



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, IL 60532-4352

January 9, 2014

EA-13-171

Mr. Larry Weber  
Senior Vice President and  
Chief Nuclear Officer  
Indiana Michigan Power Company  
Nuclear Generation Group  
One Cook Place  
Bridgman, MI 49106

**SUBJECT:           RESPONSE TO DISPUTED NON-CITED VIOLATION  
DONALD C. COOK NUCLEAR POWER PLANT, UNITS 1 AND 2,  
NRC INSPECTION REPORT 05000315/2013010; 05000316/2013010**

Dear Mr. Weber:

On August 2, 2013, Mr. J. P. Gebbie, Site Vice President, Cook Nuclear Power Plant (CNP) provided a response to a U.S. Nuclear Regulatory Commission (NRC) Inspection Report issued on July 8, 2013, concerning activities conducted at CNP. Specifically, the D. C. Cook letter contested the Non-Cited Violations (NCVs) related to the Mitigating Systems Cornerstone contained in the inspection report, namely NCVs 05000315/2013010-01; 05000316/2013010-01 and 05000315/2013010-02; 05000316/2013010-02, associated with the Failure to Maintain Emergency Operating Procedures for Mitigating the Consequences of a Steam Generator Tube Rupture (SGTR) per Technical Specifications (TS) 5.4.1, "Procedures" and Failure to Enter the Limiting Condition for Operations and Perform Required Actions per TS 3.7.4, "Steam Generator Power Operated Relief Valves (SGPORVs)." By letter dated August 19, 2013, the NRC acknowledged Mr. Gebbie's letter and advised CNP that NRC Staff was evaluating CNP's reply and would inform CNP of the results of NRC's evaluations. Based on an independent review, NRC's Staff determined the Failure to Maintain Emergency Operating Procedures for Mitigating the Consequences of a SGTR per TS 5.4.1, "Procedures" and Failure to Enter the Limiting Condition for Operations and Perform Required Actions per TS 3.7.4, "SG PORVs" violations occurred as stated in the inspection report. The finding's cross-cutting aspect and the NCVs will remain as documented in the inspection report.

In the letter dated August 2, 2013, CNP's staff stated that the NCVs lacked technical justification and is inconsistent with NRC regulations and guidance. Specific bases for CNP's contest of the NCVs included the following:

- 1) "The NCVs are based on an erroneous understanding of CNP's licensing basis. Contrary to the NCVs, CNP's licensing basis assumptions regarding the initial conditions for a SGTR accident have never considered a coincident loss of offsite power (LOOP) involving both units. Further, the NRC Staff's understanding of CNP's

licensing basis underlying the NCVs does not acknowledge docketed correspondence between Indiana & Michigan Power Company (I&M) and NRC Staff supporting I&M's position, does not represent a fair reading of CNP's Updated Final Safety Analysis Report (UFSAR), and is inconsistent with the NRC's current regulatory position regarding the loss of offsite power to non-safety-related auxiliary systems at other multi-unit sites."

- 2) "The NRC Staff has not demonstrated that I&M's understanding of CNP's licensing basis fails to provide adequate protection of public health and safety from either design basis events or beyond-design basis external events. Further, the NRC Staff has not demonstrated that its own position would provide a meaningful improvement in the protection of public health and safety."
- 3) "The NRC Staff's determination that the NCVs represent a more-than-minor performance deficiency with cross-cutting aspects is based on an erroneous understanding of the scope of a LOOP assumed within CNP's design basis SGTR accident analysis, is inconsistent with the NRC staff's statements in docketed correspondence, and is unrepresentative of present licensee performance."

#### NRC Staff's Review:

The NRC staff reviewed the information provided in Mr. Gebbie's letter dated August 2, 2013, to determine not only whether the violations as stated in the inspection report were valid, but also whether the cross-cutting aspect assigned was appropriate. The review was conducted by a staff member independent of the initial inspection effort. The staff member reviewed several documents that are listed in the Enclosure to this letter.

The staff recognized the complicated nature of CNPs' licensing bases. However, after careful consideration of the information you provided, we have concluded the violations occurred as stated in the inspection report. The finding, cross-cutting aspect, and the NCVs will remain as documented in the inspection report. The bases for this determination are briefly described below. For additional details, please see the Enclosure to this letter.

According to the Safety Evaluation Report (SER) for the original Final Safety Analysis Report (FSAR) of CNP issued on September 10, 1973, CNP was designed and constructed to meet the intent of the proposed General Design Criteria (GDC) published on July 11, 1967, and the GDC published in February 1971 and July 7, 1971. There are two significant GDCs associated with the disputed violation. The first is "Sharing of Systems," (GDC 4 in 1967 and GDC 5 in 1971). Both the 1967 and 1971 versions essentially state, "Reactor facilities shall not share structures systems or components unless it is shown their ability to perform their safety functions is not significantly impaired by the sharing."

For the SGPORVs to be operable, air must be supplied to the valves. The compressed air system as described in the original FSAR in Section 9.8.2 is partially a shared system. There are hand wheels on the valves and, at the time of the finding, backup nitrogen bottles could have been manually aligned to supply air pressure to the SGPORVs. Consistent with the TS bases, the SGPORVs are only operable if they can be operated from the control room. The SGPORVs could only be operated from the control room if they were being supplied air from the compressed air system.

The original FSAR stated all the air compressors were supplied with normal and backup emergency power, which was later determined to be not true. The control air compressors supply air to the designated unit only and have a backup emergency power supply. The plant air compressors can share air between units but do **not** have a backup emergency power supply. It is the plant air compressor on the non-affected unit your staff claims credit for during an SGTR accident coincident with a loss of offsite power, should the affected unit's control air compressor fail or be out-of-service for maintenance. This credit is dependent upon the unaffected unit maintaining offsite power; therefore, air and power are shared between units.

The Regulatory Guide 1.81, "Shared Emergency and Shutdown Electric Systems for Multi-Unit Nuclear Power Plant," Revision 1, dated January 1975 describes an NRC-approved method of meeting the requirements of the GDC for sharing systems. Regulatory Position C 2b of Regulatory Guide 1.81 states, "A single failure (a false or spurious accident signal at the system level in the non-accident unit should be considered a single failure) should not preclude the capability to automatically supply minimum engineered safety feature (ESF) loads in any one unit and safely shutdown the remaining unit, assuming a loss of the offsite power." Since the Regulatory Guide is referring to multiple units and the discussion of loss of offsite power (LOOP) is not unit specific, the loss of offsite power is clearly pertaining to **both** units. The current FSAR indicates the plant meets the intent of the GDC for the shared systems; and although the Regulatory Guide is not a requirement, it is useful in assessing the current licensing basis. The regulatory position established in the Regulatory Guide defines what is considered acceptable such that the sharing of systems will not significantly impact their ability to perform their safety functions. The Regulatory Guide provides clear documentation that a LOOP at the site (all units) is required in this position. No additional information you have provided shows that the Agency accepted an alternate solution or method to meet the intent of the GDC. Therefore, it is reasonable to conclude that the original and current licensing basis assume a LOOP for both units during the accident scenario mentioned.

The original FSAR description of the compressed air system with emergency power to all air compressors would clearly meet the intent of the GDC (and Regulatory Guide 1.81) with a loss of offsite power to both units even with one control air compressor on the affected unit out-of-service for maintenance and a failure of the other plant air compressor on the unit. This is what was reviewed and approved in the SER.

The second associated GDC was "Emergency Power for Protection Systems," (GDC 24 in 1967). The 1967 version of GDC 24 stated, "In the event of loss of **all offsite power**, sufficient alternate sources of power shall be provided to permit the required functioning of the protection system." This again clearly implies a loss of offsite power to all units at a site.

Similarly, we have concluded the cross-cutting aspect assigned to the finding remains valid as described below:

"The inspectors determined the cause of this finding involved the cross-cutting area of human performance, the component of decision making, and the aspect of conservative assumptions. [H.1(b)], in that the licensee did not adopt a requirement to demonstrate that the proposed action is safe in order to proceed rather than a requirement that it is unsafe in order to disapprove the action. Specifically, as recent as April 20, 2012, the licensee incorrectly assumed the unaffected unit's plant air system (i.e., not backed by the emergency diesel generators) would be available during the SGTR scenario to supply motive power to the affected unit's SGPORVs. This assumption failed to take into account the licensing basis requirement of considering a SGTR and a loss of offsite power to the station (both units)."

L. Weber

-4-

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and the CNP's August 2, 2013 response, will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Anne T. Boland  
Acting Deputy Regional Administrator

Docket Nos. 50-315; 50-316  
License Nos. DPR-58; DPR-74

Enclosure: Independent Reviewer Assessment of D. C. Cook Contested Violations

cc w/encl: Distribution via ListServ™

## **Independent Reviewer's Assessment of D. C. Cook's Contested Violations**

I have evaluated the information that formed Cook's basis that the conditions described in the inspection report were not within the licensing basis for the D. C. Cook, Units 1 and 2. My conclusions were based on the review of the following documents:

- 1) Letter from G. Shear, NRC, to L. J. Weber, I&M, "Donald C. Cook Nuclear Power Plant, Units 1 and 2, Component Design Basis Inspection, 05000315/2013010; 05000316/2013010," dated July 8, 2013; (ADAMS Accession No. ML13189A243)
- 2) Letter from W. Hodge, I&M, to C. Tilton, NRC, "D. C. Cook CDBI Response to Question 2012-CDBI-298," dated November 15, 2012; (ADAMS Accession No. ML12320A544)
- 3) Letter from J. F. Stang, NRC, to R. P. Powers, I&M, "Donald C. Cook Nuclear Plant, Units 1 and 2 - Issuance of Amendments (TAG Nos. MB0739 and MB0740)," dated October 24, 2001; (ADAMS Accession No. ML12690136)
- 4) Letter from J.F. Stang, NRC to R. P. Powers, I&M, "Donald C. Cook Nuclear Plant, Units 1 and 2 - Request for Additional Information (RAI) Regarding License Amendment Request (TAC NOS. MB0739 and MB0740)," dated May 7, 2001.
- 5) Donald C. Cook Nuclear Plant Updated Final Safety Analysis Report Revision 24, dated March 17, 2012;
- 6) Donald C. Cook Nuclear Plant Final Safety Analysis Report for Units 1 and 2, Revision 0, dated February 2, 1971;
- 7) Letter from K. O'Brien, NRC, to Mr. S. Bahadur, NRC, "Task Interface Agreement - Licensing Basis for Donald C. Cook Nuclear Power Plant, Units 1 and 2, During a Steam Generator Tube Rupture Event Coincident with a Loss of Offsite Power (TIA 2012-11)," dated December 7, 2012. (ADAMS Accession No. ML13011A382)
- 8) Letter from I&M to Ms. Ann Marie Stone and Ms. Caroline Tilton, NRC, "Response to NRC Inspection Report Issued January 11, 2013, Containing the Results of the Component Design Basis Inspection Conducted Between July 23, 2012 and December 3, 2012," dated February 8, 2013.
- 9) Title 10 *Code of Federal Regulations* 50.63, "Loss of All Alternating Current Power."
- 10) Letter from Mr. M. W. Rencheck, I&M, to the NRC Document Control Desk, "Letter C0601- 21, Donald C. Cook Nuclear Plant Units 1 and 2 Response to Request for Additional Information Regarding License Amendment for "Changes in Steam Generator Tube Rupture Analysis Methodology (TAC Nos. MB0739 and MB0740)," dated June 29, 2001, (ADAMS Accession No. ML011860097).
- 11) Letter from A. M. Stone, NRC, to Mr. L. J. Weber, I&M, "D. C. Cook Nuclear Power Plant, Units 1 and 2, Component Design Bases Inspection 05000315/2012007; 05000316/2012007," dated January 11, 2013, (ADAMS Accession No. L13011A401).
- 12) Amendments to Donald C. Cook Nuclear Plant, Final Safety Analysis Report for Units 1 and 2, dated November 11, 1977.

## **Independent Reviewer's Assessment of D. C. Cook's Contested Violations**

- 13) Amendments to the Donald C. Cook Nuclear Plant Final Safety Analysis Report for Units 1 and 2, dated July 1997.
- 14) Letter from Mr. R. P. Powers, I&M, to the NRC Document Control Desk, "Letter C1000-11, Donald C. Cook Nuclear Plant Units 1 and 2 License Amendment Request for Changes in Steam Generator Tube Rupture Analysis Methodology," dated October 24, 2000, (ADAMS Accession No. ML003762982).
- 15) NRC Regulatory Guide 1.70, "Standard Format, and Content of Safety Analysis Reports for Nuclear Power Plants, Revision 3," dated November 1978.
- 16) American Nuclear Society, ANSI/ANS-51.1-1983, "Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants," dated 1983.
- 17) NUREG/CR-6890, "Reevaluation of Station Blackout Risk and Nuclear Power Plants: Analysis of Loss of Offsite Power Events 1986-2004," dated December 2005.
- 18) NRC Order Number EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012.
- 19) NRC Interim Staff Guidance JLD-ISG-2012-01, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events, Revision 0," dated August 29, 2012.
- 20) Nuclear Management and Resources Council (NUMARC) 87-00, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors, Revision 0, dated November 1987.
- 21) Regulatory Guide 1.81, "Shared Emergency and Shutdown Electric Systems for Multi-Unit Nuclear Power Plants," Revision 1, dated January 1976.
- 22) Regulatory Guide 1.155, "Station Blackout," Revision 0, dated August 1988.

The inspection report describes two NCVs of the Donald C. Cook, Units 1 and 2 TS 5.4.1, "Procedures," and TS 3.7.4, "Steam Generator Power Operated Relief Valves," for the failure to implement design measures which were consistent with the licensing bases for a Steam Generator Tube Rupture (SGTR) concurrent with a LOOP at the station. Specifically, the licensee's emergency operating procedures (EOPs) 1(2) OHP-4023-E-3, "Steam Generator Tube Rupture," failed to provide adequate actions to mitigate the consequences of an SGTR, coincident with a LOOP, in sufficient time to prevent overfilling the ruptured steam generator. Additionally, the licensee failed to declare the affected unit's SG PORVs inoperable and complete the required actions when the non-safety-related control air compressor (CAC) was made unavailable and incapable of providing its required support function. With the unit's CAC unavailable, the SG PORVs would not be capable of being remotely operated from the control room during an SGTR concurrent with the LOOP on both units. The licensee entered this issue into its Corrective Action Program and completed modifications to establish an automatic source of nitrogen as another motive force to support SG PORV operability. The NRC has determined that the LOOP affects both units at CNP. The CNP staff contends that the licensing basis at CNP required that the plant design only take into account a LOOP on the unit affected by the SGTR. Under that assumption a non-safety-related air compressor,

## **Independent Reviewer's Assessment of D. C. Cook's Contested Violations**

from the non-affected unit, with no source of emergency backup power, your staff claims is credited with supplying the air necessary to operate the SG PORVs on the affected unit.

The arguments as to why CNP staff consider the above to be true, as described in Mr. Gebbie's letter dated August 2, 2013, the NRC's response to those arguments are listed below.

- 1) *The NCVs were based on an erroneous understanding of CNP's licensing basis. Contrary to the NCVs, CNP's licensing basis assumptions regarding the initial conditions for an SGTR accident have never considered a coincident LOOP involving both units. Further, the NRC staffs understanding of CNP's licensing basis underlying the NCVs does not acknowledge docketed correspondence between I&M and NRC staff supporting IM's position, does not represent a fair reading of CNP's Updated Final Safety Analysis Report (UFSAR), and is inconsistent with the NRC's current regulatory position regarding the loss of offsite power to non-safety related auxiliary systems at other multi-unit sites.*

The Cook Nuclear Plant's staff contend that CNP's original licensing basis has from the beginning assumed that an SGTR Accident would involve a coincident, single unit LOOP; and explicitly assumed that SG PORVs would remain available throughout an SGTR accident.

The NRC staff's review of the original FSAR text, dated February 2, 1971, showed that it did not explicitly state whether or not a LOOP, described in any part of the FSAR, was single or dual unit. The Region III staff's review of the original licensing basis documentation clearly showed that the intent of the original license review was to determine that either of the units was safe to operate given that an accident occurred on one unit and a loss of offsite power occurred to both units simultaneously.

The Safety Evaluation Report (SER) for the original CNP FSAR was issued on September 10, 1973. Section 3.1 discussed conformance with the Atomic Energy Commission (AEC) General Design Criteria (GDC). The SER stated that the Cook plant was designed and constructed to meet the intent of the proposed General Design Criteria, published July 11, 1967, that the Final Safety Analysis Report had been filed with the Commission when revisions of the General Design Criteria were published in February 1971 and July 7, 1971. The SER stated, "We reviewed the plant design against the current General Design Criteria and we believe that the design meets these criteria."

There are two significant General Design Criteria associated with the disputed violation. The first is "Sharing of Systems," (GDC 4 in 1967 and GDC 5 in 1971). The 1967 version states, "Reactor facilities shall not share systems or components unless it is shown that safety is not impaired by the sharing." The 1971 version states, "Structures, systems, and components important to safety shall not be shared between nuclear power units unless it is shown that their ability to perform their safety functions is not significantly impaired by the sharing."

For the SG PORVs to be operable air must be supplied to the valves. The compressed air system as described in the original FSAR in Section 9.8.2 is partially a shared system. There are hand wheels on the valves and, at the time of the finding, backup nitrogen bottles could have been manually aligned to supply pressure to the SG PORVs. As described the Technical Specification Bases (TS B) 3.7.4, "An SG PORV is considered operable when it is capable manually from the control room, of fully opening and closing. In addition, Regulatory Issue Summary (RIS) 2005-20, Revision 1, "Revision to NRC Inspection Manual Part 9900 Technical Guidance, "Operability Determinations and Functionality Assessments for Resolution of Degraded or Nonconforming

## Independent Reviewer's Assessment of D. C. Cook's Contested Violations

Conditions Adverse to Quality or Safety," Section C.9, states, "The definition of operability assumes that a structure, system or component described in TSs can perform its specified safety function when all necessary support systems are capable of performing their related support functions."

The SG PORVs could only be operated from the control room if they were being supplied air from the air compressors. This makes the air compressors a support system. Therefore, since the air compressors are a support system for the SG PORVs, at the time the finding was identified, the SG PORVs would be inoperable if air pressure was lost to the valves due to the failure of the compressed air system.

The original version of the FSAR, reviewed by the SER listed above, stated that all the air compressors were supplied with normal and backup emergency power. This was later determined to be not true. The control air compressors supply air to the designated unit only and have a backup emergency power supply, and the plant air compressors can share air between units but do **not** have a backup emergency power supply. It is the plant's air compressor on the non-affected unit that your staff claims credit for during an SGTR accident coincident with a loss of offsite power should the affected unit's control air compressor fail or be out-of-service due to maintenance. This credit is dependent upon the unaffected unit maintaining offsite power. Therefore, the plant air compressor on the non-affected unit shares air and power with the affected unit.

Regulatory Guide 1.81, "Shared Emergency and Shutdown Electric Systems for Multi-Unit Nuclear Power Plants," Revision 1, dated January 1975, describes an NRC-approved method of meeting the requirements of the GDC for sharing systems. Regulatory Position C 2b of Regulatory Guide 1.81, states, "A single failure (a false or spurious accident signal at the system level in the non-accident unit should be considered a single failure) should not preclude the capability to automatically supply minimum ESF loads in any one unit and safely shutdown the remaining unit, assuming a loss of offsite power." This clearly implies a loss of offsite power to all units at a site.

The original docketed description of the compressed air system with emergency power to all air compressors would clearly meet the intent of the GDC (and Regulatory Guide 1.81) with a loss of offsite power to both units even with one air compressor on the affected unit out-of-service for maintenance and a failure of the other air compressor on the unit. This is what was reviewed and this is what was approved.

The second associated GDC was "Emergency Power for Protection Systems," (GDC 24 in 1967). The 1967 version of GDC 24 stated, "In the event of loss of **all offsite power**, sufficient alternate sources of power shall be provided to permit the required functioning of the protection system." This again clearly implies a loss of offsite power to all units at a site.

In addition, although the Region III staff's review of the original FSAR text, dated February 2, 1971, showed that it did not explicitly state whether or not a LOOP was single or dual unit, but it did explicitly state that an SGTR coincident with a Station Blackout was part of the licensing basis.

"In the event of a co-incident station blackout, the steam dump valves would automatically close to protect the condenser. The steam generator pressure would rapidly increase resulting in steam discharge to the atmosphere through the steam generator safety and/or power operated relief valves."



## Independent Reviewer's Assessment of D. C. Cook's Contested Violations

This was re-emphasized in accordance with your letter dated August 2, 2013, that in 1997 you changed your UFSAR to read:

"In the event of a co-incident station blackout, the steam dump valves would automatically close to protect the condenser. The steam generator pressure would rapidly increase resulting in steam discharge to the atmosphere through the steam generator power operated relief valves."

The original version of the FSAR was silent in Section 8 about Station Blackout Analysis. However, in July 1988 the *Code of Federal Regulations* was amended to include a new Section 50.63, entitled "Loss of All Alternating Current Power," (Station Blackout (SBO)). The SBO Rule required that licensees submit information as defined in 10 CFR 50.63 to provide a plan and schedule for conformance to the SBO Rule. In response to the SBO Rule requirements, Revision 23 of the UFSAR states in Section 8.7.2 that the operation of the compressed gas system was evaluated using the guidance in NUMARC 87-00, "Guidelines and Technical Bases For NUMARC Initiatives Addressing Station Blackout At Light Water Reactors," except where Regulatory Guide 1.155 took precedence. Page 2 - 2 of NUMARC 87-00, Paragraph 2.3.1 states:

*The LOOP Is Assumed To Affect All Units At A Plant Site. At a multi-unit site with normally dedicated emergency AC power sources, station blackout is assumed to occur at only one unit. At multi-unit sites with normally shared emergency AC power sources, where the combination of AC sources exceeds the minimum redundancy requirements for normal safe shutdown (non-DBA) of all units, the remaining emergency AC power sources may be used as alternative AC power sources provided they meet the alternate AC power criteria in Appendix B. If there are no remaining emergency AC power sources in excess of the minimum redundancy requirements, station blackout must be assumed to occur at all the units.*

Paragraph 8.7.2.3, of Revision 23, UFSAR, "Evaluation of Availability Compressed Air," states that, "the only air-operated valves relied upon to cope with a SBO are the Steam Generator Power Operated Relief Valves. Steam Generator PORVs fail closed on loss of air, and are provided with backup nitrogen bottles and equipped with hand wheels for manual operation under plant procedures." **There is no mention of air supplied from the unaffected unit.**

In addition, your letter dated August 2, 2013, contends that the original FSAR omits any mention of the possibility that compressed air system components could be unavailable as a result of a single failure or maintenance as it prefaced its elaboration of the sequence of events initiated by an SGTR event by stating that its analysis assumed normal operation of the various plant control systems. **This statement supports the violation regarding entering the Technical Specifications if the control air compressor is made unavailable.** If the FSAR omits any mention of the possibility that compressed air system components could be unavailable as a result of a single failure or maintenance that would imply that taking the control air compressor out-of-service would be outside your licensing basis, which would make the SG PORVs inoperable.

The CNP staff contend that the NRC staff reviewed and endorsed CNP's design basis assumptions for SGTR accidents in docketed correspondence. The CNP staff cited the safety evaluation written in response to CNP's license amendment request (LAR) from October 24, 2000, that I&M submitted to revise the methodology used in designing CNP Emergency Operating Procedures (EOPs) during a design basis SGTR accident. In that LAR, the CNP staff proposed to incorporate a supplemental methodology into the analysis of steam generator overfill following an SGTR.

## **Independent Reviewer's Assessment of D. C. Cook's Contested Violations**

The CNP staff planned to use the results from the analysis to determine the time available for operator actions to prevent overfills and to revise the plant EOPs. The CNP staff contend that language within the LAR supported CNP's earlier contentions about SG PORVs and LOOP during an SGTR.

With the exception of the use of the LOFTTR2 computer code the LAR was rejected by the NRC because I&M's method of implementation of WCAP-10698-PA did not satisfy the WCAP safety evaluation requirements. The LOFTTR2 computer code modeled when operators would open or close SG PORVs assuming that action could be performed. The support systems for the PORVs were not modeled within the code. The statement that the NRC-approved "the LOFTTR2 computer code and the plant specific current licensing basis assumptions," is in the safety evaluation (SE); however, as stated before a single or dual unit LOOP was not explicitly specified

As stated previously the original licensing basis for CNP was a co-incident Station Blackout with the SGTR, which per NUMARC 87-00 required an assumption of a LOOP affecting both units.

The CNP staff attempted to change the licensing basis for CNP when Safety Screening 2001-0017-00 was signed on February 19, 2001. This safety screening changed the wording in several places in the UFSAR from Station Blackout to LOOP. In Section 14.2.4, Steam Generator Tube Rupture was one of those sections. CNP staff sent a UFSAR update to the NRC on June 21, 2001, in accordance with 10 CFR 50.71(e). That update did not contain a description of the change signed on February 19, 2001. Therefore, the NRC staff understood the comment in the LAR SE that the use of the LOFTTR2 code was approved and the plant specific current licensing basis assumptions, to refer to a Station Blackout and consequently loss of power to both units.

The CNP staff also contend that the NRC staff explicitly acknowledged that CNP's licensing basis assumptions credited certain systems and components, including the SG PORVs and their control air appurtenances, as remaining available for mitigation of an SGTR accident. Nowhere in CNP's licensing basis is credit explicitly given to the plant air compressor from the non-affected unit for supplying air to the affected unit during an SGTR and a loss of offsite power. The CNP staff was asked in a letter from Mr. J.F. Stang, NRC to Mr. R. P. Powers, I&M, "Donald C. Cook Nuclear Power Plant, Units 1 and 2 - Request For Additional Information (RAI) Regarding License Amendment Request (TAC NOs. MB0739 and MB0740)," dated May 7, 2001, to provide:

"A list of systems, components and instruments which are credited for accident mitigation in the plant specific SGTR EOP(s). Specify whether each system and component specified is safety grade. For primary and secondary PORVs and control valves specify the valve motive power and state whether the motive power and valve controls are safety grade. For non-safety grade systems and components state whether safety grade backups are available which can be expected to function or provide the desired information within a time period compatible with prevention of SGTR overfill or justify that non-safety grade components can be utilized for the design basis event."

The response to the above request for the additional information did not state that the non-affected unit plant air compressor was credited. The response did not state that any air compressor was credited. The response stated that the SG PORVs were credited and had non-safety-related appurtenances. CNP's letter dated August 2, 2013, expands the term appurtenances to mean the plant air compressors from the other Unit in order to maintain the functionality of the SG PORVs.

## **Independent Reviewer's Assessment of D. C. Cook's Contested Violations**

The CNP staff contend that a comparison of the different contexts in which the term LOOP appears with CNP's SGTR and Loss of All AC Power to the Plant Auxiliaries accident analyses does not support the NRC's generic interpretation of the term. The NRC staff do not agree that the text in UFSAR, Revision 23, in Section 14.1.12, Loss of All AC Power to the Plant Auxiliaries," addressed a LOOP in only one unit. The UFSAR states:

"A complete loss of all (non-emergency) AC power (e.g., offsite power) may result in the loss of all power to the plant auxiliaries, i.e., the RCPs, condensate pumps, etc. The loss of power may be caused by **a complete loss of the offsite grid** accompanied by **a** turbine generator trip at the **station**, or by a loss of the on-site AC distribution system."

A complete loss of the offsite grid is not a single unit event. The words, "**a** turbine generator trip" implies that the specific UFSAR is talking about a specific unit. However, there are two separate Sections of 14.1.12, one for each unit. The context that each of them individually refers to a single unit does not preclude the simultaneous loss of offsite power to both units.

The CNP staff contend that the NRC staff's position was not supported by the NRC and industry guidance regarding the form and content of CNP's UFSAR. CNP staff's argument stated that guidance in ANSI/ANS-51.1-1982, "Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants," dated 1983, identified the threshold for consideration of transient events and accidents within an FSAR required a minimal best estimate frequency of occurrence of  $\geq 1.0E-6/\text{yr}$ . Then CNP staff stated that using the D. C. Cook Nuclear Power Plant Standardized Plant Analysis Risk (SPAR) an SGTR with multi-unit LOOP obtained a value of  $2.12E-6/\text{yr}$ , which is greater than the ANS threshold. CNP staff continued by stating informal calculations incorporating more recent industry data on the frequency of multi-unit LOOPS provided more reasons to conclude that a multi-unit LOOP is too remote an event to be considered in CNP's design basis SGTR.

NRC staff determined these arguments to be irrelevant. The guidance discussed in ANSI/ANS-51.1-1982 was not published until eleven years after CNP Unit 1 was licensed. In addition, NRC staff determined that the SPAR model calculation result supported the industry guidance provided by ANSI/ANS-51.1-1982. However, the CNP staff's statement that other informal calculations provided different results was not supported by information about the assumptions used or the calculations performed that could be reviewed by the NRC; and therefore, were discounted.

The CNP staff also presented risk numbers for informal calculations performed for an SGTR coincident with a multi-unit loss of offsite power coincident with a control air compressor out-of-service. In addition to the previous statement about the relevance of informal calculation results for which the NRC has not been given the assumptions and actual calculations, NRC staff specifically disagreed with CNP staff's analysis of using a frequency of occurrence for a multi-unit LOOP in combination with a control air compressor out-of-service for maintenance to state that the meaning of a LOOP was inconsistent with the structure of the UFSAR. Having a control air compressor out-of-service is not part of the initial assumptions of the SGTR accident. Having a control air compressor out-of-service is, however, a matter of operability regarding the SG PORVs. Risk-based conclusions in regard to operability were inappropriate in this context. The NRC Inspection Manual Technical Guidance Part 9900, "Operability Determinations, and Functionality Assessments for Resolution of Degraded or Non-conforming Conditions Adverse to Quality or Safety," Paragraph C.6, states:

## **Independent Reviewer's Assessment of D. C. Cook's Contested Violations**

Probabilistic risk-assessment is a valuable tool for evaluating accident scenarios because it can consider the probabilities of occurrence of accidents or external events. Nevertheless, the definition of operability is that the SSC must be capable of performing its specified safety function or functions, which inherently assumes that the event occurs and that the safety function or functions can be performed. Therefore, the use of PRA or probabilities of occurrences of accidents or external events is not consistent with the assumption that the event occurs, and is not acceptable for making operability decisions.

Mr. Gebbie's response dated August 2, 2013, stated that the NRC staff explicitly endorsed within the Safety Evaluation (SE) attached to the Letter from Mr. J. F. Stang, NRC, to Mr. R. P. Powers, IM, "Donald C. Cook Nuclear Power Plant, Units 1 and 2 – Issuance of Amendments, (TAG Nos. MB0739 and MB0740)," dated October 24, 2001, the vague references to control air appurtenances as an extension to credit the other unit's plant air compressors. The Region III staff determined that this was an inaccurate assessment of the wording of the SE. The SE stated that the staff concluded that the licensing basis SGTR analysis did credit limited use of non-safety grade equipment for mitigating the SGTR.

The CNP staff also contend that because Unit 1 was licensed in 1974 and Unit 2 was licensed in 1977 the SGTR accident analysis within CNP's original licensing basis did not, "as a practical matter," assume a multi-unit LOOP. The NRC interpreted this to mean that because there was no licensed second unit a multi-unit LOOP was not assessed. However, the original FSAR stated that the compressed gas system was a shared system. If the compressed air is shared and taken credit for then the power that drives the air compressor is also shared.

The CNP staff contend that other licensees of the same vintage assume only a single unit LOOP during an SGTR. The Region III staff contacted the licensing departments at Point Beach and Prairie Island. The Point Beach Nuclear Plant does assume a dual unit loss of offsite power and Prairie Island was not specific as to whether it was a single or dual unit LOOP but the Region III staff was informed by the licensing department staff that no credit was taken for equipment from the other unit during an SGTR coincident with a LOOP.

Finally, CNP staff contend that the Commission's current regulations and guidance governing the availability of offsite power reflect the unit-specific approach to electric system design within licensing basis accident assumptions at CNP and other similarly-situated facilities. CNP staff contends that the Station Blackout Rule is unit-specific in its approach to the availability of AC power, including offsite power.

First, as mentioned earlier, NUMARC 87-00 required the initial assumption that the LOOP affected all units at a multi-unit site. Second, Regulatory Guide 1.155, "Station Blackout," stated as a minimum a grid under-voltage and collapse should be considered as a potential loss of offsite power. A grid collapse is not a single unit event.

- 2) "The NRC staff has not demonstrated that I&M's understanding of CNP's licensing basis fails to provide adequate protection of public health and safety from either design basis events or beyond-design basis external events. Further, the NRC staff has not demonstrated that its own position would provide a meaningful improvement in the protection of public health and safety."

## **Independent Reviewer's Assessment of D. C. Cook's Contested Violations**

The CNP staff contend that the NRC staff has not demonstrated that its position would result in any meaningful contribution to adequate protection of the public health and safety from design basis SGTR accidents at CNP. CNP staff support this supposition with a probabilistic risk discussion.

However, the issues at-hand are one of operability of the SG PORVs when the control air compressor is out-of-service, and whether the emergency operating procedures were adequate to return the SG PORVs to an operable status in the event of an SGTR coincident with a loss of offsite power. Therefore, since this issue is predominantly an operability issue, a discussion of adequate protection is moot.

- 3) "The NRC's staff determination that the NCV represent a more-than-minor performance deficiency with cross-cutting aspects is based on an erroneous understanding of the scope of a LOOP assumed within CNP's design basis SGTR accident analysis, is inconsistent with the NRC staffs statements in docketed correspondence, and is unrepresentative of present licensee performance."

Nowhere in Mr. Gebbie's letter does he contend that the Non-Cited Violations documented in Inspection Report 05000315/2013-010, are not more than minor. Your contention is whether the violations were valid, which has already been discussed, and whether a Cross-Cutting Issue is valid. CNP staff contend that, "the NRC staff nowhere explains how IMs requirements were inconsistent with Reactor Safety and Public Health." Per Inspection Manual Chapter 0310, "Components Within The Cross-Cutting Areas," A Cross-Cutting Aspect is, "A performance characteristic of a finding that is the most significant causal factor of the performance deficiency." The Cross-Cutting Aspect does not discuss the safety significance of a performance deficiency.

Finally, the CNP staff contend the fact that the performance deficiency is more than three years old and not reflective of present performance. Mr. Gebbie correctly quotes part of Inspection Manual Chapter 0612, "Power Reactor Inspection Reports." However, the whole quote is:

"The performance characteristic associated with the potential cross-cutting aspect is reflective of present performance if the performance deficiency (not the event or condition resulting from the performance deficiency) is recent (i.e., nominally within the last three years). In some rare or unusual cases, other considerations can be applied to determine if the cross-cutting aspect is reflective of present performance.

If the performance deficiency occurred more than three years ago, but the performance characteristic has not been corrected or eliminated, the inspector can conclude that the cross-cutting aspect is reflective of present performance.

If the performance deficiency occurred within the last three years, but the performance characteristic has since been corrected or eliminated, the inspector can conclude that the cross-cutting aspect is not reflective of present performance.

Corrected or eliminated means that the performance deficiency would not likely occur today under similar circumstances. In performing this evaluation, inspectors should consider both changes made to establish licensee programs and processes since the performance deficiency occurred and any recent examples of improved performance."

## **Independent Reviewer's Assessment of D. C. Cook's Contested Violations**

The CNP staff contend that the NRC did not justify why the cross-cutting aspect is rare and unusual. The NRC expects that not correcting or eliminating a performance deficiency in less than three years is rare and unusual. As stated above corrected or eliminated means that the performance deficiency would likely not occur today. The fact that the licensing basis is being discussed in this letter demonstrates that the performance deficiency was still occurring at the time of the finding.

### **NRC Conclusion:**

The NRC staff concluded that the violations and the associated cross-cutting aspect documented in NRC Inspection Report 05000315; 05000316/2013-010 are valid. Specifically, as recent as April 20, 2012, (the last time relevant EOPs were revised) the licensee incorrectly assumed the unaffected unit's plant air system (i.e., not backed by the emergency diesel generators) would be available during the SGTR scenario to supply motive power to the affected unit's SGPORVs.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and the CNP's August 2, 2013 response, will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Anne T. Boland  
Acting Deputy Regional Administrator

Docket Nos. 50-315; 50-316  
License Nos. DPR-58; DPR-74

Enclosure: Independent Reviewer's Assessment of D. C. Cook's Contested Violations

cc w/encl: Distribution via ListServ™

**DISTRIBUTION:**

Brett Rini  
RidsNrrDorLp3-1 Resource  
RidsNrrPMDCCook Resource  
RidsNrrDirslrib Resource  
Cynthia Pederson  
Anne Boland  
Steven Orth

Allan Barker  
Carole Ariano  
Linda Linn  
DRPIII  
DRSIII  
Patricia Buckley  
Tammy Tomczak  
[ROPreports.Resource@nrc.gov](mailto:ROPreports.Resource@nrc.gov)

See previous concurrence

DOCUMENT NAME:G:\DRSIII\DRS\DCCOOK Response to Disputed Violation 2013 010 BJ.docx

Publicly Available       Non-Publicly Available       Sensitive       Non-Sensitive

To receive a copy of this document, indicate in the concurrence box "C" = Copy without attach/encl "E" = Copy with attach/encl "N" = No copy

OFFICE	RIII	DRS	RIII	DRP	RIII	DRP	RIII	DRS
NAME	BJose:ls		CPhillips		JBenjamin		JGiessner for GShear	
DATE	12/09/13		12/09/13		12/10/13		12/31/13	
OFFICE	RIII	EICS	RIII via email	OE	RIII		RIII	
NAME	SOrth		LCasey for Zimmerman		ATBoland			
DATE	12/30/13		12/23/13		01/09/14			

**OFFICIAL RECORD COPY**