



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

October 30, 2019

Mr. John Dent, Jr.  
Vice President and CNO  
Nebraska Public Power District  
Cooper Nuclear Station  
72676 648A Avenue  
Brownville, NE 68321

**SUBJECT: COOPER NUCLEAR STATION - ISSUANCE OF AMENDMENT NO. 263 RE:  
ADOPTION OF TSTF-514, REVISION 3, "REVISE BWR OPERABILITY  
REQUIREMENTS AND ACTIONS FOR RCS LEAKAGE INSTRUMENTATION"  
(EPID L-2019-LLA-0050)**

Dear Mr. Dent:

The U.S. Nuclear Regulatory Commission (NRC or the Commission) has issued the enclosed Amendment No. 263 to Renewed Facility Operating License No. DPR-46 for Cooper Nuclear Station (CNS). The amendment consists of changes to the technical specifications (TSs) in response to your application dated February 28, 2019.

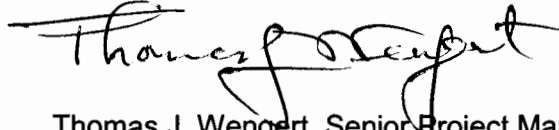
The amendment revises the CNS TSs to define a new time limit for restoring inoperable reactor coolant system (RCS) leakage detection instrumentation to operable status and establish alternate methods of monitoring RCS leakage when one or more required monitors are inoperable. The request was submitted in accordance with NRC-approved Technical Specifications Task Force (TSTF) Standard Technical Specifications Change Traveler TSTF-514, Revision 3, "Revise BWR [Boiling-Water Reactor] Operability Requirements and Actions for RCS Leakage Instrumentation," as part of the consolidated line item improvement process.

J. Dent, Jr.

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A copy of the related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Thomas J. Wengert", with a stylized flourish at the end.

Thomas J. Wengert, Senior Project Manager  
Plant Licensing Branch IV  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-298

Enclosures:

1. Amendment No. 263 to DPR-46
2. Safety Evaluation

cc: Listserv



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

**NEBRASKA PUBLIC POWER DISTRICT**

**DOCKET NO. 50-298**

**COOPER NUCLEAR STATION**

**AMENDMENT TO RENEWED FACILITY OPERATING LICENSE**

Amendment No. 263  
Renewed License No. DPR-46

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Nebraska Public Power District (the licensee), dated February 28, 2019, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-46 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A as revised through Amendment No. 263, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective as of its date of issuance and shall be implemented within 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Jennifer L. Dixon-Herrity, Chief  
Plant Licensing Branch IV  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed Facility  
Operating License No. DPR-46  
and the Technical Specifications

Date of Issuance: October 30, 2019

ATTACHMENT TO LICENSE AMENDMENT NO. 263  
RENEWED FACILITY OPERATING LICENSE NO. DPR-46  
COOPER NUCLEAR STATION  
DOCKET NO. 50-298

Replace the following pages of the Renewed Facility Operating License No. DPR-46 and Appendix A Technical Specifications with the enclosed revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Renewed Facility Operating License

REMOVE

-3-

INSERT

-3-

Technical Specifications

REMOVE

ii  
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3.4-24

- (5) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by operation of the facility.
- C. This license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2419 megawatts (thermal).

(2) Technical Specifications

The Technical Specifications contained in Appendix A as revised through Amendment No. 263, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Physical Protection

The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contain Safeguards Information protected under 10 CFR 73.21, are entitled: "Cooper Nuclear Station Safeguards Plan," submitted by letter dated May 17, 2006.

NPPD shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The NPPD CSP was approved by License Amendment No. 238 as supplemented by changes approved by License Amendments 244 and 249.

(4) Fire Protection

NPPD shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the license amendment request dated April 24, 2012 (and supplements dated July 12, 2012, January 14, 2013, February 12, 2013, March 13, 2013, June 13, 2013, December 12, 2013, January 17, 2014, February 18, 2014, and April 11, 2014), and as approved in the safety evaluation dated April 29, 2014. Except where NRC approval for changes or deviations is required by 10 CFR 50.48(c), and provided no other regulation, technical specification, license condition or requirement would require prior NRC approval, the licensee may make changes to the fire protection program without prior approval of the Commission if

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(continued)

**ACTIONS (continued)**

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. -----NOTE----- Only applicable when the drywell atmospheric gaseous radiation monitor is the only OPERABLE monitor. ----- Drywell floor drain sump flow monitoring system inoperable.</p>	C.1 Analyze grab samples of the primary containment atmosphere.	Once per 12 hours
	<u>AND</u>	
	C.2 Monitor RCS LEAKAGE by administrative means.	Once per 12 hours
	<u>AND</u>	
	C.3 Restore drywell floor drain sump flow monitoring system to OPERABLE status.	7 days
<p>D. Required Action and associated Completion Time of Condition A, B, or C not met.</p>	D.1 Be in MODE 3.	12 hours
	<u>AND</u>	
	D.2 Be in MODE 4.	36 hours
E. All required leakage detection systems inoperable.	E.1 Enter LCO 3.0.3.	Immediately

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.4.5.1 Perform a CHANNEL CHECK of required drywell atmospheric monitoring channel.	In accordance with the Surveillance Frequency Control Program

(continued)



**SURVEILLANCE REQUIREMENTS (continued)**

SURVEILLANCE		FREQUENCY
SR 3.4.5.2	Perform a CHANNEL FUNCTIONAL TEST of required leakage detection instrumentation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.5.3	Perform a CHANNEL CALIBRATION of required leakage detection instrumentation.	In accordance with the Surveillance Frequency Control Program

### 3.4 REACTOR COOLANT SYSTEM (RCS)

#### 3.4.6 RCS Specific Activity

LCO 3.4.6      The specific activity of the reactor coolant shall be limited to DOSE EQUIVALENT I-131 specific activity  $\leq 0.2 \mu\text{Ci/gm}$ .

APPLICABILITY:    MODE 1,  
MODES 2 and 3 with any main steam line not isolated.

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Reactor coolant specific activity $> 0.2 \mu\text{Ci/gm}$ and $\leq 4.0 \mu\text{Ci/gm}$ DOSE EQUIVALENT I-131.	-----NOTE----- LCO 3.0.4.c is applicable. -----	
	A.1      Determine DOSE EQUIVALENT I-131.	Once per 4 hours
	<u>AND</u> A.2      Restore DOSE EQUIVALENT I-131 to within limits.	48 hours
B. Required Action and associated Completion Time of Condition A not met.  <u>OR</u>  Reactor Coolant specific activity $> 4.0 \mu\text{Ci/gm}$ DOSE EQUIVALENT I-131.	B.1      Determine DOSE EQUIVALENT I-131.	Once per 4 hours
	<u>AND</u> B.2.1    Isolate all main steam lines.	12 hours
	<u>OR</u>	(continued)

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2.2.1 Be in MODE 3.	12 hours
	<u>AND</u> B.2.2.2 Be in MODE 4.	36 hours

#### SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.6.1</p> <p>-----NOTE----- Only required to be performed in MODE 1. -----</p> <p>Verify reactor coolant DOSE EQUIVALENT I-131 specific activity is <math>\leq 0.2 \mu\text{Ci/gm}</math>.</p>	In accordance with the Surveillance Frequency Control Program

### 3.4 REACTOR COOLANT SYSTEM (RCS)

#### 3.4.7 Residual Heat Removal (RHR) Shutdown Cooling System - Hot Shutdown

LCO 3.4.7 Two RHR shutdown cooling subsystems shall be OPERABLE, and, with no recirculation pump in operation, at least one RHR shutdown cooling subsystem shall be in operation.

#### NOTES

1. Both RHR shutdown cooling subsystems and recirculation pumps may be removed from operation for up to 2 hours per 8 hour period.
2. One RHR shutdown cooling subsystem may be inoperable for up to 2 hours for the performance of Surveillances.

APPLICABILITY: MODE 3, with reactor steam dome pressure less than the shutdown cooling permissive pressure.

#### ACTIONS

#### NOTE

Separate Condition entry is allowed for each RHR shutdown cooling subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two RHR shutdown cooling subsystems inoperable.	<p>A.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.</p> <p><u>AND</u></p>	<p>Immediately</p> <p>(continued)</p>

ACTIONS		
CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2      Verify an alternate method of decay heat removal is available for each inoperable RHR shutdown cooling subsystem.	1 hour
	<u>AND</u> A.3      Be in MODE 4.	24 hours
B. No RHR shutdown cooling subsystem in operation.  <u>AND</u>  No recirculation pump in operation.	B.1      Initiate action to restore one RHR shutdown cooling subsystem or one recirculation pump to operation.	Immediately
	<u>AND</u> B.2      Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation  <u>AND</u> Once per 12 hours thereafter
	<u>AND</u> B.3      Monitor reactor coolant temperature and pressure.	Once per hour

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.4.7.1</p> <p>-----NOTE-----            Not required to be met until 2 hours after reactor            steam dome pressure is less than the shutdown            cooling permissive pressure.            -----</p> <p>Verify one RHR shutdown cooling subsystem or            recirculation pump is operating.</p>	<p>In accordance with            the Surveillance            Frequency Control            Program</p>

### 3.4 REACTOR COOLANT SYSTEM (RCS)

#### 3.4.8 Residual Heat Removal (RHR) Shutdown Cooling System - Cold Shutdown

LCO 3.4.8 Two RHR shutdown cooling subsystems shall be OPERABLE, and, with no recirculation pump in operation, at least one RHR shutdown cooling subsystem shall be in operation.

#### NOTES

1. Both RHR shutdown cooling subsystems and recirculation pumps may be removed from operation for up to 2 hours per 8 hour period.
2. One RHR shutdown cooling subsystem may be inoperable for up to 2 hours for the performance of Surveillances.

APPLICABILITY: MODE 4.

#### ACTIONS

#### NOTE

Separate Condition entry is allowed for each shutdown cooling subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two RHR shutdown cooling subsystems inoperable.	A.1 Verify an alternate method of decay heat removal is available for each inoperable RHR shutdown cooling subsystem.	1 hour  <u>AND</u>  Once per 24 hours thereafter

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. No RHR shutdown cooling subsystem in operation.</p> <p><u>AND</u></p> <p>No recirculation pump in operation.</p>	<p>B.1 Verify reactor coolant circulating by an alternate method.</p>	<p>1 hour from discovery of no reactor coolant circulation</p> <p><u>AND</u></p> <p>Once per 12 hours thereafter</p>
	<p><u>AND</u></p> <p>B.2 Monitor reactor coolant temperature.</p>	<p>Once per hour</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.8.1 Verify one RHR shutdown cooling subsystem or recirculation pump is operating.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>





ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. -----NOTE----- Required Action C.2 shall be completed if this Condition is entered. -----</p> <p>Requirements of the LCO not met in other than MODES 1, 2, and 3.</p>	<p>C.1 Initiate action to restore parameter(s) to within limits.</p> <p><u>AND</u></p> <p>C.2 Determine RCS is acceptable for operation.</p>	<p>Immediately</p> <p>Prior to entering MODE 2 or 3.</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.9.1 -----NOTE----- Only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing. -----</p> <p>Verify:</p> <p>a. RCS pressure and RCS temperature are within the applicable limits specified in the curves in the PTLR; and</p> <p>b. RCS heatup and cooldown rates are within limits specified in the PTLR.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.9.2	Verify RCS pressure and RCS temperature are within the criticality limits specified in the PTLR.	Once within 15 minutes prior to control rod withdrawal for the purpose of achieving criticality
SR 3.4.9.3	<p>-----NOTE----- Only required to be met in MODES 1, 2, 3, and 4 during recirculation pump startup.</p> <p>-----</p> <p>Verify the difference between the bottom head coolant temperature and the reactor pressure vessel (RPV) coolant temperature is within the limits specified in the PTLR.</p>	Once within 15 minutes prior to each startup of a recirculation pump
SR 3.4.9.4	<p>-----NOTE----- Only required to be met in MODES 1, 2, 3, and 4 during recirculation pump startup.</p> <p>-----</p> <p>Verify the difference between the reactor coolant temperature in the recirculation loop to be started and the RPV coolant temperature is within the limits specified in the PTLR.</p>	Once within 15 minutes prior to each startup of a recirculation pump

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.9.5	-----NOTE----- Only required to be performed when tensioning the reactor vessel head bolting studs. -----	In accordance with the Surveillance Frequency Control Program
	Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	
SR 3.4.9.6	-----NOTE----- Not required to be performed until 30 minutes after RCS temperature $\leq 80^{\circ}\text{F}$ in MODE 4. -----	In accordance with the Surveillance Frequency Control Program
	Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	
SR 3.4.9.7	-----NOTE----- Not required to be performed until 12 hours after RCS temperature $\leq 90^{\circ}\text{F}$ in MODE 4. -----	In accordance with the Surveillance Frequency Control Program
	Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.	

### 3.4 REACTOR COOLANT SYSTEM (RCS)

#### 3.4.10 Reactor Steam Dome Pressure

LCO 3.4.10      The reactor steam dome pressure shall be  $\leq 1020$  psig.

APPLICABILITY:    MODES 1 and 2.

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Reactor steam dome pressure not within limit.	A.1      Restore reactor steam dome pressure to within limit.	15 minutes
B. Required Action and associated Completion Time not met.	B.1      Be in MODE 3.	12 hours

#### SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.10.1      Verify reactor steam dome pressure is $\leq 1020$ psig.	In accordance with the Surveillance Frequency Control Program



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 263 TO

RENEWED FACILITY OPERATING LICENSE NO. DPR-46

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

DOCKET NO. 50-298

1.0 INTRODUCTION

By application dated February 28, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19071A111), Nebraska Public Power District (NPPD, the licensee) requested changes to the technical specifications (TSs) for Cooper Nuclear Station. The proposed changes would define a new time limit for restoring inoperable reactor coolant system (RCS) leakage detection instrumentation to operable status and establish alternate methods of monitoring RCS leakage when one or more required monitors are inoperable.

The licensee stated that the license amendment request (LAR) is consistent with U.S. Nuclear Regulatory Commission (NRC or the Commission)-approved Revision 3 to Technical Specifications Task Force (TSTF) Standard Technical Specifications (STSs) Change Traveler TSTF-514, Revision 3, "Revise BWR [Boiling-Water Reactor] Operability Requirements and Actions for RCS Leakage Instrumentation," dated November 24, 2010 (ADAMS Accession No. ML103280389). The availability of this TS improvement was published in the *Federal Register* on December 17, 2010 (75 FR 79048), as part of the consolidated line item improvement process (CLIIP).

2.0 REGULATORY EVALUATION

2.1 TSTF-514 Applicable Regulatory Requirements/Criteria

Under Section 50.92(a) of Title 10 of the *Code of Federal Regulations* (10 CFR), determinations on whether to grant an applied-for license amendment are to be guided by the considerations that govern the issuance of initial licenses or construction permits to the extent applicable and appropriate. Both the common standards for licenses and construction permits in 10 CFR 50.40(a), and those specifically for issuance of operating licenses in 10 CFR 50.57(a)(3), provide that there must be "reasonable assurance" that the activities at issue will not endanger the health and safety of the public.

The NRC's regulatory requirements related to the content of the TS are contained in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36. Paragraph (c)(2)(i) of 10 CFR 50.36 states that limiting conditions for operation (LCOs) are the lowest functional capability or performance levels of equipment required for safe operation of the facility.

The NRC's guidance for the format and content of BWR TSs can be found in NUREG-1433, Revision 4.0. STS 3.4.6, "RCS Leakage Detection Instrumentation," in NUREG-1433, contains the guidance specific to the RCS leakage detection instrumentation for BWRs. Cooper Nuclear Station is a BWR/4 facility.

The Bases for STS 3.4.6 contained in NUREG-1433 provide background information, the applicable safety analyses, a description of the limiting condition for operation (LCO), the applicability for the RCS leakage detection instrumentation TSs, and describe the Actions and surveillance requirements. The TS Bases provide the purpose or reason for the TSs, which are derived from the analyses and evaluation included in the safety analysis report, and for these TSs, the RCS leakage detection instrumentation design assumptions and licensing basis for the plant.

As stated in NRC Information Notice (IN) 2005-24, "Nonconservatism in Leakage Detection Sensitivity" (ADAMS Accession No. ML051780073), the reactor coolant activity assumptions for primary containment/drywell atmosphere gaseous radioactivity monitors may be nonconservative. This means that the monitors may not be able to detect a 1 gallon per minute (gpm) leak within 1 hour under all likely operating conditions.

The issue described in IN 2005-24 has raised questions regarding operability requirements for primary containment/drywell atmosphere gaseous radioactivity monitors. TSTF-514, Revision 3, includes a new TS Condition for RCS leakage detection instrumentation to establish Required Actions for operation during conditions of reduced monitoring sensitivity because the gaseous radioactivity instrumentation is the only operable instrument.

The regulation at 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," General Design Criterion (GDC) 30, "Quality of reactor coolant pressure boundary," specifies means for detecting and, to the extent practical, identifying the location of the source of RCS leakage. Regulatory Guide (RG) 1.45, Revision 0, "Reactor Coolant Pressure Boundary Leakage Detection Systems," dated May 1973 (ADAMS Accession No. ML003740113), describes acceptable methods of implementing GDC 30 with regard to the selection of leakage detection systems for the reactor coolant pressure boundary.

RG 1.45, Revision 0, Regulatory Position C.2, states that,

Leakage to the primary reactor containment from unidentified sources should be collected and the flow rate monitored with an accuracy of one gallon per minute (gpm) or better.

RG 1.45, Revision 0, Regulatory Position C.3 states that,

At least three separate detection methods should be employed and two of these methods should be (1) sump level and flow monitoring and (2) airborne particulate radioactivity monitoring. The third method may be selected from the following:

- a. monitoring of condensate flow rate from air coolers, [or]
- b. monitoring of airborne gaseous radioactivity.

Humidity, temperature, or pressure monitoring of the containment atmosphere should be considered as alarms or indirect indication of leakage to the containment.

RG 1.45, Revision 0, Regulatory Position C.5 states that,

The sensitivity and response time of each leakage detection system in regulatory position 3. above employed for unidentified leakage should be adequate to detect a leakage rate, or its equivalent, of one gpm in less than one hour.

RG 1.45, Revision 0, "Detector Response Time," states, in part, that,

In analyzing the sensitivity of leak detection systems using airborne particulate or gaseous radioactivity, a realistic primary coolant radioactivity concentration assumption should be used. The expected values used in the plant environmental report would be acceptable.

RG 1.45, Revision 1, "Guidance on Monitoring and Responding to Reactor Coolant System Leakage," was issued in May 2008 (ADAMS Accession No. ML073200271). RG 1.45, Revision 1, describes methods for implementing GDC 30 that are different from those in RG 1.45, Revision 0, and was developed and issued to support new reactor licensing. Revision 1 addresses having two TS leakage detection methods capable of detecting a 1 gpm leak within 1 hour provides adequate leakage detection capability from a safety perspective. It recommends that other potential indicators (including the gaseous radiation monitors) be maintained even though they may not have the same detection capability. These indicators, in effect, provide additional defense-in-depth.

## 2.2 CNS Regulatory Requirements/Criteria

In the LAR dated February 28, 2019, the licensee states, in part:

...

The following regulatory requirements apply to CNS:

CNS was designed and constructed to meet the principle [principal] design criteria described in the AEC's [Atomic Energy Commission's] proposed rule, "General Design Criteria for Nuclear Power Plant Construction Permits," published in the *Federal Register* on July 11, 1967 (32 FR 10213). The degree of conformance to the 1967 proposed GDC is described in Appendix F, "Conformance to AEC Proposed General Design Criteria" to the USAR [Updated



Safety Analysis Report] for CNS. CNS' current licensing basis incorporates the proposed GDC that are equivalent to the 10 CFR Part 50, Appendix A, GDC 30. Criterion 30, "Quality of reactor coolant pressure boundary," requires that means be provided for detecting and, to the extent practical, identifying the location of the source of reactor coolant leakage. The proposed license amendment is consistent with the AEC proposed GDC in that the design requirements for instrumentation, reactor coolant leak detection, the reactor coolant pressure boundary, and reactor coolant makeup are unaffected.

In the LAR, the licensee states, in part, regarding the RG 1.45, Regulatory Position stated in TSTF-514:

RG 1.45, "Reactor Coolant Pressure Boundary Leakage Detection Systems," May 1973, describes acceptable methods of implementing this requirement with regard to the selection of leakage detection systems for the reactor coolant boundary. The position of RG 1.45 is that at least three different detection methods should be employed. Two of these methods should be: (1) sump level and flow monitoring and (2) airborne particulate radioactivity monitoring. The third method may involve either monitoring of condensate flow rate from air coolers or monitoring of gaseous radioactivity. The RG recommends that the sensitivity and response time of each leakage detection system employed for unidentified leakage should be adequate to detect a leakage rate, or its equivalent, of one gpm in less than one hour. CNS conforms to the regulatory position outlined in RG 1.45. However, as discussed in the Technical Analysis [in the licensee's application], the gaseous portion of the drywell atmospheric radiation monitor does not meet the sensitivity requirements of RG 1.45 nor is CNS specifically committed to RG 1.45. This difference does not alter the conclusion that the proposed change is applicable to CNS.

Section IV-10, "Reactor Coolant System Leakage Rate Limits," of the CNS USAR provides details associated with the containment atmospheric leakage detection systems in use at CNS. TS 3.4.5 establishes LCOs for three of these systems: (1) the drywell floor drain sump flow monitoring system, (2) the drywell atmospheric particulate monitoring system, and (3) the drywell atmospheric gaseous monitoring system. As discussed in the USAR, drywell equipment sump temperature, suppression pool water level, primary containment pressure, and primary containment temperature also provide a means for detecting leaks within the primary containment.

### 2.3 Proposed TS Changes

In adopting the changes to TSs included in TSTF-514, Revision 3, the licensee proposed to revise the Conditions and Required Actions for TS 3.4.5, "RCS Leakage Detection Instrumentation." The licensee proposed adding new Condition C to TS 3.4.5. New Condition C would be applicable when the drywell atmospheric gaseous monitoring system is the only operable RCS leakage detection system. This new Condition is necessary because improved fuel integrity and the resulting lower primary coolant radioactivity concentration affect the response of a plant's drywell atmospheric gaseous monitoring system to a greater extent than the response of other RCS leakage detection monitors to leakage radioactivity. The proposed Required Actions for new Condition C require the licensee to analyze grab samples of the primary containment atmosphere once per 12 hours, restore the drywell floor drain sump

flow monitoring system to operable status within 7 days, and monitor RCS leakage by administrative means once per 12 hours.

In addition, in the LAR, the licensee proposed the following administrative measures:

The administrative means of monitoring include diverse alternative mechanisms from which appropriate indicators may be selected based on plant conditions. NPPD will utilize the following method or methods considering the current plant conditions and historical or expected sources of unidentified leakage: drywell equipment sump temperature, suppression pool water level, primary containment pressure, and primary containment temperature.

There are diverse alternative methods for determining that RCS leakage has not increased, from which appropriate indicators may be selected based on plant conditions. NPPD will utilize the following method or methods considering the current plant conditions and historical or expected sources of unidentified leakage: drywell equipment sump temperature, suppression pool water level, primary containment pressure, and primary containment temperature. Actions to verify that these indications have not increased since the required monitors became inoperable and analyze primary containment atmospheric grab samples are sufficient to alert the operating staff to an unexpected increase in RCS leakage.

### 3.0 TECHNICAL EVALUATION

The NRC staff reviewed the licensee's request as follows. First, the staff compared the plant's license, licensing basis, and design with the baseline assumptions in the model TSTF. Next, the staff considered how the licensee proposed to adopt TSTF-514 in light of CNS's plant-specific design and licensing. The staff then considered if the licensee showed that adopting TSTF-514 would provide reasonable assurance of public health and safety, and compliance with the Commission's regulations.

#### 3.1 NRC Staff Evaluation

The licensee proposed adding new Condition C to TS 3.4.5. New Condition C Required Actions require monitoring RCS leakage by obtaining and analyzing grab samples of the primary containment atmosphere every 12 hours; monitoring RCS leakage using administrative means every 12 hours; and taking action to restore monitoring capability using another monitor within 7 days. Condition C would be applicable when the drywell atmospheric gaseous monitoring system is the only operable RCS leakage detection system.

The associated proposed Actions and Completion Times are adequate because monitoring the RCS by administrative means, coupled with primary containment atmospheric grab samples, are sufficient to alert the operating staff to an unexpected increase in unidentified leakage. The grab samples provide a method of detecting particulate and gaseous radioactive material in the primary containment atmosphere. However, taking frequent grab samples will ensure there is no significant loss of monitoring capability during the Required Action Completion Time. The 12-hour interval is reasonable given the availability of the drywell atmospheric gaseous monitoring system. Allowing 7 days to restore another RCS leakage monitor to operable status is reasonable given the diverse methods employed in the Required Actions to detect an RCS leak and the low probability of a large RCS leak during this period. Proposed Condition C is

conservative relative to the STS, sufficiently alerts the operating staff, provides a comparable ability to detect RCS leakage, and provides time intervals that are reasonable. Therefore, the NRC staff determined that proposed Condition C provides reasonable assurance of safety.

The TSTF-514 Traveler and SE discuss the applicable regulatory requirements and guidance, including GDC 30 of 10 CFR Part 50, Appendix A. TSTF-514 states, in part, "Many plants pre-date the issuance of RG 1.45 and their plant-specific licensing basis is described in their UFSAR. In either case, the appropriate sensitivity of the atmospheric radiation monitors is dependent on the design assumptions and the plant licensing basis of each licensee."

The CNS USAR, Revision XXIX, Section IV.10.3.2, states, in part:

In addition to the existing leak detection system within the drywell during normal operation, a two channel (particulate and gas) radiation monitor is used to draw an air sample from containment. This monitor, the Drywell Atmospheric Monitoring System, has indication and annunciation in the Main Control Room. If the Drywell Atmospheric Monitoring System is inoperable, grab samples of the drywell atmosphere are taken in accordance with the Technical Specifications.

In the LAR, the licensee stated that the design calculations determined that the gaseous portion of the drywell atmospheric radioactivity monitor could detect a leakage rate of less than the leakage rate limits as defined by CNS Technical Specifications, within 1 hour. The licensee further stated that this information was then included in the design basis calculations for the gaseous portion of the drywell atmospheric radioactivity monitor. This difference does not alter the conclusion that the proposed change is applicable to CNS. Therefore, based on the above, the NRC staff concludes that the licensee's explanation supports the applicability of the TSTF-514 changes to the CNS TSs.

The licensee also proposed minor changes to ensure continuity of the TS format. These changes re-letter current Condition C, which applies when the Required Action and the associated Completion Time are not satisfied, to Condition D, and current Condition D, which applies when all required leakage detection systems are inoperable, to Condition E. Similar changes were made to the associated Required Actions. The licensee also made changes to the TS Table of Contents consistent with the associated TS page numbers, and is reissuing several TS pages due to repagination. The NRC staff determined that these changes are editorial, and therefore acceptable.

The NRC staff evaluated the licensee's proposed changes against the applicable regulatory requirements listed in Section 2 of this SE. The NRC staff also compared the proposed changes to the changes made to STS by TSTF-514, Revision 3. The NRC staff determined that all the proposed changes afford reasonable assurance of safety. Therefore, the NRC staff finds the proposed changes acceptable.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Nebraska State official was notified of the proposed issuance of the amendment on September 20, 2019. The State official had no comments.

## 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration published in the *Federal Register* on June 4, 2019 (84 FR 25838), and there has been no public comment on such finding. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

## 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: R. Grover, NRR

Date: October 30, 2019

SUBJECT: COOPER NUCLEAR STATION - ISSUANCE OF AMENDMENT NO. 263 RE:  
ADOPTION OF TSTF-514, REVISION 3, "REVISE BWR OPERABILITY  
REQUIREMENTS AND ACTIONS FOR RCS LEAKAGE INSTRUMENTATION"  
(EPID L-2019-LLA-0050) DATED OCTOBER 30, 2019

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**ADAMS Accession No. ML19238A007**

\*By memorandum

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