

United States Nuclear Regulatory Commission
Attachment III to Serial: RNP-RA/98-0041
6 Pages

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
REQUEST FOR TECHNICAL SPECIFICATIONS CHANGE
REFUELING OPERATIONS - NUCLEAR INSTRUMENTATION

MARKUP OF CURRENT TECHNICAL SPECIFICATIONS
AND BASES PAGES

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3.9 REFUELING OPERATIONS

3.9.2 Nuclear Instrumentation

LC0 3.9.2 Two source range neutron flux monitors shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One required source range neutron flux monitor inoperable.</p> <p>INSERT TS-A</p> <p>B.1</p> <p>B.2</p>	<p>A.1 Suspend CORE ALTERATIONS.</p> <p>AND</p> <p>A.2 Suspend positive reactivity additions.</p>	<p>Immediately</p> <p>Immediately</p>
<p>B. Two required source range neutron flux monitors inoperable.</p> <p>INSERT TS-B</p> <p>C.</p> <p>INSERT TS-C</p>	<p>B.1 Initiate action to restore one source range neutron flux monitor to OPERABLE status.</p> <p>AND</p> <p>B.2 Perform SR 3.9.1.1.</p> <p>C.4</p>	<p>Immediately</p> <p>4 hours</p> <p>AND</p> <p>Once per 12 hours thereafter</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.2.1	Perform CHANNEL CHECK.	12 hours
SR 3.9.2.2	<p>.....NOTE.....</p> <p>Neutron detectors are excluded from CHANNEL CALIBRATION.</p> <p>.....</p> <p>Perform CHANNEL CALIBRATION.</p>	18 months

INSERT TS-A

A. One required source range neutron flux monitor inoperable	A.1 Verify one Post Accident Monitor (PAM) source range neutron flux monitor provides indication in the Control Room.	15 minutes
	<u>AND</u>	
	A.2 Log indicated PAM source range neutron monitor count rate.	30 minutes
		<u>AND</u> Once per 30 minutes thereafter

INSERT TS-B

B. Required Actions and Completion Times of Condition A not met.
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INSERT TS-C

	<u>AND</u>	
	C.2 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	C.3 Suspend positive reactivity additions.	Immediately

BASES (continued)

APPLICABILITY In MODE 6, the source range neutron flux monitors must be OPERABLE to determine changes in core reactivity. There are no other direct means available to check core reactivity levels. In MODES 2, 3, 4, and 5, these same installed source range detectors and circuitry are also required to be OPERABLE by LCO 3.3.1, "Reactor Protection System (RPS) Instrumentation."

ACTIONS A.1 and A.2

INSERT Bases-A

With only one source range neutron flux monitor OPERABLE, ~~redundancy has been lost. Since these instruments are the only direct means of monitoring core reactivity conditions, CORE ALTERATIONS and positive reactivity additions must be suspended immediately. Performance of Required Action A.1 shall not preclude completion of movement of a component to a safe position.~~

B.1

With no source range neutron flux monitor OPERABLE, action to restore a monitor to OPERABLE status shall be initiated immediately. Once initiated, action shall be continued until a source range neutron flux monitor is restored to OPERABLE status.

INSERT Bases-B

B.2

With no source range neutron flux monitor OPERABLE, there are no direct means of detecting changes in core reactivity. However, since CORE ALTERATIONS and positive reactivity additions are not to be made, the core reactivity condition is stabilized until the source range neutron flux monitors are OPERABLE. This stabilized condition is determined by performing SR 3.9.1.1 to ensure that the required boron concentration exists.

The Completion Time of 4 hours is sufficient to obtain and analyze a reactor coolant sample for boron concentration. The Frequency of once per 12 hours ensures that unplanned changes in boron concentration would be identified. The

(continued)

BASES

ACTIONS

B-2 (continued)

12 hour Frequency is reasonable, considering the low probability of a change in core reactivity during this time period.

SURVEILLANCE REQUIREMENTS

SR 3.9.2.1

SR 3.9.2.1 is the performance of a CHANNEL CHECK, which is a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that the two indication channels should be consistent with core conditions. Changes in fuel loading and core geometry can result in significant differences between source range channels, but each channel should be consistent with its local conditions.

The Frequency of 12 hours is consistent with the CHANNEL CHECK Frequency specified similarly for the same instruments in LCO 3.3.1.

SR 3.9.2.2

SR 3.9.2.2 is the performance of a CHANNEL CALIBRATION every 18 months. This SR is modified by a Note stating that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the source range neutron flux monitors consists of obtaining the detector plateau or preamp discriminator curves, evaluating those curves, and comparing the curves to the manufacturer's data. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage. Operating experience has shown these components usually pass the Surveillance when performed at the 18 month Frequency.

INSERT Bases-C

REFERENCES

1. UFSAR, Section 3.1.
 2. UFSAR, Section 15.4.6.
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INSERT Bases-A

an OPERABLE Post Accident Monitor (PAM) source range neutron monitor may be used to provide the required redundancy. Required Action A.1 ensures that the PAM source range neutron monitor is indicating in the control room. Since the PAM source range neutron monitor provides only visual indication of count rate in the Control Room and has no audible count rate capability, Required Action A.2 requires that the indicated count rate from the PAM source range neutron monitor be logged within 30 minutes and once per 30 minutes thereafter. The Completion Times are reasonable considering that there remains one OPERABLE source range monitor with audible count rate and alarm function, and recognition of the time required to complete manual operator actions in response to a boron dilution event.

B.1 and B.2

If the Required Actions and Completion Times of Condition A are not met, redundant means of monitoring core reactivity conditions are not assured. CORE ALTERATIONS and positive reactivity additions must be suspended immediately. Performance of Required Action B.1 shall not preclude completion of movement of a component to a safe position.

C.1, C.2, and C.3

INSERT Bases-B

Since the source range neutron monitors are the only direct means of monitoring core reactivity conditions, CORE ALTERATIONS and positive reactivity additions must be suspended immediately. Performance of Required Action C.2 shall not preclude completion of a component to a safe condition.

C.4

INSERT Bases-C

The CHANNEL CALIBRATION for the PAM source range neutron flux monitors only applies to the portion of the channel applicable to providing visual indication of neutron count rate in the Control Room.

United States Nuclear Regulatory Commission

Attachment IV to Serial: RNP-RA/98-0041

7 Pages

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
REQUEST FOR TECHNICAL SPECIFICATIONS CHANGE
DEPARTURE FROM NUCLEATE BOILING CORRELATION

RETYPE TECHNICAL SPECIFICATIONS AND BASES

3.9 REFUELING OPERATIONS

3.9.2 Nuclear Instrumentation

LC0 3.9.2 Two source range neutron flux monitors shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required source range neutron flux monitor inoperable.	A.1 Verify one Post Accident Monitor (PAM) source range neutron flux monitor provides indication in the Control Room.	15 minutes
	<u>AND</u> A.2 Log indicated PAM source range neutron monitor count rate.	30 minutes <u>AND</u> Once per 30 minutes thereafter
B. Required Actions and Completion Times of Condition A not met.	B.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u> B.2 Suspend positive reactivity additions.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Two required source range neutron flux monitors inoperable.	C.1 Initiate action to restore one source range neutron flux monitor to OPERABLE status.	Immediately
	<u>AND</u>	
	C.2 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	C.3 Suspend positive reactivity additions.	Immediately
	<u>AND</u>	
	C.4 Perform SR 3.9.1.1.	4 hours
		<u>AND</u>
		Once per 12 hours thereafter

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.2.1 Perform CHANNEL CHECK.	12 hours
SR 3.9.2.2NOTE..... Neutron detectors are excluded from CHANNEL CALIBRATION. Perform CHANNEL CALIBRATION.	18 months

B 3.9 REFUELING OPERATIONS

B 3.9.2 Nuclear Instrumentation

BASES

BACKGROUND

The source range neutron flux monitors are used during refueling operations to monitor the core reactivity condition. The installed source range neutron flux monitors are part of the Nuclear Instrumentation System (NIS). These detectors are located external to the reactor vessel and detect neutrons leaking from the core.

The installed source range neutron flux monitors are BF3 detectors operating in the proportional region of the gas filled detector characteristic curve. The detectors monitor the neutron flux in counts per second. The instrument range covers six decades of neutron flux ($1E+6$ cps) with a 5% instrument accuracy. The detectors also provide continuous visual indication in the control room and an audible alarm to alert operators to a possible dilution accident. The NIS is designed in accordance with the criteria presented in the UFSAR Section 3.1 (Ref. 1).

APPLICABLE SAFETY ANALYSES

Two OPERABLE source range neutron flux monitors are required to provide a signal to alert the operator to unexpected changes in core reactivity such as with a boron dilution accident (Ref. 2) or an improperly loaded fuel assembly.

The source range neutron flux monitors satisfy Criterion 3 of the NRC Policy Statement.

LCO

This LCO requires that two source range neutron flux monitors be OPERABLE to ensure that redundant monitoring capability is available to detect changes in core reactivity. For the purposes of this LCO, OPERABILITY of the source range flux monitors includes both channels with continuous visual count rate indication in the control room, and one channel with audible count rate indication available in the containment.

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BASES (continued)

APPLICABILITY In MODE 6, the source range neutron flux monitors must be OPERABLE to determine changes in core reactivity. There are no other direct means available to check core reactivity levels. In MODES 2, 3, 4, and 5, these same installed source range detectors and circuitry are also required to be OPERABLE by LCO 3.3.1, "Reactor Protection System (RPS) Instrumentation."

ACTIONS A.1 and A.2

With only one required source range neutron flux monitor OPERABLE, an OPERABLE Post Accident Monitor (PAM) source range neutron monitor may be used to provide the required redundancy. Required Action A.1 ensures that the PAM source range neutron monitor is indicating in the control room. Since the PAM source range neutron monitor provides only visual indication of count rate in the Control Room and has no audible count rate capability, Required Action A.2 requires that the indicated count rate from the PAM source range neutron monitor be logged within 30 minutes and once per 30 minutes thereafter. The Completion Times are reasonable considering that there remains one OPERABLE source range monitor with audible count rate and alarm function, and recognition of the time required to complete manual operator actions in response to the boron dilution event.

B.1 and B.2

If the Required Actions and Completion Times of Condition A are not met, redundant means of monitoring core reactivity conditions are not assured. CORE ALTERATIONS and positive reactivity additions must be suspended immediately. Performance of Required Action B.1 shall not preclude completion of movement of a component to a safe position.

C.1, C.2, and C.3

With no source range neutron flux monitor OPERABLE, action to restore a monitor to OPERABLE status shall be initiated immediately. Once initiated, action shall be continued

(continued)

BASES (continued)

ACTIONS

C.1, C.2, and C.3 (continued)

until a source range neutron flux monitor is restored to OPERABLE status. Since the source range neutron monitors are the only direct means of monitoring core reactivity conditions, CORE ALTERATIONS and positive reactivity additions must be suspended immediately. Performance of Required Action C.2 shall not preclude completion of a component to a safe condition.

C.4

With no source range neutron flux monitor OPERABLE, there are no direct means of detecting changes in core reactivity. However, since CORE ALTERATIONS and positive reactivity additions are not to be made, the core reactivity condition is stabilized until the source range neutron flux monitors are OPERABLE. This stabilized condition is determined by performing SR 3.9.1.1 to ensure that the required boron concentration exists.

The Completion Time of 4 hours is sufficient to obtain and analyze a reactor coolant sample for boron concentration. The Frequency of once per 12 hours ensures that unplanned changes in boron concentration would be identified. The 12 hour Frequency is reasonable, considering the low probability of a change in core reactivity during this time period.

SURVEILLANCE
REQUIREMENTS

SR 3.9.2.1

SR 3.9.2.1 is the performance of a CHANNEL CHECK, which is a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that the two indication channels should be consistent with core conditions. Changes in fuel loading and core geometry can result in significant differences between source range channels, but each channel should be consistent with its local conditions.

The Frequency of 12 hours is consistent with the CHANNEL CHECK Frequency specified similarly for the same instruments in LCO 3.3.1.

(continued)

BASES

SURVEILLANCE
REQUIREMENTS
(continued)

SR 3.9.3.2

SR 3.9.2.2 is the performance of a CHANNEL CALIBRATION every 18 months. This SR is modified by a Note stating that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the source range neutron flux monitors consists of obtaining the detector plateau or preamp discriminator curves, evaluating those curves, and comparing the curves to the manufacturer's data. The CHANNEL CALIBRATION for the PAM source range neutron flux monitors only applies to the portion of the channel applicable to providing visual indication of neutron count rate in the Control Room. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage. Operating experience has shown these components usually pass the Surveillance when performed at the 18 month Frequency.

REFERENCES

1. UFSAR, Section 3.1.
 2. UFSAR, Section 15.4.6.
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