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

April 23, 2021

Mr. Cleveland Reasoner
Chief Executive Officer and
Chief Nuclear Officer
Wolf Creek Nuclear Operating Corporation
P.O. Box 411
Burlington, KS 66839

SUBJECT: WOLF CREEK GENERATING STATION, UNIT 1 - ISSUANCE OF AMENDMENT NO. 228 REGARDING REPLACEMENT OF ENGINEERED SAFETY FEATURES TRANSFORMERS WITH NEW TRANSFORMERS THAT HAVE ACTIVE AUTOMATIC LOAD TAP CHANGERS (EPID L-2020-LLA-0125)

Dear Mr. Reasoner:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 228 to Renewed Facility Operating License No. NPF-42 for the Wolf Creek Generating Station, Unit 1. The amendment consists of changes to the Wolf Creek Updated Safety Analysis Report (USAR) in response to your application dated June 8, 2020.

The amendment is in support of changes to the Wolf Creek USAR describing the design and operation of replacement engineered safety features transformers that have active automatic load tap changers.

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

Sincerely,

/RA/

Samson Lee, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-482

Enclosures:
1. Amendment No. 228 to NPF-42
2. Safety Evaluation

cc: Listserv

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

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION, UNIT 1

DOCKET NO. 50-482

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 228
License No. NPF-42

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the Wolf Creek Generating Station, Unit 1 (the facility) Renewed Facility Operating License No. NPF-42 filed by the Wolf Creek Nuclear Operating Corporation (the Corporation), dated June 8, 2020, 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, as amended, 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, by Amendment No. 228, Renewed Facility Operating License No. NPF 42 is hereby amended to authorize revision to the Updated Safety Analysis Report (USAR) as set forth in the licensee's application dated June 8, 2020, and evaluated in the NRC staff safety evaluation for this amendment. The licensee shall submit the update of the USAR authorized by this amendment in accordance with 10 CFR 50.71(e).

3. The license amendment is effective as of its date of issuance and shall be implemented in accordance with the June 8, 2020, application.

FOR THE NUCLEAR REGULATORY COMMISSION

Jennifer L. Dixon-Herrity

Digitally signed by Jennifer L. Dixon-Herrity
Date: 2021.04.23 09:00:51 -04'00'

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

Date of Issuance: April 23, 2021

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 228 TO

RENEWED FACILITY OPERATING LICENSE NO. NPF-42

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION, UNIT 1

DOCKET NO. 50-482

1.0 INTRODUCTION

By application dated June 8, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20160A458), Wolf Creek Nuclear Operating Corporation (the licensee) submitted a license amendment request (LAR) for the Wolf Creek Generating Station (Wolf Creek) in support of Updated Safety Analysis Report (USAR) changes describing the design and operation of replacement engineered safety features (ESF) transformers that have active automatic load tap changers (LTCs).

2.0 REGULATORY EVALUATION

2.1 System Design and Operation

The onsite power system is provided with preferred power from the offsite system through two independent and redundant sources of power. One ESF transformer is supplied power directly, by one of the preferred power circuits from the offsite power system. The second ESF transformer is supplied power from one of the secondary windings of the startup transformer. One circuit is fed from ESF transformer XNB01 and supplies power normally to its associated 4.16 kilovolt (kV) Class 1E bus. The other circuit is fed from one secondary winding of the startup transformer, which feeds two medium-voltage 13.8 kV buses and ESF transformer XNB02.

The licensee's proposed changes in the LAR would revise the Wolf Creek USAR to describe the design and operation of replacement ESF transformers (i.e., XNB01 and XNB02), equipped with active automatic LTCs on the transformer secondary windings to regulate voltage to provide acceptable voltages to the safety-related electrical distribution system given a wider range of offsite power system voltages. The LTC controllers receive power from an auxiliary winding in the XNB01 and XNB02 transformers supplied by the original 13.8 kV source. The replacement ESF transformer with an automatic LTC will provide voltage support for the associated Class 1E bus by adjusting output voltage based on switchyard input voltage. Section 3.7, "System Operation/Coordination and LTC Operation," in Attachment I of the LAR, describes the system coordination and LTC operation.

The LTC operates after a 3 second delay. The time delay avoids LTC action during a large motor start scenario and switchyard transitions. Momentary undervoltage conditions have been evaluated by the licensee and were shown to meet acceptance criteria. Based on the evaluated scenarios, the licensee concluded that when ESF transformers XNB01 and XNB02 operate in the automatic LTC mode, all criteria for safety-related equipment will be met, and all of the scenarios evaluated conclude acceptable results at an analyzed minimum grid voltage of 98 percent.

2.2 Licensee Proposed Changes

Wolf Creek is systematically replacing the large, oil-filled ESF transformers to address aging concerns and voltage margin and is implementing design improvements in support of long-term station operation. The currently installed transformers are approaching the end of their 40-year life and require replacement to support the continued operation of Wolf Creek.

The replacement ESF transformers have automatic LTCs on their secondary windings. The licensee stated that the new transformers with LTCs can provide acceptable operating voltages to the safety-related electrical distribution system under a wider range of offsite power system voltages. The use of automatic LTCs introduces active components that can increase the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety, and therefore, requires prior U.S. Nuclear Regulatory Commission (NRC, the Commission) approval.

The licensee proposed USAR changes, and Technical Specification (TS) Bases changes, respectively, in support of this LAR describing the design and operation of replacement ESF transformers that have active automatic LTCs. The licensee stated that no changes to the TSs are needed.

2.3 Regulatory Requirements

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.34(b)(2) requires the Final Safety Analysis Report to provide a description of the SSCs of the facility sufficient to permit understanding of the system designs and their relationship to safety evaluations.

The regulations in 10 CFR 50.36, “Technical specifications,” sets forth requirements for the TS contents. Section 50.36(a) of 10 CFR provides a summary statement of the bases or reasons for such specifications shall be included in the licensee’s application but shall not become part of the TSs.

The following general design criteria (GDC) in 10 CFR Part 50, Appendix A “General Design Criteria for Nuclear Power Plants,” are applicable to this review.

- GDC 17, “Electric Power Systems,” requires, in part, that nuclear power plants have an offsite electric power system to permit the functioning of SSCs that are important to safety.

- GDC 18, “Inspection and Testing of Electric Power Systems,” requires, in part, that electric power systems important to safety be designed to permit appropriate periodic inspection and testing.

Wolf Creek License Condition 2.C.(5) allows changes to the Fire Protection Program without prior NRC approval if the change does not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

3.0 TECHNICAL EVALUATION

3.1 NRC Staff Risk Insights

This LAR is not a risk-informed submittal, and the licensee did not include risk insights; however, the NRC staff considered information from NRC's Wolf Creek Standardized Plant Analysis Risk (SPAR) model to provide insights on the risk impact of the proposed licensing action and inform the review scope. Since the replacement ESF transformer with LTC has more active components, there is a potential for increased likelihood of hardware faults. Insights from sensitivity studies using the Wolf Creek SPAR model demonstrated that a substantial increase in the likelihood of hardware faults resulted in only a minimal increase in plant risk. In addition, qualitative risk insights developed by the NRC staff indicated that seismic events would result in a loss of offsite power with a higher probability compared to a seismically induced failure of the transformer. Based on these risk insights in the context of the five principles of risk informed regulation, the NRC staff focused its review on the credible failure mechanisms of the replacement ESF transformer with LTC.

3.2 Electrical Evaluation

The NRC staff has reviewed the Wolf Creek USAR, Sections 8.1, "Introduction"; 8.2, "Offsite Power System"; and 8.3, "Onsite Power System" (ADAMS Accession No. ML20290A576). The licensee stated that the replacement ESF transformer design specifications listed in Table 1, "Replacement ESF Transformer Design Specifications," of Attachment I to the LAR, are essentially equivalent to the previous transformers except for the LTCs, weight of the transformer, and oil volume. The licensee also stated in the LAR that the new transformers meet the electrical design requirements of the original transformers.

The alarms associated with the replacement ESF transformers are displayed locally and are routed to the plant computer system. These alarms are grouped by function and priority as XNB01 (XNB02) XFMR Trouble and XNB01 (XNB02) Fault Pressure. Failure of the automatic LTC could result in the loss of the preferred power source and result in the safety-related bus being supplied by the emergency diesel generator (EDG).

3.2.1 Undervoltage and Over Voltage Evaluations

The licensee performed Electrical Transient Analysis Program (ETAP) analyses and concluded that the automatic LTC will regulate the secondary side (4.16 kV) voltage within its predetermined range when the switchyard voltage is maintained within its acceptable range (98 percent to 105 percent of 13.8kV). Based on the ETAP results, the licensee concluded that at a 105 percent grid voltage, and at a 98 percent grid voltage, the LTC still has additional taps available in either direction.

In the LAR, the licensee stated that the automatic LTCs can vary the voltage at the respective 4.16 kV bus by ± 10 percent (0.625 percent per step with ± 16 steps). The LTC operates after a 3 second delay, which avoids LTC action during a large motor start and switchyard transitions. Momentary undervoltage conditions were evaluated by the licensee and shown to meet the acceptance criteria. The licensee also performed ETAP analyses to determine the most

appropriate voltage setpoint for the LTC. Under normal operating conditions, the licensee stated that the switchyard voltage is maintained below 103 percent with a target voltage of 101.5 percent. When the switchyard voltage is at 105 percent, the licensee's ETAP analyses conclude that overvoltage at the Class 1E bus will not occur with the ESF transformers operating in the automatic LTC mode.

The licensee's current degraded voltage relay (DVR) and loss of voltage (LOV) setpoint calculations were previously approved by the NRC staff in Amendment No. 224 dated February 27, 2020 (ADAMS Accession No. ML19353C500), and the licensee does not seek to change them as part of this LAR. Therefore, the NRC staff did not review the adequacy of the setpoints in this safety evaluation. However, the NRC staff did consider these DVR and LOV setpoints with respect to LTC operation at degraded voltages and over voltage conditions, and excerpts from that evaluation are provided in Section 3.2.2 of this safety evaluation.

The NRC staff notes that with the primary and backup control systems in operation, the general response to a loss-of-coolant accident is the LTC step-correcting the voltage back to the 4.16 kV level. The LTC three-second time delay is not bypassed for a design-basis accident as the LTC operation still allows for acceptable transient response. The LTC voltage control systems ensure the Class 1E bus voltage is sufficient to retain the preferred offsite power sources for power to the safety-related electrical distribution system.

3.2.2 DVR and LOV Setpoints

In the LAR dated March 18, 2019 (ADAMS Accession No. ML19086A111), for Amendment No. 224, the licensee performed an analysis to establish the DVR dropout (minimum) voltage limit so that the running voltages of required Class 1E met the following criteria: (1) the operating voltages of the Class 1E loads must be greater than or equal to (≥) 90 percent of rated voltage, and (2) Class 1E motor control center voltages for the 460-volt (V) motors must be 423.2 V (92 percent of 460 V).

To meet the above acceptance criteria, the licensee stated in the LAR dated March 18, 2019, that a minimum required voltage of 3756.8 V (3756.8/4160 V = 90.3 percent) is required at the DVR monitored buses (NB01 and NB02), and that the LOV relay lower analytic limit is 3150.4 V.

Wolf Creek Surveillance Requirement 3.3.5.3 states, in part:

a. Loss of voltage Allowable Value ≥ 90.0V, 120V bus with time delay of 1.0 + 0.15, -0.1 sec.

   Loss of voltage nominal Trip Setpoint 91.28V, 120V bus with a time delay of 1.0 sec.

b. Degraded voltage Allowable Value ≥ 107.5V, 120V bus.

   1. Accident time delay (SIS) 8.0 +0.5, -0.6 sec
   2. Non-accident time delay (No SIS) 56 + 8.5, -7.6 sec.

   Degraded voltage nominal Trip Setpoint 108.46V, 120V bus.

If under voltage is detected at the Class 1E bus, the bus under voltage protection relay will trip the feeder breaker from the ESF transformer and the associated EDG will start to supply power to the Class 1E bus. As the licensee noted in the March 18, 2019, LAR, the calculated bus transient is expected to be no longer than 0.85 seconds. The LOV relay is set to trip within 0.9 - 1.15 seconds. The NRC staff notes that LTC time delay operation with a 3 second time delay would not prevent the operation of the LOV relay or cause spurious tripping since the LOV relay trips within 0.9 - 1.15 seconds. Therefore, the NRC staff finds that the automatic LTC operation would not affect the LOV relay settings.

In the accident case (Section 3.2.2.b), the DVR will trip with a time delay of 8 seconds (7.4 - 8.5 seconds); the setpoint is from 7.4 - 8.5 seconds and therefore, the time delay envelopes the LTC time delay if the degraded voltage drops below 3756.8 V. In the non-accident case, the DVR will trip with the time delay of 48.4 - 64.5 seconds if the degraded voltage drops below 3756.8 V. The NRC staff finds that LTC operation will be consistent with the degraded voltage; therefore, there is no impact on the DVR setpoints.

For the reasons discussed above, the NRC staff finds that the automatic LTC operation would not affect the LOV and DVR relay settings.

3.3 Structures Seismic Evaluation

In Section 3.1, "General Description," of Attachment I to the LAR, the licensee stated:

> The current and replacement ESF transformers, XNB01 and XNB02, are non-safety-related. . . .
>
> The weight of the replacement ESF transformer is increased from 53,700 lbs to 102,000 lbs. The transformer foundations were evaluated and determined to be adequate without modification.

In Section 3.3, "Fire Protection Design," of Attachment I to the LAR, the licensee stated, in part:

> The ESF transformers have an oil collection vault located under the transformers in the yard area, with separation from adjacent buildings. The adjacent structures are not safety-related.

Since the ESF transformers, XNB01 and XNB02, are nonsafety-related, and are located in the yard area with separation from adjacent buildings, which are also nonsafety-related structures, the NRC staff determined that there is no need to review the adequacy of the foundation for these ESF transformers for seismic effects.

3.4 USAR Changes

The NRC staff reviewed the proposed USAR changes (mark-up) in Attachment II of the LAR. In the following sections, the NRC staff evaluates the USAR changes that the NRC staff considers to be significant because they are not editorial or administrative in nature. The NRC staff determined that the remaining proposed USAR changes not listed below are acceptable because they are editorial or nonsignificant changes.

3.4.1 USAR Section 8.1.2, Onsite Power System Description

The licensee proposed to revise the description from “ESF transformer” to “ESF transformer **equipped with an automatic load tap changer (LTC)**” [emphasis added]. The NRC staff finds that the proposed revision is acceptable because it accurately describes the change in that the new replacement ESF transformers are equipped with automatic LTCs.

The licensee also added the following statement in Wolf Creek USAR Section 8.1.2: “The automatic LTCs provide acceptable operating voltages to the safety-related electrical distribution system under a wide range of offsite power system voltages.” The NRC staff finds that this change is acceptable because it accurately describes that the automatic LTCs can cover a wide range of offsite power system voltages.

3.4.2 Wolf Creek USAR Section 8.2, Offsite Power System, 8.2.1, Description

In the proposed Wolf Creek USAR changes, the licensee deleted drawings showing duct banks and other routing features of the two offsite circuits. In addition, in Section 8.2.1 “Description,” of the USAR, the licensee added the following text:

> The ESF transformers are equipped with automatic load tap changers (LTC). The ESF transformers with automatic LTCs do not share any common electrical or control circuits with any other transformer. They cannot be paralleled to each other even if the Class 1E 4.16 kV buses NB01 and NB02 are being supplied by the same transformer. The failure of one ESF transformer will have no effect on the operation of the opposite ESF transformer. The credible failure mechanisms of the transformer that will have the worst-case effects on the associated Class 1E equipment are summarized in Table 8.3-4.

USAR Section 8.3.1.1.2, “Class 1E AC System”, states in part, that “No interconnections are provided between the safety- and nonsafety-related busses. The NRC staff reviewed USAR Section 8.3.1.4.1.1, “Raceway and Cable Routing,” under category, “Cable Spreading Areas,” which states, in part, that “Nonsafety-related cables are not routed through safety-related raceways.” The NRC staff reviewed Figure 8.2-5, “Electrical One-Line Diagram of Wolf Creek 345 kV Switchyard and Adjacent Subs,” and LAR, Attachment I, Section 2.0, “Detailed Description.” The NRC staff reviewed USAR Section 8.3.1.4, ‘Independence of Redundant Systems,” which states, in part, “A raceway designated for a single voltage category of cables contains only cables of the same voltage category.” In the LAR (Attachment II), the licensee revised USAR Section 8.2.1. The NRC staff notes that the proposed change is consistent with the USAR (licensing basis) changes as stated in Sections 8.3.1.1.2 and 8.3.1.4.1.1. Therefore, the NRC staff finds that the proposed change to the USAR is acceptable based on the staff’s review.

In USAR Section 8.3.1.1.1.2, “Non-Class IE Power block Power System,” cable routing information and drawing numbers have been deleted because they do not relate to the new automatic LTC. The NRC staff finds that this deletion is acceptable because the station drawings, including USAR figures or drawings, will be updated in accordance with the plant design modification process. In addition, the licensee will revise cable routing drawings, as necessary, and references to the specific cable routing drawings currently stated in the text in Section 8 has been removed. Deletion of cable routing drawings and references to specific cable routing drawings is acceptable because they do not relate to cable routing drawings specific to new automatic LTC.

3.4.3 Wolf Creek USAR Table 8.3-4, Failure Mode and Effects Analysis (Sheets 4 and 5)

ESF Transformer XNB01 with automatic load tap changer (LTC) - Sheet 4:

The licensee added credible failure mechanisms related to the use of the automatic LTCs to Wolf Creek USAR Table 8.3-4, and deleted the failure modes of the existing transformer, XNB01. The automatic LTC will cause an increase in failure modes of ESF transformer XNB01 compared with the manual ESF transformer XNB01. The increase is due to the automatic LTC having more moving parts such as controllers and a motor. As such, the licensee proposed to update Table 8.3-4, Sheet 4, that describes the current ESF transformer failure modes and effects analysis. The licensee stated in the LAR that the USAR table would be updated to reflect this change in the fall of 2022 when the modification for ESF transformer XNB01 is completed.

ESF Transformer XNB02 with automatic load tap changer (LTC) - Sheet 5:

The licensee added credible failure mechanisms related to the use of the LTCs to Wolf Creek USAR Table 8.3-4, and deleted the failure modes of the existing transformer XNB02. The automatic LTC will cause an increase in failure modes of ESF transformer XNB02 compared with the manual ESF transformer XNB02. The increase is due to the automatic LTC having more moving parts such as controllers and a motor. The licensee proposed to update Table 8.3-4, Sheet 5, that describes the failure modes of ESF transformer XNB02 with an automatic LTC. The licensee stated in the LAR that the USAR table would be updated to reflect this change in the spring of 2021 when the modification for ESF transformer XNB02 is completed.

The credible failure mechanisms of the replacement ESF transformers that produce the worst-case effects on the associated Class 1E equipment are categorized by the licensee as follows:

Fails to provide power (Cases 1 and 2):

Case 1 Issues that cause the transformer lockout trip circuit to engage.
Case 2 Issues that prevent the transformer lockout trip circuit from engaging.

The ESF transformer XNB02 fails to provide preferred power to bus NB02 and backup power to bus NB01 and will result in undervoltage annunciation for bus NB02. This would cause the Class 1E voltage relays to actuate causing a transfer of the Class 1E bus to the associated causing a transfer of class 1E bus to the associated EDG.

An open contact of the above relays would cause the transformer lockout trip circuit to fail to engage. The NRC staff reviewed this failure mode and noted that this failure mode exists even in current design.

Controllers fail low (Case 3):

Case 3 The transformer tap changer fails and raises the 4.16 kV Class 1E bus voltage unexpectedly.

This failure mode will result in raising the bus voltage NB02 unexpectedly and would cause overvoltage annunciation. The effect is minimal and limit device prevents extreme voltage

changes. Primary and backup controllers (components, circuitry or potential transformers) will block raise commands to the LTC if the voltage moves beyond a specified block raise point. The NRC staff noted that in this failure mode, the effect is minimal and would not cause uncontrollable overvoltage situation due to the limit device. In addition, this condition would cause overvoltage annunciation and alert operators. If LTC fails to provide the required voltage, station operating procedures will be used to restore the bus voltage to normal

Controllers fail high (Case 4):

Case 4 The transformer tap changer fails and lowers the 4.16 kV Class 1E bus voltage unexpectedly.

This failure mode will result in lowering the bus voltage NB02 unexpectedly and would cause undervoltage annunciation. The effect is eventually degraded voltage circuits shed the bus. Degraded voltage condition would result in diesel generator start and provide the power to the XNB02 bus. Primary and backup controllers (components, circuitry or potential transformers) will block lower commands to the LTC if the voltage moves beyond a specified setpoint. The NRC staff noted that in this failure mode, the effect is minimal and would not cause uncontrollable undervoltage due to the limit device and would cause undervoltage annunciation to alert operators.

Tap Changer fails to move (Cases 5 and 6)

Case 5 The transformer tap changer fails to move.
Case 6 A vacuum bottle fails and causes the transformer tap changer to stop movement.

The NB02 bus voltage remains as is without LTC control. LTC controller self-check causes LTC trouble annunciation. The voltage will not be adjusted. It can result in overvoltage or undervoltage depending on offsite voltage. Under voltage may result in load shed. Loads are transferred to the diesel generator. The failure mode can cause control lockup, LTC motor failure, LTC potential transformers fail low, voltage sensing transformer fuses fail, and LTC vacuum interrupter failure.

The NRC staff has reviewed this failure mode and noted that this would result in malfunction of automatic LTC and will result in over voltage or under voltage or no control on the 4kV buses XNB01 and XNB02.

The NRC staff noted that based on the review of failure modes and their effects, the offsite power system capacity and capability are not impacted, and thus the offsite electric power system will continue to permit the functioning of SSCs that are important to safety which is in compliance with the GDC 17.

Summary

The licensee will perform post-modification tests including but not limited to functional testing, and energized testing for operability. Specifically, the licensee states in Section 3.9.1 of the LAR that it will perform functional testing of the ESF transformers, including Controls and Energized testing for operability. In the case of EDG Emergency Testing, the licensee states:

The LTC may be placed in the fixed tap mode or disabled during EDG testing to prevent cycling due to changes in the Class 1E bus voltage from the EDG voltage regulator intended to verify if the LTC will function as designed.

The NRC staff notes that by performing post-modification tests, the licensee will verify that the SSCs will perform their intended design functions and continue to meet the GDC 18 criteria.

Based on the NRC staff's evaluation of the information presented above, the NRC staff finds that the proposed Wolf Creek USAR changes for Table 8.3-4 (Sheets 4 and 5) are acceptable.

3.5 Licensee's New Commitment

The licensee included a new commitment in Attachment IV of the LAR. The NRC staff notes that this commitment is not within the scope of NRC staff's review.

3.6 Technical Specification Bases

The regulation at 10 CFR 50.36(a)(1) states, in part: "A summary statement of the bases or reasons for such specifications … shall also be included in the application but shall not become part of the technical specifications." The NRC staff notes that the licensee submitted proposed TS Bases changes, which detail the new equipment, for information only. The licensee states that it will make supporting changes to the TS Bases in accordance with Wolf Creek TS 5.5.14, "Technical Specifications (TS) Bases Control Program."

3.7 Summary of Technical Evaluation

The ESF transformers do not share any common electrical or control circuits, and they cannot be paralleled, even if the Class 1E 4.16 kV buses, NB001 and NB002, are cross connected. The failure of the automatic LTC would result in a loss of offsite power, which would cause the safety-related bus to be supplied by the EDG instead of the offsite power source. If undervoltage is detected at the Class 1E bus, the undervoltage relay will trip the feeder breaker from the ESF transformer and will start the associated EDG. The LTC can be operated manually in the event of the failure of the automatic system using the local control panel. The NRC staff notes that the ESF transformers are nonsafety-related equipment and failure of the ESF transformer would not directly cause a design-basis accident.

In addition, the NRC staff notes that the automatic LTC does not introduce new short-circuit failures. The fault current at XNB01 and XNB02 auxiliary windings are within the protective device stings. The malfunction of any one of neutral overcurrent relay (151N), the differential relay (287) and/or the fault pressure trip relay (263FP/K4) would result in the Class 1E bus transferring to the EDG. The NRC staff further notes that there is no change in the relay or breaker settings and therefore, no impact on protection of ESF transformers due to the automatic LTC.

As discussed in Section 3.4.3, the NRC staff finds that testing, inspections, and maintenance of the ESF transformers demonstrate continuing compliance with GDC 18. The NRC staff evaluated the changes to the Wolf Creek USAR, which are shown as markups in Attachment II to the LAR and finds that they are acceptable. Based on its review, the NRC staff concludes that the increase in potential malfunctions of the ESF transformer due to the replacement of manual LTC with an automatic LTC would not impact the capability of safety-related equipment to perform their intended design functions. The ESF transformer is nonsafety-related and does

not interface with the safety-related components/equipment. The NRC staff concluded that the offsite power system continues to meet the GDC 17 criteria.

Based on the NRC staff's evaluation of the information presented above, NRC staff finds that the licensee's proposed changes in the LAR are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Kansas State official was notified of the proposed issuance of the amendment on January 21, 2021. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to installation or use of facility components 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 July 28, 2020 (85 FR 45449), 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 Contributors: H. Kodali
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K. West

Date: April 23, 2021

SUBJECT: WOLF CREEK GENERATING STATION, UNIT 1 - ISSUANCE OF AMENDMENT NO. 228 REGARDING REPLACEMENT OF ENGINEERED SAFETY FEATURES TRANSFORMERS WITH NEW TRANSFORMERS THAT HAVE ACTIVE AUTOMATIC LOAD TAP CHANGERS (EPID L-2020-LLA-0125) DATED APRIL 23, 2021

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NAME	SRosenberg	SKrepel	JColaccino	AGhosh
DATE	2/25/2021	2/26/2021	3/1/2021	4/14/2021
OFFICE	NRR/DORL/LPL4/BC	NRR/DORL/LPL4/PM		
NAME	JDixon-Herrity	SLee		
DATE	4/22/2021	4 /23 /2021		

OFFICIAL RECORD COPY