time at which $F_{Q}^{M}(X,Y,Z) \le F_{Q}^{M}(X,Y,Z)^{RPS}$ is extrapolated to not be met.	niate pecified in 4e COLR
	 Verif	initial flux map taken after reaching equilibrium conditions. $y F^{M}_{Q}(X,Y,Z) \leq F^{L}_{Q}(X,Y,Z)^{RPS}.$	Once within 12 hours after achieving equilibrium conditions after exceeding, by ≥ 10% BTP, the
			THERMAL POWER at which F ^M _Q (X,Y,Z) was last verified <u>AND</u> 31 EFPD thereafter

Catawba Units 1 and 2

F∆H(X,Y) 3.2.2

SURVEILLANCE REQUIREMENTS (continued)

. . . .

		SURVEILLANCE	FREQUENCY
SR 3.2.2.2	1.	NOTES Extrapolate $F^{M}_{\Delta H}(X,Y)$ using at least two measurements to 31 EFPD beyond the most recent measurement. If $F^{M}_{\Delta H}(X,Y)$ is within limits and the 31 EFPD extrapolation indicates:	
		$F^{M}_{\Delta H}(X,Y)_{\text{extrapolated}} \geq F^{L}_{\Delta H}(X,Y)^{\text{SURV}}_{\text{extrapolated}}$	
		and	
		$\frac{F^{M}_{\Delta H}(X,Y)}{F^{L}_{\Delta H}(X,Y)} = \frac{F^{M}_{\Delta H}(X,Y)}{F^{L}_{\Delta H}(X,Y)} = \frac{F^{L}_{\Delta H}(X,Y)}{F^{L}_{\Delta H}(X,Y)} = F^$	ate
		then:	pecified in)
		a. Increase $F_{\Delta H}^{M}(X,Y)$ by G factor f factor f for f and f reverify $F_{\Delta H}^{M}(X,Y) \leq F_{\Delta H}^{L}(X,Y)^{SURV}$; or	he COLIC
		b. Repeat SR 3.2.2.2 prior to the time at which $F^{M}_{\Delta H}(X,Y) \leq F^{L}_{\Delta H}(X,Y)^{SURV}$ is extrapolated to not be met.	
	2.	Extrapolation of $F_{\Delta H}^{M}(X,Y)$ is not required for the initial flux map taken after reaching equilibrium conditions.	
	Verif	fy $F_{\Delta H}^{M}(X,Y) ≤ F_{\Delta H}^{L}(X,Y)^{SURV}$.	Once within 12 hours after achieving equilibrium conditions after exceeding, by \geq 10% RTP, the THERMAL POWER at which $F^{M}_{\Delta H}(X,Y)$ was last verified
			AND
			31 EFPD thereafter

Catawba Units 1 and 2

Amendment Nos. 173/165

ZIRLOTM

4.0 DESIGN FEATURES

4.1 Site Location

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Catawba Nuclear Station is located in the north central portion of South Carolina approximately six miles north of Rock Hill and adjacent to Lake Wylie. The station center is located at latitude 35 degrees, 3 minutes, 5 seconds north and longitude 81 degrees, 4 minutes, 10 seconds west. The corresponding Universal Transverse Mercator Coordinates are E 493, 660 and N 3, 878, 558, zone 17.

either ZIRLOTMor

4.2 Reactor Core

4.2.1 Fuel Assemblies

The reactor shall contain 193 fuel assemblies. Each assembly shall consist of a matrix of Zircalloy fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO₂) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

4.2.2 Control Rod Assemblies

The reactor core shall contain 53 control rod assemblies. The control material shall be silver indium cadmium and boron carbide as approved by the NRC.

4.3 Fuel Storage

- 4.3.1 Criticality
 - 4.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

Catawba Units 1 and 2

Amendment Nos. 173/165

(continued)

5.6 Reporting Requirements

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5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

- - 15. BAW-10183P-A, Fuel Rod Gas Pressure Criterion, B&W Fuel Company, July, 1995.
- 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 Systems (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.

5.6.6 Ventilation Systems Heater Report

When a report is required by LCO 3.6.10, "Annulus Ventilation System (AVS)," LCO 3.7.10, "Control Room Area Ventilation System (CRAVS)," LCO 3.7.12, Auxiliary Building Filtered Ventilation Exhaust System (ABFVES)," LCO 3.7.13, "Fuel Handling Ventilation Exhaust System (FHVES)," or LCO 3.9.3, "Containment Penetrations," a report shall be submitted within the following 30 days. The report shall outline the reason for the inoperability and the planned actions to return the systems to OPERABLE status.

5.6.7 PAM Report

When a report is required by LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

5.6.8

- Steam Generator Tube Inspection Report
- a. The number of tubes plugged in each steam generator shall be reported to the NRC within 15 days following completion of the program;

16. DPC - NE - 2009 P-A, "Westinghouse Fuel Transition Report," SER dated _____ (DAC Proprietary).

(continued)

Amendment Nos. 173/165

BASES	B 3.2.1
BASES SURVEILLANCE R	JIREMENTS (continued) the appropriate specification of the current limit, additional actions must be specifications are to meet the Fork, Y,Z) limit with the last $M_{\alpha}(X,Y,Z)$ increased by plactor $\alpha (1+\alpha Z)$ or to evaluate $F_{\alpha}(X,Y,Z)$ prior to be projected point in time when the extrapolated values are expected to xceed the extrapolated limits. These alternative requirements attempt to revent $F_{\alpha}(X,Y,Z)$ from exceeding its limit for any significant period of me without detection using the best available data. $F_{\alpha}^{M}(X,Y,Z)$ is not equired to be extrapolated for the initial flux map taken after reaching quilibrium conditions since the initial flux map establishes the baseline beasurement for future trending. Also, extrapolation of $F_{\alpha}^{M}(X,Y,Z)$ limits re not valid for core locations that were previously rodded, or for core locations that were previously rodded, or for core locations that were previously rodded, or for core locations that were previously rodded or the emand position of the rod tip.
	he Surveillance Frequency of 31 EFPD is adequate to monitor the hange of power distribution with core burnup. The Surveillance may be one more frequently if required by the results of $F_Q(X,Y,Z)$ evaluations. he Frequency of 31 EFPD is adequate to monitor the change of power istribution because such a change is sufficiently slow, when the plant is perated in accordance with the TS, to preclude adverse peaking factors
	etween 31 day surveillances.
REFERENCES	. 10 CFR 50.46, 1974.
	UFSAR Section 15.4.8.
	10 CFR 50, Appendix A, GDC 26.
	. 10 CFR 50.36, Technical Specifications, (c)(2)(ii).
	DPC-NE-2011PA "Duke Power Company Nuclear Design Methodology for Core Operating Limits of Westinghouse Reactors", March 1990.

BASES

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SURVEILLANCE REQUIREMENTS (continued)

	channel factor to the surveillance limit is likely to decrease below the value of that ratio when the measurement was taken <i>the appropriate</i> Each of these extrapolations is applied separately to the enthalpy rise hot channel factor surveillance limit. If both of the extrapolations are unfavorable, i.e., if the extrapolated factor is expected to exceed the extrapolated limit and the extrapolated factor is expected to become a larger fraction of the extrapolated limit than the measured factor is of the				
	current limit, additional actions must be taken. These actions are to meet the $F_{\Delta H}^{M}(X,Y)$ limit with the last $F_{\Delta H}^{M}(X,Y)$ increased by a factor of 1.02 or to evaluate $F_{\Delta H}^{M}(X,Y)$ prior to the point in time when the extrapolated values are expected to exceed the extrapolated limits. These alternative requirements attempt to prevent $F_{\Delta H}^{M}(X,Y)$ from exceeding its limit for any significant period of time without detection using the best available data. $F_{\Delta H}^{M}(X,Y)$ is not required to be extrapolated for the initial flux map taken after reaching equilibrium conditions since the initial flux map establishes the baseline measurement for future trending. $F_{\Delta H}^{M}(X,Y)$ is verified at power levels 10% RTP above the THERMAL POWER of its last verification, 12 hours after achieving equilibrium conditions to ensure that $F_{\Delta H}^{M}(X,Y)$ is within its limit at high power levels. The Surveillance Frequency of 31 EFPD is adequate to monitor the change of power distribution with core burnup. The Surveillance may be done more frequently if required by the results of $F_{\Delta H}^{M}(X,Y)$ evaluations.				
	The Frequency of 31 EFPD is adequate to monitor the change of power distribution because such a change is sufficiently slow, when the plant is operated in accordance with the TS, to preclude adverse peaking factors between 31 day surveillances.				
REFERENCES	1. UFSAR Section 15.4.8				
	2. 10 CFR 50, Appendix A, GDC 26.				
	3. 10 CFR 50.46.				
	4. 10 CFR 50.36, Technical Specifications, (c)(2)(ii).				
	5. DPC-NE-2005P, "Duke Power Company Thermal Hydraulic Statistical Core Design Methodology", September 1992.				

Attachment 2a

Reprinted Improved Technical Specifications for McGuire Units 1 and 2





Reactor Core Safety Limits -Four Loops in Operation

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F_o(X,Y,Z) 3.2.1

SURVEILLANCE REQUIREMENTS (continued)

. . ..

		SURVEILLANCE	FREQUENCY
SR 3.2.1.2	1.	NOTE Extrapolate $F_{\Omega}^{M}(X, Y, Z)$ using at least two measurements to 31 EFPD beyond the most recent measurement. If $F_{\Omega}^{M}(X, Y, Z)$ is within limits and the 31 EFPD extrapolation indicates: $F_{\Omega}^{M}(X, Y, Z)_{EXTRAPOLATED} \ge F_{\Omega}^{L}(X, Y, Z)^{OP}_{EXTRAPOLATED}$, and $F_{\Omega}^{M}(X, Y, Z)_{EXTRAPOLATED} \ge F_{\Omega}^{M}(X, Y, Z)$ $F_{\Omega}^{L}(X, Y, Z)_{EXTRAPOLATED} \ge F_{\Omega}^{M}(X, Y, Z)^{OP}$ then: a. Increase $F_{\Omega}^{M}(X, Y, Z)$ by the appropriate factor specified in the COLR and reverify $F_{\Omega}^{M}(X, Y, Z) \le F_{\Omega}(X, Y, Z)^{OP}$; or b. Repeat SR 3.2.1.2 prior to the time at which $F_{\Omega}^{M}(X, Y, Z) \le F_{\Omega}(X, Y, Z)^{OP}$ is automolecular and the set the	
	2.	Extrapolation of $F^{M}_{\alpha}(X,Y,Z)$ is not required for the initial flux map taken after reaching equilibrium conditions.	
	Verif	fy $F_Q^M(X,Y,Z) \leq F_Q^L(X,Y,Z)^{OP}$.	Once within 12 hours after achieving equilibrium conditions after exceeding, by \geq 10% RTP, the THERMAL POWER at which $F_{O}^{M}(X,Y,Z)$ was last verified <u>AND</u> 31 EFPD
			thereafter (continue

McGuire Units 1 and 2

F_a(X,Y,Z) 3.2.1

SURVEILLANCE REQUIREMENTS (continued)

		SURVEILLANCE	FRECUENCY
SR 3.2.1.3	1.	NOTES Extrapolate $F_{0}^{M}(X,Y,Z)$ using at least two measurements to 31 EFPD beyond the most recent measurement. If $F_{0}^{M}(X,Y,Z)$ is within limits and the 31 EFPD extrapolation indicates: $F_{0}^{M}(X,Y,Z)_{EXTRAPOLATED} \ge F_{0}^{L}(X,Y,Z)^{RPS}_{EXTRAPOLATED}$, and $F_{0}^{M}(X,Y,Z)_{EXTRAPOLATED} \ge F_{0}^{M}(X,Y,Z)$ $F_{0}^{L}(X,Y,Z)^{RPS}_{EXTRAPOLATED} = F_{0}^{M}(X,Y,Z)^{RPS}$ then: a. Increase $F_{0}^{M}(X,Y,Z)$ by the appropriate factor specified in the COLR and reverify $F_{0}^{L}(X,Y,Z) \le F_{0}^{L}(X,Y,Z)^{RPS}$; or b. Repeat SR 3.2.1.3 prior to the time at which $F_{0}^{M}(X,Y,Z) \le F_{0}^{L}(X,Y,Z)^{RPS}$ is extrapolated to not be met. Extrapolation of $F_{0}^{M}(X,Y,Z)$ is not required for the initial flux map taken after reaching equilibrium	
	Verify	$y F^{M}_{Q}(X,Y,Z) \leq F^{L}_{Q}(X,Y,Z)^{RPS}$	Once within 12 hours after achieving equilibrium conditions after exceeding, by \geq 10% RTP, the THERMAL POWER at which F ^M _Q (X,Y,Z) was last verified <u>AND</u> 31 EFPD thereafter

McGuire Units 1 and 2

F_{∆H}(X,Y) 3.2.2

SURVEILLANCE REQUIREMENTS (continued)

		SURVEILLANCE	FREQUENCY
SR 3.2.2.2	1.	NOTES Extrapolate $F_{\Delta H}^{M}(X,Y)$ using at least two measurements to 31 EFPD beyond the most recent measurement. If $F_{\Delta H}^{M}(X,Y)$ is within limits and the 31 EFPD extrapolation indicates: $F_{\Delta H}^{M}(X,Y)_{EXTRAPOLATED} \ge F_{\Delta H}^{L}(X,Y)^{SURV}_{EXTRAPOLATED}$ and $F_{\Delta H}^{M}(X,Y)_{EXTRAPOLATED} \ge F_{\Delta H}^{M}(X,Y)$ $F_{\Delta H}^{L}(X,Y)_{SURV}^{SURV}_{EXTRAPOLATED} \ge F_{\Delta H}^{M}(X,Y)^{SURV}$ then: a. Increase $F_{\Delta H}^{M}(X,Y)$ by the appropriate factor specified in the COLR and reverify $F_{\Delta H}^{M}(X,Y) \le F_{\Delta H}^{L}(X,Y)^{SURV}$; or b. Repeat SR 3.2.2.2 prior to the time at which $F_{\Delta H}^{M}(X,Y) \le F_{\Delta H}^{L}(X,Y)^{SURV}$ is extrapolated to not be met. Extrapolation of $F_{\Delta H}^{M}(X,Y)$ is not required for the initial flux map taken after reaching acuilibrium	
	Verif	conditions. fy $F^{M}_{\Delta H}(X,Y) \leq F^{L}_{\Delta H}(X,Y)^{SURV}$.	Or.ce within 12 hours after achieving equilibrium conditions after exceeding, by \geq 10% RTP, the THERMAL POWER at which F ^M _{ΔH} (X,Y) was last verified <u>AND</u> 31 EFPD thereafter

McGuire Units 1 and 2 3.2.2-4

4.0 DESIGN FEATURES

4.1 Site Location

The McGuire Nuclear Station site is located at latitude 35 degrees, 2 minutes, 59 seconds north and longitude 80 degrees, 56 minutes, 55 seconds west. The Universal Transverse Mercator Grid Coordinates are E 504, 669, 256, and N 3, 920, 870, 471. The site is in northwestern Mecklenburg County, North Carolina, 17 miles north-northwest of Charlotte, North Carolina.

4.2 Reactor Core

4.2.1 Fuel Assemblies

The reactor shall contain 193 fuel assemblies. Each assembly shall consist of a matrix of either ZIRLO[™] or Zircalloy fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO₂) as fuel material. Limited substitutions of ZIRLO[™], zirconium alloy, or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

4.2.2 Control Rod Assemblies

The reactor core shall contain 53 control rod assemblies. The control material shall be silver indium cadmium (Unit 1) silver indium cadmium and boron carbide (Unit 2) as approved by the NRC.

4.3 Fuel Storage

4.3.1 Criticality

- 4.3.1.1 The spent fuel storage racks are designed and shall be maintained with:
 - Fuel assemblies having a maximum nominal U-235 enrichment of 4.75 weight percent;
 - k_{eff} ≤ 0.95 if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR;

(continued)

5.6 Reporting Requirements

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

- 5. DPC-NE-2011PA, "Duke Power Company Nuclear Design Methodology for Core Operating Limits of Westinghouse Reactors," March, 1990 (DPC Proprietary).
- DPC-NE-3001PA, "Multidimensional Reactor Transients and Safety Analysis Physics Parameter Methodology," November, 1991 (DPC Proprietary).
- DPC-NF-2010A, "Duke Power Company McGuire Nuclear Station Catawba Nuclear Station Nuclear Physics Methodology for Reload Design," June, 1985.
- DPC-NE-3002A, Through Rev. 2 "FGAR Chapter 15 System Transient Analysis Methodology," SER dated April 26, 1996.
- 9. DPC-NE-3000P-A, Rev. 1 "Thermal-Hydraulic Transient Analysis Methodology," SER dated December 27, 1995.
- 10. DPC-NE-1004A, Rev. 1, "Nuclear Design Methodology Using CASMO-3/SIMULATE-3P," SER dated April 26, 1996.
- DPC-NE-2004P-A, Rev. 1, "Duke Power Company McGuire and Catawba Nuclear Stations Core Thermal-Hydraulic Methodology using VIPRE-01," SER dated February 20, 1997 (DPC Proprietary).
- 12. DPC-NE-2001?-A, Rev. 1, "Fuel Mechanical Reload Analysis Methodology for Mark-BW fuel," October 1990 (DPC Proprietary).
- DPC-NE-2005P-A, Rev. 1, "Thermal Hydraulic Statistical Core Design Methodology," SER dated November 7, 1996 (DPC Proprietary).
- DPC-NE-2008P-A, "Fuel Mechanical Reload Analysis Methodology Using TACO3," SER dated April 3, 1995 (DPC Proprietary).
- 15. BAW-10183P-A, Fuel Rod Gas Pressure Criterion, B&W Fuel Company, July, 1995.
- DPC-NE-2009P-A, "Westinghouse Fuel Transition Report," SER dated ______ (DPC Proprietary).

(continued)

McGuire Units 1 and 2

SURVEILLANCE REQUIREMENTS (continued)

than the measured factor is of the current limit, additional actions must be taken. These actions are to meet the $F_Q(X,Y,Z)$ limit with the last $F^M_Q(X,Y,Z)$ increased by the appropriate factor specified in the COLR or to evaluate $F_Q(X,Y,Z)$ prior to the projected point in time when the extrapolated values are expected to exceed the extrapolated limits. These alternative requirements attempt to prevent $F_Q(X,Y,Z)$ from exceeding its limit for any significant period of time without detection using the best available data. $F^M_Q(X,Y,Z)$ is not required to be extrapolated for the initial flux map taken after reaching equilibrium conditions since the initial flux map establishes the baseline measurement for future trending. Also, extrapolation of $F^M_Q(X,Y,Z)$ limits are not valid for core locations that were previously rodded, or for core locations that were previously rodded, or for core locations of the rod tip.

 $F_Q(X,Y,Z)$ is verified at power levels $\geq 10\%$ RTP above the THERMAL POWER of its last verification, 12 hours after achieving equilibrium conditions to ensure that $F_Q(X,Y,Z)$ is within its limit at higher power levels.

The Surveillance Frequency of 31 EFPD is adequate to monitor the change of power distribution with core burnup. The Surveillance may be done more frequently if required by the results of $F_{O}(X,Y,Z)$ evaluations.

The Frequency of 31 EFPD is adequate to monitor the change of power distribution because such a change is sufficiently slow, when the plant is operated in accordance with the TS, to preclude adverse peaking factors between 31 day surveillances.

- REFERENCES 1. 10 CFR 50.46, 1974.
 - 2. UFSAR Section 15.4.8.
 - 3. 10 CFR 50, Appendix A, GDC 26.
 - 4. 10 CFR 50.36, Technical Specifications, (c)(2)(ii).
 - DPC-NE-2011PA "Duke Power Company Nuclear Design Methodology for Core Operating Limits of Westinghouse Reactors", March 1990.

BASES

SURVEILLANCE REQUIREMENTS (continued)

channel factor to the surveillance limit is likely to decrease below the value of that ratio when the measurement was taken.

Each of these extrapolations is applied separately to the enthalpy rise hot channel factor surveillance limit. If both of the extrapolations are unfavorable, i.e., if the extrapolated factor is expected to exceed the extrapolated limit and the extrapolated factor is expected to become a larger fraction of the extrapolated limit than the measured factor is of the current limit, additional actions must be taken. These actions are to meet the $F^{M}_{\ \Delta H}(X,Y)$ limit with the last $F^{M}_{\ \Delta H}(X,Y)$ increased by the appropriate factor specified in the COLR or to evaluate $F^{M}_{\ \Delta H}(X,Y)$ prior to the point in time when the extrapolated values are expected to exceed the extrapolated limits. These alternative requirements attempt to prevent $F^{M}_{\ \Delta H}(X,Y)$ from exceeding its limit for any significant period of time without detection using the best available data. $F^{M}_{\ \Delta H}(X,Y)$ is not required to be extrapolated for the initial flux map taken after reaching equilibrium conditions since the initial flux map establishes the baseline n.easurement for future trending.

 $F^{M}_{\Delta H}(X,Y)$ is verified at power levels 10% RTP above the THERMAL POWER of its last verification, 12 hours after achieving equilibrium conditions to ensure that $F^{M}_{\Delta H}(X,Y)$ is within its limit at high power levels.

The Surveillance Frequency of 31 EFPD is adequate to monitor the change of power distribution with core burnup. The Surveillance may be done more frequently if required by the results of $F^{M}_{AH}(X,Y)$ evaluations.

The Frequency of 31 EFPD is adequate to monitor the change of power distribution because such a change is sufficiently slow, when the plant is operated in accordance with the TS, to preclude adverse peaking factors between 31 day surveillances.

REFERENCES	1.	UFSAR Section 15.4.8
	2.	10 CFR 50, Appendix A, GDC 26.
	3.	10 CFR 50.46.
	4.	10 CFR 50.36, Technical Specifications, (c)(2)(ii).
	5.	DPC-NE-2005P, "Duke Power Company Thermal Hydraulic Statistical Core Design Methodology", September 1992.

Attachment 2b

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Reprinted Improved Technical Specifications for Catawba Units 1 and 2



Figure 2.1.1-1

(UNIT 1 ONLY)

Reactor Core Safety Limits -Four Loops in Operation

Catawba Units 1 and 2

2.0-2



Figure 2.1.1-1

(UNIT 2 ONLY)

Reactor Core Safety Limits -Four Loops in Operation

Catawba Units 1 and 2

2.0-3

Amendment Nos.

SLs 2.0

F_a(X,Y,Z) 3.2.1

SURVEILLANCE REQUIREMENTS (continued)

.. .

		SURVEILLANCE	FREQUENCY
SR 3.2.1.2	1.	NOTE Extrapolate $F_{O}^{M}(X,Y,Z)$ using at least two measurements to 31 EFPD beyond the most recent measurement. If $F_{O}^{M}(X,Y,Z)$ is within limits and the 31 EFPD extrapolation indicates: $F_{O}^{M}(X,Y,Z)_{EXTRAPOLATED} \ge F_{O}^{L}(X,Y,Z)^{OP}_{EXTRAPOLATED}$, and $F_{O}^{M}(X,Y,Z)_{EXTRAPOLATED} \ge F_{O}^{M}(X,Y,Z)$ $F_{O}^{L}(X,Y,Z)^{OP}_{EXTRAPOLATED} \ge F_{O}^{L}(X,Y,Z)^{OP}$ then: a. Increase $F_{O}^{M}(X,Y,Z)$ by the appropriate factor specified in the COLR and reverify $F_{O}^{M}(X,Y,Z) \le F_{O}^{L}(X,Y,Z)^{OP}$; or b. Repeat SR 3.2.1.2 prior to the time at which $F_{O}^{M}(X,Y,Z) \le F_{O}^{L}(X,Y,Z)^{OP}$ is extrapolated to not be met. Extrapolation of $F_{O}^{M}(X,Y,Z)$ is not required for the initial flux map taken after reaching equilibrium conditions.	
	Verify $F_{O}^{M}(X,Y,Z) \leq F_{O}^{L}(X,Y,Z)^{OP}$.		Once within 12 hours after achieving equilibrium conditions after exceeding, by \geq 10% RTP, the THERMAL POWER at which F ^M _O (X,Y,Z) was last verified <u>AND</u> 31 EFPD thereafter

Catawba Units 1 and 2

F_a(X,Y,Z) 3.2.1

SURVEILLANCE REQUIREMENTS (continued)

.. ..

•	SURVEILLANCE	FREQUENCY
SR 3.2.1.3	 NOTES	
	Verify $F_Q^M(X,Y,Z) \leq F_Q^L(X,Y,Z)^{RPS}$.	Once within 12 hours after achieving equilibrium conditions after exceeding, by \geq 10% RTP, the THERMAL POWER at which $r_{Q}^{M}(X,Y,Z)$ was last verified <u>AND</u> 31 EFPD thereafter

F∆H(X,Y) 3.2.2

SURVEILLANCE REQUIREMENTS (continued)

		SURVEILLANCE	FREQUENCY
SR 3.2.2.2	1.	NOTES Extrapolate $F_{\Delta H}^{M}(X, Y)$ using at least two measurements to 31 EFPD beyond the most recent measurement. If $F_{\Delta H}^{M}(X, Y)$ is within limits and the 31 EFPD extrapolation indicates: $F_{\Delta H}^{M}(X, Y)_{EXTRAPOLATED} \ge F_{\Delta H}^{L}(X, Y)^{SURV}_{EXTRAPOLATED}$ and $F_{\Delta H}^{M}(X, Y)_{EXTRAPOLATED} \ge F_{\Delta H}^{M}(X, Y)_{SURV}$ $F_{\Delta H}^{L}(X, Y)^{SURV}_{EXTRAPOLATED} \ge F_{\Delta H}^{M}(X, Y)^{SURV}$ then: a. Increase $F_{\Delta H}^{M}(X, Y)$ by the appropriate factor specified in the COLR and rr verify $F_{\Delta H}^{M}(X, Y) \le F_{\Delta H}^{L}(X, Y)^{SURV}$; or b. Repeat SR 3.2.2.2 prior to the time at which $F_{\Delta H}^{M}(X, Y) \le F_{\Delta H}^{L}(X, Y)^{SURV}$ is extrapolated to not be met. Extrapolation of $F_{\Delta H}^{M}(X, Y)$ is not required for the initial flux map taken after reaching equilibrium conditions.	
	Verify $F_{\Delta H}^{M}(X,Y) \leq F_{\Delta H}^{L}(X,Y)^{SURV}$.		Once within 12 hours after achieving equilibrium conditions after exceeding, by \geq 10% RTP, the THERMAL POWER at which $F_{\Delta H}^{M}(X,Y)$ was last verified <u>AND</u> 31 EFPD thereafter

Catawba Units 1 and 2 3.2.2-4

4.0 DESIGN FEATURES

4.1 Site Location

Catawba Nuclear Station is located in the north central portion of South Carolina approximately six miles north of Rock Hill and adjacent to Lake Wylie. The station center is located at latitude 35 degrees, 3 minutes, 5 seconds north and longitude 81 degrees, 4 minutes, 10 seconds west. The corresponding Universal Transverse Mercator Coordinates are E 493, 660 and N 3, 878, 558, zone 17.

4.2 Reactor Core

4.2.1 Fuel Assemblies

The reactor shall contain 193 fuel assemblies. Each assembly shall consist of a matrix of either ZIRLO[™] or Zircalloy fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO₂) as fuel material. Limited substitutions of ZIRLO[™], zirconium alloy, or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

4.2.2 Control Rod Assemblies

The reactor core shall contain 53 control rod assemblies. The control material shall be silver indium cadmium and boron carbide as approved by the NRC.

4.3 Fuel Storage

4.3.1 Criticality

4.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

(continued)

5.6 Reporting Requirements

4.

- 5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)
 - 15. BAW-10183P-A, Fuel Rod Gas Pressure Criterion, B&W Fuel Company, July, 1995.
 - DPC-NE-2009P-A, "Westinghouse Fuel Transition Report," SER dated _____ (DPC Proprietary).
 - 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 Systems (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.

5.6.6 Ventilation Systems Heater Report

When a report is required by LCO 3.6.10, "Annulus Ventilation System (AVS)," LCO 3.7.10, "Control Room Area Ventilation System (CRAVS)," LCO 3.7.12, Auxiliary Building Filtered Ventilation Exhaust System (ABFVES)," LCO 3.7.13, "Fuel Handling Ventilation Exhaust System (FHVES)," or LCO 3.9.3, "Containment Penetrations," a report shall be submitted within the following 30 days. The report shall outline the reason for the inoperability and the planned actions to return the systems to OPERABLE status.

5.6.7 PAM Report

When a report is required by LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

5.6.8 Steam Generator Tube Inspection Report

a. The number of tubes plugged in each steam generator shall be reported to the NRC within 15 days following completion of the program;

(continued)

Catawba Units 1 and 2

SURVEILLANCE REQUIREMENTS (continued)

than the measured factor is of the current limit, additional actions must be taken. These actions are to meet the $F_Q(X,Y,Z)$ limit with the last $F^M_Q(X,Y,Z)$ increased by the appropriate factor specified in the COLR or to evaluate $F_Q(X,Y,Z)$ prior to the projected point in time when the extrapolated values are expected to exceed the extrapolated limits. These alternative requirements attempt to prevent $F_Q(X,Y,Z)$ from exceeding its limit for any significant period of time without detection using the best available data. $F^M_Q(X,Y,Z)$ is not required to be extrapolated for the initial flux map taken after reaching equilibrium conditions since the initial flux map establishes the baseline measurement for future trending. Also, extrapolation of $F^M_Q(X,Y,Z)$ limits are not valid for core locations that were previously rodded, or for core locations that were previously rodded, or for core locations of the rod tip.

 $F_Q(X,Y,Z)$ is verified at power levels $\geq 10\%$ RTP above the THERMAL POWER of its last verification, 12 hours after achieving equilibrium conditions to ensure that $F_Q(X,Y,Z)$ is within its limit at higher power levels.

The Surveillance Frequency of 31 EFPD is adequate to monitor the change of power distribution with core burnup. The Surveillance may be done more frequently if required by the results of $F_Q(X,Y,Z)$ evaluations.

The Frequency of 31 EFPD is adequate to monitor the change of power distribution because such a change is sufficiently slow, when the plant is operated in accordance with the TS, to preclude adverse peaking factors between 31 day surveillances.

- REFERENCES 1. 10 CFR 50.46, 1974.
 - 2. UFSAR Section 15.4.8.
 - 3. 10 CFR 50, Appendix A, GDC 26.
 - 4. 10 CFR 50.36, Technical Specifications, (c)(2)(ii).
 - DPC-NE-2011PA "Duke Power Company Nuclear Design Methodology for Core Operating Limits of Westinghouse Reactors", March 1990.

BASES

· A.

SURVEILLANCE REQUIREMENTS (continued)

channel factor to the surveillance limit is likely to decrease below the value of that ratio when the measurement was taken.

Each of these extrapolations is applied separately to the enthalpy rise hot channel factor surveillance limit. If both of the extrapolations are unfavorable, i.e., if the extrapolated factor is expected to exceed the extrapolated limit and the extrapolated factor is expected to become a larger fraction of the extrapolated limit than the measured factor is of the current limit, additional actions must be taken. These actions are to meet the $F^{M}_{\Delta H}(X,Y)$ limit with the last $F^{M}_{\Delta H}(X,Y)$ increased by the appropriate factor specified in the COLR or to evaluate $F^{M}_{\Delta H}(X,Y)$ prior to the point in time when the extrapolated values are expected to exceed the extrapolated limits. These alternative requirements attempt to prevent $F^{M}_{\Delta H}(X,Y)$ from exceeding its limit for any significant period of time without detection using the best available data. $F^{M}_{\Delta H}(X,Y)$ is not required to be extrapolated for the initial flux map taken after reaching equilibrium conditions since the initial flux map establishes the baseline measurement for future trending.

 $F^{M}_{\Delta H}(X,Y)$ is verified at power levels 10% RTP above the THERMAL POWER of its last verification, 12 hours after achieving equilibrium conditions to ensure that $F^{M}_{\Delta H}(X,Y)$ is within its limit at high power levels.

The Surveillance Frequency of 31 EFPD is adequate to monitor the change of power distribution with core burnup. The Surveillance may be done more frequently if required by the results of $F^{M}_{AH}(X,Y)$ evaluations.

The Frequency of 31 EFPD is adequate to monitor the change of power distribution because such a change is sufficiently slow, when the plant is operated in accordance with the TS, to preclude adverse peaking factors between 31 day surveillances.

REFERENCES	1.	UFSAR Section 15.4.8
	2.	10 CFR 50, Appendix A, GDC 26.
	3.	10 CFR 50.46.
	4.	10 CFR 50.36, Technical Specifications, (c)(2)(ii).
	5.	DPC-NE-2005P, "Duke Power Company Thermal Hydraulic Statistical Core Design Methodology", September 1992.