July 17, 2003

MEMORANDUM TO: Arthur T. Howell III, Director
Division of Reactor Projects, Region IV

FROM: Ledyard B. Marsh, Director ***/RA/***
Division of Licensing Project Management, NRR

SUBJECT: REGION IV TIA NO. 2002-03, REGARDING EVALUATION OF POTENTIAL UNREVIEWED SAFETY QUESTIONS ASSOCIATED WITH MODIFICATIONS MADE TO OFFSITE POWER AT COOPER NUCLEAR STATION (TAC No. MB5768)

By a memorandum dated June 26, 2002, Region IV requested the Office of Nuclear Reactor Regulation (NRR) to provide guidance on the Cooper Nuclear Station's (CNS) implementation of Section 50.59 of Title 10 of the *Code of Federal Regulations* (10 CFR), regarding several offsite power equipment modifications and control procedure changes. A clarification was also requested concerning the licensee's definition of the term "circuit" as used in the Updated Safety Analysis Report (USAR). Due to the licensee's interpretation of the term "circuit" and how it applies to General Design Criterion (GDC) -17 specified USAR equipment, Region IV is concerned that proper 10 CFR 50.59 reviews were not performed, resulting in potential unreviewed safety questions.

The USAR for CNS currently describes the station's qualified offsite power sources as the 345 kV ring bus supplying power to the startup transformer and the 69 kV line supplying power to the emergency transformer. Each line is designed to be capable of carrying the required loads for safe shutdown of CNS. The CNS was originally licensed with two qualified sources of offsite power available for powering all emergency equipment required for safe shutdown of CNS. The two qualified power sources are described in the CSN Safety Evaluation Report issued in February 1973.

Between 1981 and 1990, CNS staff made several modifications to the offsite power system's configuration. The Region IV staff considers these modifications without appropriate safety reviews to constitute potential unreviewed safety questions, and has requested NRR's evaluation and advise to confirm its conclusions.

The NRR staff has reviewed the licensee's USAR and the NRC's 1973 SER, and concludes that:

(1) Redundant paths of power availability are clearly defined under GDC-17 to include incoming power lines and switchyard components. The licensee should be cognizant of switchyard components that contribute to the operability of the offsite power systems;

(2) The licensee must ensure offsite circuits' configurations are in accordance with the CNS Technical Specifications, and additionally;

CONTACT: Mohan Thadani, NRR
415-1476

(3) Based on our evaluation, we believe that the licensee inappropriately screened the offsite power systems modifications out of consideration of 10 CFR 50.59 criteria. When changes are considered on the above described equipment, evaluations in accordance with 10 CFR 50.59 need to be performed for the switchyard components described in the USAR, regardless of the ownership and responsibility for the components.

A safety evaluation prepared by the NRR's Division of Engineering supporting the above conclusions is attached.

Docket No. 50-298

Attachment: As stated

cc w/attachment: B. Platchek, RI
V. McCree, RII
G. Grant, RIII

(3) Based on our evaluation, we believe that the licensee inappropriately screened the offsite power systems modifications out of consideration of 10 CFR 50.59 criteria. When changes are considered on the above described equipment, evaluations in accordance with 10 CFR 50.59 need to be performed for the switchyard components described in the USAR, regardless of the ownership and responsibility for the components.

A safety evaluation prepared by the NRR's Division of Engineering supporting the above conclusions is attached.

Docket No. 50-298

Attachment: As stated

cc w/attachment: B. Platchek, RI
V. McCree, RII
G. Grant, RIII

DISTRIBUTION:
NON-PUBLIC/SENSITIVE
PDIV-1 R/F
RdisNrrDlpm (LMarsh/ELeeds)
RidsNrrDe (RBarrett)
RidsNrrDlpmLpdiv (HBerkow)
RidsNrrDlpmLpdiv1 (RGramm)
RidsNrrPMMThadani
RidsNrrLAMMcAllister
RidsOEMailCenter (FCongel)
RJenkins
RidsRgn4MailCenter (KKennedy/SSchwind)
RPulsifer
TSpecht
JLazevnick

*See previous concurrence

ACCESSION NO.: ML031970371 NRR-106

OFFICE	PDIV-1/PM	PDIV-1/LA	OE*	PDIV-1/SC*	PDIV/PD	DLPM/D
NAME	MThadani:sab	MMcAllister	FCongel	RGramm	HBerkow	LMarsh
DATE	7/15/2003	7/15/2003	07/11/03	07/14/03	7/15/2003	7/17/2003

OFFICIAL RECORD COPY

TASK INTERFACE AGREEMENT (TIA) BY THE OFFICE OF NUCLEAR REACTOR REGULATION

AND REGION IV REGARDING EVALUATION OF POTENTIAL UNREVIEWED

SAFETY QUESTIONS ASSOCIATED WITH MODIFICATIONS

MADE TO OFFSITE POWER AT COOPER NUCLEAR STATION

A Region IV memorandum to the Division of Licensing Project Management dated June 26, 2002, requested guidance on the Cooper Nuclear Station's (CNS) application of Section 50.59, "Changes, tests and experiments," of Title 10 of the *Code of Federal Regulations* (10 CFR) regarding several offsite power equipment modifications and control procedure changes. Further clarification was also requested concerning the licensee's definition of the term "circuit" as used in 10 CFR Part 50, Appendix A, General Design Criterion (GDC) -17.

Region IV staff is concerned that proper reviews were not performed in accordance with 10 CFR 50.59 resulting in unanswered safety questions. One possible safety issue is the addition of the 161 kV Auburn line as a separate power source to the startup transformer in addition to the normal switchyard supply. The Auburn line was determined by the licensee to be incapable of accommodating design basis accident loading. Because of this inability, the Auburn line would degrade under loss-of-coolant accident (LOCA) power demands and may trip, thus delaying the re-energization of Class 1E busses from the emergency transformer. In this situation, safe shutdown loads may not start in the allotted time to mitigate core damage. The licensee's position is that the CNS offsite power system responsibility ends at the high voltage side of the startup transformer. Therefore, the licensee believes that the 161 kV Auburn line which is located upstream of that point is not required to be considered under 10 CFR 50.59.

In response to the Region IV staff's request, the following determinations were made concerning 10 CFR 50.59 applicability and usage of the term "circuit" as stated in the TIA:

1. According to 10 CFR 50.59, changes made to the facility as described in the licensee's Updated Safety Analysis Report (USAR) require evaluation. The licensee's USAR (Chapter 8, Section 2, pages 3 - 5) contains a discussion on switchyard components in addition to their startup and emergency transformers. Therefore, switchyard equipment falls under the guidance of 10 CFR 50.59. A number of significant changes were made by the licensee to switchyard components described in the station's USAR. Therefore, 10 CFR 50.59 evaluation applies.

2. CNS believes GDC-17 use of the term "circuit" does not include equipment from the startup and emergency transformers toward the transmission system. Due to this understanding, CNS considers the required two circuit paths as the startup and emergency transformers themselves on down to the Class 1E switchgear. It can be

seen that GDC-17's intent of having two distinct circuits incorporates electrical paths from the network grid itself to the onsite electrical distribution system. This can be found explicitly in paragraph 3 under Criterion 17, 10 CFR Part 50, Appendix A. Here it states that "Electric power from the transmission network to the onsite electric distribution system shall be supplied by two physically independent circuits...." Within the paragraph it further expounds that "A switchyard common to both circuits is acceptable." The term "circuit" implies a path from the incoming transmission lines, through the switchyard, and into the onsite distribution system. This intent can be derived from other documentation as well:

- Standard Review Plan, Section 8.2.I.1 states, "The required minimum of two separate circuits from the transmission network to the onsite distribution system is provided." The circuit is described further as including "switchyard interconnections (breakers and bus arrangements)."

- IEEE Standard 765-1983, Section 4.1 states, "The preferred power supply shall consist of two or more circuits from the transmission system to the Class 1E distribution system." To clarify this, Figures 1 and 2 (a, b, and c) are provided in the Standard and include lines entering the switchyard from the grid, switchyard components, and transformers. IEEE Standard 765-1983 is an industry consensus standard.

- CNS Technical Specification (TS) Bases page B3.8-4 states "Each offsite circuit consists of incoming breaker and disconnect to the respective SSST or ESST, the SSST and ESST transformers, and the respective circuit path including feeder breakers to one of the two 4.16 kV critical buses...." This also identifies switchyard equipment as part of the term "circuit," of which two are required as also noted on the same page.

The NRC staff's evaluation of the offsite power system in its 1973 CNS Licensing Safety Evaluation Report includes a discussion of the 345 kV transmission lines and switchyard. This is consistent with the view, identified above in GDC-17 and related documentation, that the offsite power sources extend to the switchyard and transmission lines.

Additionally, the CNS USAR discusses the importance of electrical path separation on the incoming transmission lines, proceeding through the switchyard, and to the Class 1E switchgear. Limiting the definition of "circuit" solely to the onsite distribution system is not consistent with CNS technical specifications (TSs) and USAR discussed above. Even though a licensee may not be responsible for, or have ownership of, equipment supplying the onsite portions of their circuits, the licensee must still ensure that this equipment configuration is in compliance with TSs for any given plant condition. This may require a cooperative effort with other organizations but still remains the responsibility of the licensee.

Loss of the 345 kV switchyard supply to the 345/161 kV transformer will render the 161 kV offsite circuit inoperable for CNS TS purposes because the Auburn 161 kV line cannot accommodate design basis accident loading. Although the Auburn line is not fully capable, it may still be considered for risk assessment purposes in accordance with 10 CFR 50.65(a)(4); provided the analysis realistically portrays its capability.

In conclusion, redundant paths of power availability are clearly defined under GDC-17 including incoming power lines and switchyard components. The licensee should be cognizant of switchyard components that contribute to operability of the offsite power system. The licensee must ensure offsite circuit configurations are in accordance with TSs and support operability determinations. Additionally, when changes are considered on the above mentioned equipment, evaluation in accordance with 10 CFR 50.59 is invoked due to the presence of switchyard components in the USAR, regardless of equipment ownership or responsibility.

Principal Contributors: T. Specht
J. Lazevnick

Date: July 17, 2003