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AEP-NRC-2015-62
10 CFR 50.90

Docket Nos. 50-315

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Donald C. Cook Nuclear Plant Unit 1
Exigent License Amendment Request Regarding Technical Specification 3.3.2,
Engineered Safety Feature Actuation System (ESFAS) Instrumentation

References:

1. U. S. Nuclear Regulatory Commission Information Notice 2015-05, "Inoperability of Auxiliary and Emergency Feedwater Auto-Start Circuits on Loss of Main Feedwater Pumps," dated May 12, 2015, ADAMS Accession Number ML15008A493.

By Reference 1 the U. S. Nuclear Regulatory Commission (NRC) informed Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant (CNP) Unit 1, of several instances between 2006 and 2012 where licensees operated their main feedwater (MFW) systems in such a manner that the automatic initiation of auxiliary or emergency feedwater on loss of all MFW pumps was disabled. Upon review of Reference 1, I&M determined that the CNP design and operation of the CNP MFW pumps has resulted in conditions similar to those described in Reference 1. Additionally, I&M determined that due to the design of the Unit 1 CNP MFW pump trip channels and the MFW pump operational requirements for startup and shutdown of a MFW pump, there is no corresponding provision in the CNP Technical Specifications (TS) allowing for the normal startup and shutdown of a MFW pump. This condition has been entered in CNP's corrective action program to evaluate past compliance with the Unit 1 TS.

Pursuant to 10 CFR 50.90, I&M, the licensee for CNP Unit 1, requests an amendment to the Appendix A TS for Renewed Facility Operating License DPR-58. The proposed amendment would revise TS 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," to add a new Condition for one or more inoperable Required Channels, per MFW pump, for MFW pump trips.

The current TS Condition in TS 3.3.2, "ESFAS Instrumentation," for inoperable Required Channels for MFW pump trips is Condition B which allows for only one required channel to be inoperable. TS 3.3.2 does not have a Condition with a provision for two required channels to be inoperable at the same time, which is the case for the normal start up and shutdown of CNP Unit 1 MFW pumps and during post maintenance testing for some types of maintenance. Therefore, an entry into TS Limiting Condition of Operation (LCO) 3.0.3 is required unnecessarily.

I&M has reviewed the CNP Unit 2 MFW pumps and Unit 2 TS 3.3.2 and has determined that the design and operational requirements for the Unit 2 MFW pumps are provided for in the Unit 2 TS. The design for Unit 2 has only one channel per MFW pump and the TS requires only one channel per MFW pump which is appropriately addressed by Unit 2 TS 3.3.2, Condition B.

I&M has determined that the safety function of the ESFAS Instrumentation will continue to be met with a Condition that allows for inoperability of two required trip channels for a MFW pump. The automatic initiation of the auxiliary feedwater system does not credit the MFW pump trip Function for design basis accidents (DBA) and transients that result in a loss of MFW. The MFW pump trip Function is an anticipatory Function. Other Functions are credited for the DBAs and transients that result in a loss of MFW. I&M is therefore requesting a change to TS 3.3.2 that would add a new Condition which allows for one or more required trip Channels to be inoperable for a MFW pump. Since the primary success path for accident mitigation is provided by SG low-low level signals, loss of both anticipatory trip channels does not place the plant in an unanalyzed condition and; therefore, the plant should not be required to enter TS LCO 3.0.3.

I&M is requesting that the proposed change be approved on an exigent basis in accordance with 10 CFR 50.91(6) because failure to issue the amendment in a timely manner would result in the delayed startup of Unit 1 following the current Unit 1 forced maintenance outage. Unit 1 is currently shutdown due to TS Required Action 3.8.1.B.5, which required that the unit be shutdown due to an inoperable emergency diesel generator (EDG) which experienced a bearing failure during a post maintenance test run following extensive maintenance on the EDG. The current schedule to return Unit 1 to service has Unit 1 startup scheduled for July 12, 2015. This does not allow time for the 30-day public comment period specified in 10 CFR 50.91(a)(2)(ii) prior to issuance of a normal license amendment. The EDG bearing failure that resulted in the shutdown condition of Unit 1 could not have been reasonably foreseen. The operating limitation of the Unit 1 TS has existed since initial plant operation and was only recently identified through the issuance of Reference 1 and could not have been reasonably foreseen. Therefore, I&M could not have avoided the situation that has resulted in the need for an exigent amendment.


I&M requests approval of this proposed license amendment prior to MODE 2 entry during the restart of Unit 1 from the current forced outage. Entry into MODE 2 is scheduled to occur on July 12, 2015. I&M further requests that the license amendment be made effective upon NRC issuance to be implemented within 30 days.

Enclosure 1 to this letter provides an affirmation statement pertaining to the proposed amendment. Enclosure 2 provides I&M's evaluation of the proposed TS change and the basis for requesting exigent approval. Enclosure 3 to this letter provides Unit 1 TS pages marked to show the proposed changes. Enclosure 4 to this letter provides Unit 1 TS Bases pages marked to show the changes that will be made upon implementation of the proposed amendment and are for informational purposes only. New clean Unit 1 TS pages with proposed changes incorporated will be provided to the NRC Licensing Project Manager when requested. The TS Bases changes will be made in accordance with the CNP TS Bases Control Program.

Copies of this letter and its enclosures are being transmitted to the Michigan Public Service Commission and Michigan Department of Environmental Quality, in accordance with the requirements of 10 CFR 50.91.

There are no new regulatory commitments in this letter. Should you have any questions, please contact Mr. Michael K. Scarpello, Regulatory Affairs Manager, at (269) 466-2649.

Sincerely,



Joel P. Gebbie
Site Vice President

HLK/dmb

Enclosures:

1. Affirmation
2. Evaluation of Proposed Exigent License Amendment Request Regarding Technical Specification 3.3.2, Engineered Safety Feature Actuation System (ESFAS) Instrumentation
3. Donald C. Cook Nuclear Plant Unit 1 Technical Specification Pages Marked to Show Proposed Changes
4. Donald C. Cook Nuclear Plant Unit 1 Technical Specification Bases Pages Marked To Show Proposed Changes

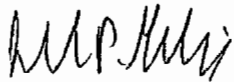
c: T. A. Beltz, NRC, Washington, D.C.
A. W. Dietrich, NRC, Washington, D.C.
J. T. King – MPSC
MDEQ – RMD/RPS
NRC Resident Inspector
C. D. Pederson, NRC Region III
A. J. Williamson, AEP Ft. Wayne, w/o enclosures

Enclosure 1 to AEP-NRC-2015-62

AFFIRMATION

I, Joel P. Gebbie, being duly sworn, state that I am Site Vice President of Indiana Michigan Power Company (I&M), that I am authorized to sign and file this request with the U. S. Nuclear Regulatory Commission on behalf of I&M, and that the statements made and the matters set forth herein pertaining to I&M are true and correct to the best of my knowledge, information, and belief.

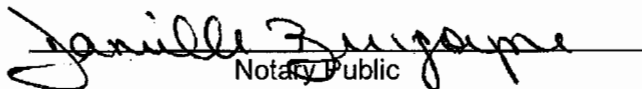
Indiana Michigan Power Company



Joel P. Gebbie
Site Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 29 DAY OF June, 2015


Notary Public

My Commission Expires 04-04-2018

DANIELLE BURGOYNE
Notary Public, State of Michigan
County of Berrien
My Commission Expires 04-04-2018
Acting in the County of Berrien

Enclosure 2 to AEP-NRC-2015-62

Evaluation of Proposed Exigent License Amendment Request Regarding Technical Specification 3.3.2, Engineered Safety Feature Actuation System Instrumentation

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1.0 SUMMARY DESCRIPTION

Pursuant to 10 CFR 50.90, Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant (CNP) Unit 1, proposes to amend the Appendix A TS to Facility Operating License DPR-58. I&M proposes to revise TS 3.3.2, "ESFAS Instrumentation," to add a new Condition for one or more inoperable Required Channels for main feedwater (MFW) pump trips, change Table 3.3.2-1 to add a footnote to the Applicable Mode Column for Mode 2, and to reflect the new Condition, and renumber some existing Conditions.

U. S. Nuclear Regulatory Commission (NRC) issued Information Notice (IN) 2015-05, "Inoperability of Auxiliary and Emergency Feedwater Auto-Start Circuits on Loss of Main Feedwater Pumps," dated May 12, 2015. IN 2015-05 describes several instances between 2006 and 2012 where licensees operated their MFW systems in such a manner that the automatic initiation of auxiliary or emergency feedwater on loss of all MFW pumps was disabled. I&M evaluated IN 2015-05 as an industry operating experience evaluation and on June 18, 2015, determined that the design and operation of the CNP MFW pumps has resulted in conditions similar to those described in IN 2015-05. Additionally, I&M determined that due to the design of the Unit 1 CNP MFW pump trip channels and the MFW pump operational requirements for startup and shutdown of a MFW pump, there is no corresponding provision in the CNP TS allowing for the normal startup and shutdown of a MFW pump, therefore requiring an unnecessary entry into TS Limiting Condition of Operation (LCO) 3.0.3. This condition has been entered in CNP's corrective action program to evaluate past compliance with the Unit 1 TS.

I&M is requesting that the proposed change be approved on an exigent basis in accordance with 10 CFR 50.91(6) because failure to issue the amendment in a timely manner would result in the delayed startup of Unit 1 following the current Unit 1 forced maintenance outage. I&M requests approval of this proposed license amendment prior to MODE 2 entry during the restart of Unit 1 from the current forced outage. Entry into MODE 2 is scheduled to occur on July 12, 2015.

2.0 DETAILED DESCRIPTION

2.1 Proposed Change

The Auxiliary Feedwater (AFW) auto-start function on a Trip of all MFW pumps is an anticipatory function in that it provides early actuation of the AFW system to mitigate the consequences of a loss of normal feedwater. Additionally, the current TS requires that this function be operable in Mode 2 prior to the availability of sufficient feedwater demand to run a MFW pump.

(1) I&M proposes adding the following new TS 3.3.2 Condition H:

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. One or more MFW Pump trip channel(s) inoperable.	<p>-----NOTE----- Two channels on one MFW pump may be inoperable for up to 4 hours during the process of removing the pump from service or placing the pump in service. -----</p> <p>H.1 Restore channel(s) to OPERABLE status.</p>	48 hours

To reflect the new Condition H, Table 3.3.2-1, Function 6.g., will have the Conditions column changed from B to H. Additionally, the current Conditions H through K will be renumbered to be Conditions I through L and the renumber of Condition I will be changed to reflect Condition H for Function 6.g.

(2) I&M proposes to change Table 3.3.2-1, Function 6.g. to add the following footnote to the Mode 2 Applicability:

"When one or more Main Feedwater pump(s) are supplying feedwater to steam generators."

Enclosure 3 to this letter provides the Unit 1 TS pages marked to show proposed changes. New text on these pages is marked with a single-line border. New clean Unit 1 TS pages with proposed changes incorporated will be provided to the NRC Licensing Project Manager when requested. Enclosure 4 to this letter provides the Unit 1 TS Bases pages marked to show proposed changes. The TS Bases are provided for informational purposes. The TS Bases changes will be made in accordance with the CNP TS Bases Control Program.

2.2 Condition Being Resolved

The current CNP Unit 1 TS does not have provisions for the normal power operation and maintenance operation of the MFW pumps that reflects their design of operation.

2.3 Reason for Requesting the Amendment

Reason for Requesting Amendment:

To establish a TS Condition to permit operation of the MFW pumps as designed for normal operations of startup and shutdown of the MFW pumps and some post maintenance testing

operation following some normal maintenance activities. An additional reason is to clarify the TS Mode 2 applicability of the MFW trip Function.

Reason that the Amendment is Requested on an Exigent Basis:

I&M is requesting approval of the proposed TS change on an exigent basis as allowed by 10 CFR 50.91(a)(6). The regulation at 10 CFR 50.91(a)(6)(vi) requires that a licensee seeking approval of an amendment on an exigent basis explain the exigency and why the licensee cannot avoid it.

I&M is requesting that the proposed change be approved on an exigent basis in accordance with 10 CFR 50.91(6) because failure to issue the amendment in a timely manner would result in the delayed startup of Unit 1 following the current Unit 1 forced maintenance outage. Unit 1 is currently shutdown due to TS Required Action 3.8.1.B.5, which required that the unit be shutdown due to an inoperable emergency diesel generator (EDG) which experienced a bearing failure during a post maintenance test run following extensive maintenance on the EDG. The current schedule to return Unit 1 to service has Unit 1 startup scheduled for July 12, 2015. This does not allow time for the 30-day public comment period specified in 10 CFR 50.91(a)(2)(ii) prior to issuance of a normal license amendment. The EDG bearing failure that resulted in the shutdown condition of Unit 1 could not have been reasonably foreseen. The startup of Unit 1 will require a normal startup of the Unit 1 MFW pumps which currently have no TS provisions that reflect the design of the normal operation of the MFW pumps and the pump trip inputs for auto-actuation of the AFW pumps. The operating limitations of the Unit 1 TS have existed since initial plant operation and have only recently been identified through the issuance of Information Notice 2015-05, "Inoperability of Auxiliary and Emergency Feedwater Auto-Start Circuits on Loss of Main Feedwater Pumps," dated May 12, 2015, and could not have been reasonably foreseen. Therefore, I&M could not have avoided the situation that has resulted in the need for an exigent amendment. I&M requests approval of this proposed license amendment prior to MODE 2 entry during the restart of Unit 1 from the current forced outage. Entry into MODE 2 is scheduled to occur on July 12, 2015.

3.0 TECHNICAL EVALUATION

3.1 Description of Unit 1 MFW Pumps

The Feedwater System, in conjunction with the Condensate System, returns condensed steam from the condensers and the feedwater heater drains to the steam generators while maintaining the overall water inventory throughout the cycle. These systems maintain the water level of the steam generators (SG) during normal unit operation.

The Main Feedwater Pump Turbines (MFPTs) provide motive power to drive the MFW pumps. The Feedwater Differential Pressure Control System regulates the speed, and thereby the differential pressure across the feedwater regulating valves to maintain valve operation in the linear response region. The MFPT Control System provides control of the MFPT stop valves which isolate steam flow to the MFPT for various equipment and plant conditions.

The control scheme for CNP Unit 1 MFW pumps considers the MFW pumps to be tripped when both the turbine low pressure and the high pressure stop valves are closed. A limit switch is mounted to each stop valve to provide an input to the circuitry that the stop valves are closed. This input is the signal that the MFW pumps have tripped and to automatically start AFW. The logic for auto actuation of AFW from MFW pump trips is 4-out-of-4 (AND logic, see Figure 1). There are two MFW pumps and each has two stop valves with closed limit switch inputs making up the four logic inputs. There are other means to automatically start AFW but for purposes of this discussion focus will be upon the MFPT stop valves closing to automatically start AFW.

The scenarios discussed below are the typical normal operation of the MFW pumps for startup of the MFW pumps and normal post maintenance testing. For all scenarios the control scheme for the MFW pump operation will either open both stop valves together or close both stop valves together. One stop valve cannot be opened or closed independently of the other stop valve which is the configuration of the MFPTs from the manufacturer since the initial startup of Unit 1.

For all of the scenarios the following operating requirements and characteristics can affect the amount of time to place the MFW pumps in operation and subsequently affect the ability of the MFW pumps to provide a timely signal to automatically start AFW in Modes 1 and 2:

1. Prior to trip testing and warming the MFW pump turbine the motor driven AFW pumps are verified not in Auto. This configuration does not defeat the auto-start provided by other Functions (i.e. Low-Low S/G level). The position of this switch is selected to avoid forwarding an unintended signal to automatically start AFW from MFW pump trips. Typically during this phase of start-up AFW is in service supporting unit operation and it would be redundant to send another AFW start signal.
2. During the warming of the MFPT all the feedwater is recirculated back to the condenser with no feedwater forwarded to the SGs during this warm-up period at approximately 1000 revolutions per minute (rpm).
3. The following conditions are typical examples that may hold the MFW pump at 1000 rpm while recirculating the feedwater to the condenser for a period of time beyond what is required for warming the turbine, this includes, but is not limited to:
 - a. If the lubricating oil temperature is less than 110 degrees Fahrenheit. Operating the MFW pump at 1000 rpm could contribute to a delay in forwarding feedwater to the SGs to achieve an adequate lubricating oil temperature per the manufacturer's instruction.
 - b. Each MFP turbine has a dedicated steam condenser and establishing a stable condenser vacuum condition will delay forwarding feedwater to the steam generators.
 - c. Performing post maintenance testing.

Starting the First MFW pump:

In this scenario the second MFW pump has both its stop valves closed. Then when the first MFW pump is started both stop valves are opened to warm up the turbine by slow rolling without the MFW pump providing any feedwater to the SGs. In the event of a MFW pump trip then both stop valves will be closed but the AFW Auto selector switch will not cause AFW to

start. Due to this operational condition being the start of the first MFW pump, the AFW is currently in service.

First MFW pump in Service and Starting the Second MFW pump:

Starting the second MFW pump means that the first MFW pump is in service and providing feedwater to the SGs. In the event the second MFW pump were to trip during the start-up phase it would cause little to no perturbations because the feedwater would be recirculating to the main condenser with the first MFW pump in service. A trip of the second MFW pump when it is providing feedwater to the SGs will cause some perturbations but will not trip the first MFW pump. But if, during the slow rolling of the second MFW pump, the first MFW pump should trip then there will be no automatic start of the motor driven AFW pumps due to the stop valves of the second MFW pump being open.

First MFW pump in Service and Starting the Second MFW pump Uncoupled:

Typically, the first MFW pump is in service and providing feedwater to the SGs. The unit is ascending in power while balancing is occurring on the turbine of the second MFW pump. An uncoupled run may be required due to this turbine receiving a major inspection that requires an uncoupled run to conduct a final balancing of the turbine rotor. In the event the second MFW pump were to trip during the start-up phase it would cause no perturbations because the MFW pump is not providing feedwater to the SGs. But if during the uncoupled operation of the second MFW pump, the first MFW pump should trip then there will be no automatic start of the motor driven AFW pumps due to the stop valves of the second MFW pump still being open.

Summary

The scenarios discussed for CNP Unit 1 above have not presented any type of challenges to the reliability of the affected equipment nor have there been any challenges to safe unit operation. The first scenario does not pose any challenges to AFW automatically starting since AFW is in service during this operational phase of unit start-up. The following two scenarios can occur as a result of transitioning from a refueling, planned or forced outage, as well as a downpower where one of the MFP's was removed from service due to, but not limited to, a planned or partial forced outage.

The Engineered Safety Feature Actuation System (ESFAS) instrumentation function 6.g is an anticipatory start signal for which no credit is taken in any safety analysis. The design basis events for which operation of the AFW system is required are the loss of all AC power to the plant auxiliaries, loss of normal feedwater, loss of electrical load, and small break loss of coolant accident (SBLOCA). The analyses presented in CNP Updated Final Safety Analysis Report (UFSAR) Sections 14.1.9, Loss of Normal Feedwater, and 14.1.12, Loss of All AC Power to the Plant Auxiliaries, state that the SG water level low-low AFW start signal is specifically credited in the analyses. Since the primary success path for accident mitigation is provided by SG low-low level signals, loss of both anticipatory trip channels does not place the plant in an unanalyzed condition and, therefore, the plant should not be required to enter TS Limiting Condition of Operation (LCO) 3.0.3.

3.2 Proposed TS 3.3.2 New Condition H for Function 6.g. of Table 3.3.2-1

The proposed change will add a new Condition H to LCO 3.3.2, which will read:

"One or more Main Feedwater Pump trip channel(s) inoperable."

This provision is required to accurately reflect plant design bases. The design basis events, which impose AFW safety function requirements, are loss of all AC power to the plant auxiliaries, loss of normal feedwater, loss of electrical load, and SBLOCAs. These design bases events assume AFW auto-start on either low-low SG level, safety injection or a LOOP signal. These ESFAS signals are Class 1E, which means that they meet all requirements for reliable power supplies, separation, redundancy, testability, seismic and environmental qualifications as specified in 10 CFR50.55a(h)(2), Protection Systems.

The anticipatory AFW auto-start circuits associated with the MFW pumps do not meet the requirements specified in 10 CFR 50.55a(h)(2). The steam stop valve closed limit switches and relays that make up these circuits are not single failure proof, nor are they seismically qualified. These circuits do not interface with the ESFAS, which is an integral part of the Solid State Protection System. As such, these circuits are not part of the primary success path for postulated accident mitigation as defined by 10 CFR 50.36(c)(2)(ii), Criterion 3 and, therefore, are not credited in the accident analysis. The safety grade signals credited in the accident analysis for loss of normal feedwater are SG low-low level.

Function 6.g. logic includes 4 channels arranged in a 4-out-of-4 logic. Therefore, the change to new Condition H allowing multiple channels to be inoperable results in no change in plant safety level since function is lost if any or all channels are inoperable.

Additionally, to reflect the new Condition H, Table 3.3.2-1, Function 6.g., will have the Conditions column changed from B to H and the current Conditions H through K will be renumbered to be Conditions I through L.

In conclusion, since the primary success path for accident mitigation is provided by SG low-low level signals, loss of both anticipatory trip channels does not place the plant in an unanalyzed condition and, therefore, the plant should not be required to enter TS LCO 3.0.3.

3.3 Proposed Required Action for TS 3.3.2 New Condition H

The proposed Required Action for TS 3.3.2, reads as follows

"H.1 Restore channel(s) to OPERABLE status."

The TS 3.3.2 new Condition H, applies to both anticipatory trip channels. The trip channels are combined using an "AND" logic circuit requiring 4-out-of-4 channels (see Figure 1). Failure of any one of the four (two per MFW pump) channels results in loss of AFW auto-start function. Therefore, the trip channels must be declared OPERABLE within 48 hours of entering Condition H. This Required Action is consistent with the previously applicable Condition B for

Function 6.g. To reflect the new Condition, the current Condition H (renumbered to Condition I) will be changed to reflect the new Condition H for Function 6.g. This Condition has a Required Action to be in MODE 3 in 6 hours.

3.4 Proposed Note for Required Action for TS 3.3.2 New Condition H

The proposed change will revise the Applicability for the Required Action for the new Condition H with the following note:

"Two channels on one Main Feedwater pump may be inoperable for up to 4 hours during the process of removing the pump from service or placing the pump in service."

This provision will allow placing a MFW pump in service or removing a MFW pump from service during the Mode of Applicability without the requirement to enter LCO 3.3.2, Condition H, for an inoperable channel(s). Entering into an LCO Action to place a system into service or remove a system from service is atypical without express allowance in the TS (e.g. the allowance associated with emergency core cooling system and low temperature overpressure protection system). This change is limited to a short period of time (4 hours) to allow operational flexibility to align the MFW pumps. This time is well within the Completion Time of 48 hours as currently provided in Condition B for one inoperable channel and the proposed Completion Time for the new Condition H. In addition, plant safety is not compromised during this short period because the safety-related AFW auto-start channels, i.e., SG low-low levels, are operable.

The proposed TS allowance is justified because, as described above in the process for placing the MFW pump in service, the operating requirements and characteristics of MFW pump operation can require more than one hour, with 4 hours being sufficient time to complete placing a MFW pump in operation. During this time, the MFW pump is placed on turning gear and the auxiliary support systems such as injection water, gland steam sealing, steam drains, cooling water, and lube oil are aligned and placed into operation. Following those actions, the MFPT vacuum is established, the turbine rolled, and the MFW pump temperature increased to normal operating levels. When both MFW pumps are in service (i.e., both providing feed flow), the AFW auto-start Function 6.g is fully operational. During plant shutdown, the sequence of events is reversed.

Loss of the anticipatory trip circuits during plant startup or shutdown is of very low safety significance because the AFW system will automatically start on low-low SG level, LOOP, and safety injection, which are all Class 1E circuits. The MFW pump anticipatory trip circuits are not single failure proof, nor do they meet the requirements for Class 1E safety circuits as defined by 10 CFR 50.55a(h)(2).

3.5 Proposed Completion Time for TS 3.3.2 New Condition H

The proposed Completion Time for Required Action H.1 is 48 hours.

The Proposed Completion Time of 48 hours for Required Action H.1 is consistent with the previously applicable Condition B for Function 6.g. The previously applicable Condition B

allowed 48 hours with one channel inoperable. The 4-out-of-4 logic means that any number of channels, either one channel or more than one channel, would render the auto-actuation function of AFW for Function 6.g. non-functional. Therefore, the Completion Time of 48 hours for new Condition H is consistent with the previously applicable Condition B Completion Time for Function 6.g.

3.6 Proposed Footnote for Table 3.3.2-1, Function 6.g.

The proposed change will revise Mode 2 applicability for Function 6.g with the following note:

"When one or more Main Feedwater Pump(s) are supplying feedwater to steam generators."

Since the AFW pumps are already in service and used as the primary means of removing heat from the reactor core in Mode 2, the anticipatory AFW auto-start function serves no useful purpose. If an AFW pump were to fail during startup or shutdown, the redundant AFW pump(s) would start automatically on low-low SG level, if not already manually initiated by the operator in accordance with station operating procedures.

3.7 Summary

In summary, the proposed TS change will establish a new Condition to allow one or more MFW pump trip channels to be inoperable, will eliminate the requirement that LCO 3.3.2 Function 6.g. be met in Mode 2 when the MFW pumps are not running, and will allow two anticipatory AFW auto-start channels to be inoperable for a limited period in Mode 1 and 2 when placing a MFW pump in or out of service. In the unlikely event that an AFW pump trips during plant startup or shutdown (i.e. Mode 2), the redundant AFW pumps would start automatically on low-low SG level, if not already manually initiated by the operator in accordance with station operating procedures.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

Regulatory Requirements

10CFR 50.36(c)(2)(ii), stipulates that a TS LCO must be established for each item meeting one or more of the following criteria:

1. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.
2. A process variable, design feature, or operating restriction that is an initial condition of a design basis accident (DBA) or transient analysis that either assumes the failure of, or presents a challenge to the integrity of a fission product barrier.
3. A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a DBA or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

4. A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

The requirements for the initiation of AFW auto-start resulting from trip of all MFW pumps are included in the TS in accordance with 10 CFR 50.36(c)(2), "Limiting Conditions for Operation."

As described in UFSAR Section 1.4, the Plant Specific Design Criteria (PSDC) define the principal criteria and safety objectives for the CNP design. The following PSDC are relevant to the proposed amendment:

PSDC CRITERION 12 Instrumentation And Control Systems

Instrumentation and controls shall be provided as required to monitor and maintain within prescribed operating ranges essential reactor facility operating variables.

The proposed operational change continues to provide system monitoring and proper actuation to satisfy the anticipatory trip function. No changes are proposed to the safety-related instrumentation (i.e., ESFAS).

PSDC CRITERION 37 Engineered Safety Features Basis For Design

Engineered Safety Features shall be provided in the facility to back up the safety provided by the core design, the reactor coolant pressure boundary, and their protection systems. Such Engineered Safety Features shall be designed to cope with any size reactor coolant piping break up to and including the equivalent of a circumferential rupture of any pipe in that boundary, assuming unobstructed discharge from both ends.

PSDC CRITERION 38 Reliability And Testability Of Engineered Safety Features

All Engineered Safety Features shall be designed to provide such functional reliability and ready testability as is necessary to avoid undue risk to the health and safety of the public.

The proposed change does not alter the ability for the reactor trip functions to actuate. The proposed operational allowance is consistent with the CNP Unit 1 design and analysis and ensures proper actuation to satisfy the anticipatory trip function. Therefore, the recommendations of these PSDC continue to be met with the proposed change.

4.2 Precedent

1. Amendment 77 to Watts Bar Nuclear Plant (Agencywide Documents Access Management System (ADAMS) Accession No. ML090480566)
2. Amendment 187 to Wolf Creek Generating Station (ADAMS Accession No. ML100630013)
3. Amendment 198 to Callaway Plant (ADAMS Accession No. ML101110103)

4.3 No Significant Hazards Consideration Determination

A change is proposed to the CNP Unit 1 TS 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation." The proposed amendment would add a new Condition for one or more inoperable Required Channels for MFW pump trips, modify Completion Time clock activation requirements, and clarify Mode 2 Applicability.

As required by 10 CFR 50.91(a), the CNP analysis of the issue of no significant hazards consideration is presented below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The design basis events which impose initiation of the AFW System requirements are loss of normal main feedwater, MSLB, LOOP, and SBLOCA. These design bases event evaluations assume actuation of the AFW System due to LOOP signal, SG water level - low-low or a safety injection signal. The anticipatory motor driven AFW pump autostart signals from the MFW pumps are not credited in any DBAs and are, therefore, not part of the primary success path for postulated accident mitigation, as defined by 10 CFR 50.36(c)(2)(ii), Criterion 3. Modifying Completion Time clock activation requirements, providing a Condition and Required Actions for more than one inoperable channel for this function, and modifying Mode 1 and 2 Applicability for this function will not impact any previously evaluated design basis accidents.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

This TS change allows for one or more MFW pump channels to be inoperable during Mode 1 and 2 and has an operational allowance during Mode 1 and 2 for placing MFW pumps in service or securing MFW pumps. This change involves an anticipatory AFW auto-start function that is not credited in the accident analysis. Since this change only affects the conditions at which this auto-start function needs to be operable and does not affect the function that actuates AFW due to LOOP, low-low steam generator level or a safety injection signal, it will not be an initiator to a new or different kind of accident from any accident previously evaluated.

Therefore, the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

This TS change involves the automatic start of the AFW pumps due to trip of both MFW pumps, which is not an assumed start signal for design basis events. This change does not modify any values or limits involved in a safety related function or accident analysis.

Therefore, the proposed amendment does not involve a significant reduction in a margin of safety.

Based on the above I&M concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c) and, accordingly, a finding of "no significant hazards consideration" is justified.

4.4 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the NRC'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.

5.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

Simplified MFPT Functional Diagram for Anticipatory Trip Circuit

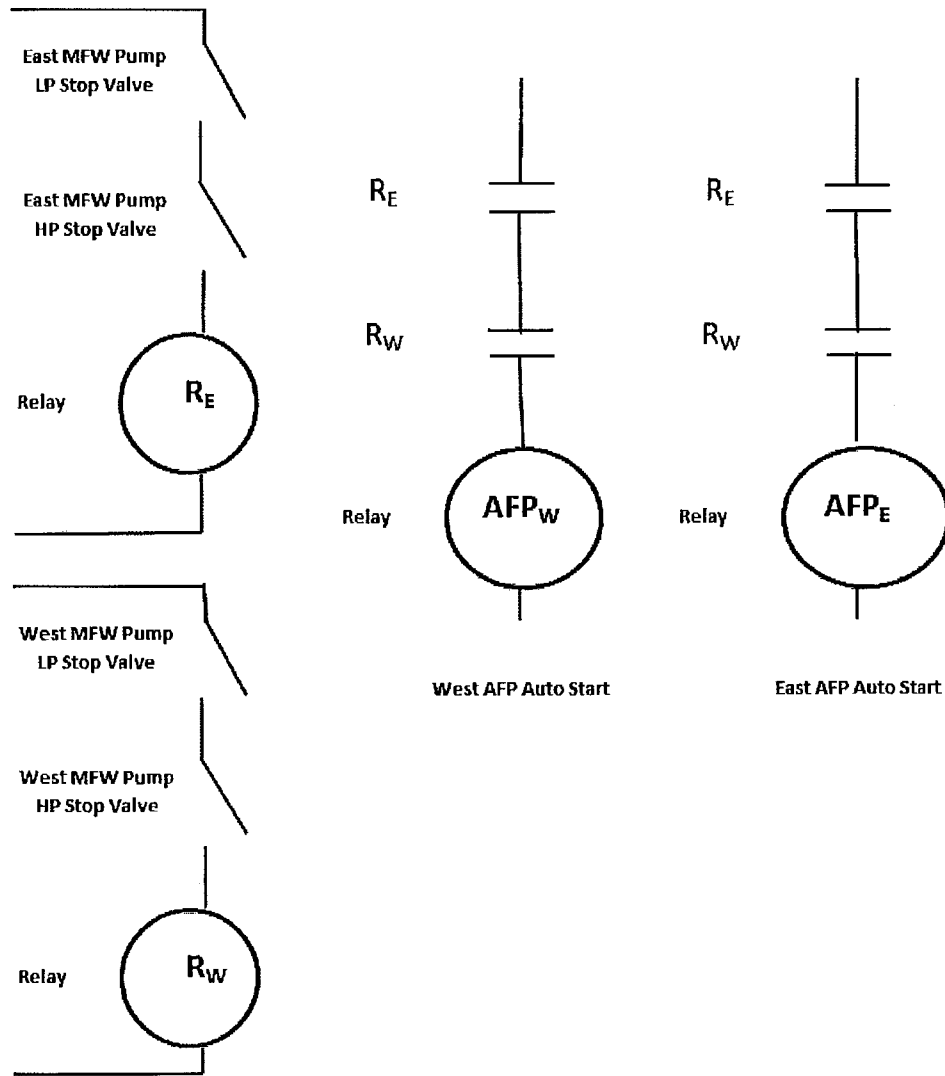


Figure 1

Enclosure 3 to AEP-NRC-2015-62

DONALD C. COOK NUCLEAR PLANT UNIT 1 TECHNICAL SPECIFICATION PAGES
MARKED TO SHOW CHANGES
TS 3.3.2, ESFAS Instrumentation

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>H. One or more Main Feedwater Pump trip channel(s) inoperable.</p>	<p>-----NOTE----- Two channels on one Main Feedwater pump may be inoperable for up to 4 hours during the process of removing the pump from service or placing the pump in service. -----</p> <p>H.1 Restore channel(s) to OPERABLE status.</p>	<p>48 hours</p>
<p>H.1 Required Action and associated Completion Time of Condition B.H not met for Function 6.g.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition D not met for Function 6.f.</p>	<p>H.1.1 Be in MODE 3.</p>	<p>6 hours</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>Required Action and associated Completion Time of Condition B not met for Function 8.a.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition C not met for Function 4.b, 5.a, 6.a, 6.b, or 7.b.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition D not met for Function 1.c, 1.d, 1.e.(1), 1.e.(2), 4.d, 4.e, 5.b, 6.c, 7.c, or 8.c.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition E not met for Function 2.c, 3.b.(3), or 4.c.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition F not met for Function 6.e.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition G not met for Function 8.b.</p>	<p>1 Be in MODE 3.</p> <p><u>AND</u></p> <p>2 Be in MODE 4.</p>	<p>6 hours</p> <p>12 hours</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
J K. Required Action and associated Completion Time of Condition B not met for Function 1.a, 2.a, 3.a.(1), 3.b.(1), or 7.a. OR Required Action and associated Completion Time of Condition C not met for Function 1.b, 2.b, 3.a.(2), or 3.b.(2).	J K.1 Be in MODE 3.	6 hours
	AND J K.2 Be in MODE 5.	36 hours
K L. Required Action and associated Completion Time of Condition B not met for Function 4.a.	K L.1 Declare associated steam generator stop valve (SGSV) inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTE-----

Refer to Table 3.3.2-1 to determine which SRs apply for each ESFAS Function.

SURVEILLANCE		FREQUENCY
SR 3.3.2.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.2.2	-----NOTE----- Verification of relay setpoints not required. -----	31 days
	Perform TADOT.	

Table 3.3.2-1 (page 4 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
6. Auxiliary Feedwater					
c. SG Water Level - Low Low (per SG)	1,2,3	3	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≥ 4.0%
d. SI Input from ESFAS	1,2,3	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.			
e. Loss of Voltage (per bus)	1,2,3	3	F	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.7 SR 3.3.2.12	≥ 3238.9 V and ≤ 3332.6 V with ≥ 1.8 sec and ≤ 2.2 sec time delay
f. Undervoltage Reactor Coolant Pump	1,2	1 per bus	D	SR 3.3.2.5 SR 3.3.2.7 SR 3.3.2.12	≥ 2725 V
g. Trip of all Main Feedwater Pumps (per pump)	1,2 ^(g)	2	B ^(H)	SR 3.3.2.9 SR 3.3.2.12	NA
7. Containment Air Recirculation/Hydrogen Skimmer (CEQ) System					
a. Manual Initiation	1,2,3,4	1 per train	B	SR 3.3.2.9	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
c. Containment Pressure – High	1,2,3	3	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≤ 1.17 psig
8. ESFAS Interlocks					
a. Reactor Trip, P-4	1,2,3	1 per train	B	SR 3.3.2.9	NA
b. Pressurizer Pressure, P-11	1,2,3	3	G	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10	≤ 1915 psig
c. T _{avg} - Low Low, P-12	1,2,3 ^(b)	1 per loop	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10	≥ 538.8°F

(b) Above the P-12 (T_{avg} - Low Low) interlock.

(g) When one or more Main Feedwater pump(s) are supplying feedwater to steam generators.

Enclosure 4 to AEP-NRC-2015-62

**DONALD C. COOK NUCLEAR PLANT UNIT 1 TECHNICAL SPECIFICATION BASES PAGES
MARKED TO SHOW CHANGES**

TS Bases 3.3.2, ESFAS Instrumentation

(Informational Only)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

This Function must be OPERABLE in MODES 1, 2, and 3 (above P-12) when a secondary side break or stuck open valve could result in the rapid depressurization of the steam lines. This Function does not have to be OPERABLE in MODE 3 below P-12, and MODE 4, 5, or 6 because there is insufficient energy in the secondary side of the unit to have an accident.

The ESFAS instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

ACTIONS

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed on Table 3.3.2-1.

In the event a channel's trip setpoint is found nonconservative with respect to the Allowable Value, or the transmitter, instrument loop, signal processing electronics, or bistable is found inoperable, then all affected Functions provided by that channel must be declared inoperable and the LCO Condition(s) entered for the protection Function(s) affected.

When the number of inoperable channels in a trip function exceed those specified in one or other related Conditions associated with a trip function, then the unit is outside the safety analysis. Therefore, LCO 3.0.3 should be immediately entered if applicable in the current MODE of operation.

A.1

Condition A applies to all ESFAS protection functions.

Condition A addresses the situation where one or more channels or trains for one or more Functions are inoperable at the same time. The Required Action is to refer to Table 3.3.2-1 and to take the Required Actions for the protection functions affected. The Completion Times are those from the referenced Conditions and Required Actions.

B.1

Condition B applies to Manual Initiation, ~~Trip of all Main Feedwater Pumps,~~ and the Reactor Trip P-4 interlock Functions.

The affected Manual Initiation Functions include:

- SI;
- Containment Spray;

BASES

ACTIONS (continued)

- Phase A Isolation;
- Phase B Isolation;
- Steam Line Isolation; and
- CEQ System.

If a required channel or train is inoperable, 48 hours is allowed to return it to an OPERABLE status. For the Manual Initiation and the Reactor Trip P-4 interlock Functions, the specified Completion Time is reasonable considering that there are two automatic actuation trains and another manual initiation train OPERABLE for each Function, and the low probability of an event occurring during this interval. ~~For the Trip of all Main Feedwater Pump Function, this action recognizes the lack of manual trip provisions for a failed channel. The specified Completion Times are is reasonable, considering that there are two automatic actuation trains and another manual initiation train OPERABLE for each manual Function.~~ the nature of these Functions (i.e., Main Feedwater Pump Function is not credited in the safety analysis), the available redundancy, and the low probability of an event occurring during this interval.

C.1

Condition C applies to the automatic actuation logic and actuation relays for the following functions:

- SI;
- Containment Spray;
- Phase A Isolation;
- Phase B Isolation;
- Steam Line Isolation;
- Turbine Trip and Feedwater Isolation;
- Auxiliary Feedwater; and
- CEQ System.

BASES

ACTIONS (continued)

F.1

Condition F applies to the Auxiliary Feedwater Loss of Voltage Function.

If one channel (on the associated bus) is inoperable, Required Action F.1 requires that channel to be placed in trip within 1 hour. With a channel in trip, the Auxiliary Feedwater Loss of Voltage instrumentation channels are configured to provide a one-out-of-two logic to start the associated motor driven feedwater pump.

The specified Completion Time was chosen to be consistent with the Completion Time for an inoperable Loss of Voltage channel in ITS 3.3.5.

G.1

Condition G applies to the P-11 interlock.

With one or more channels inoperable, the operator must verify that the interlock is in the required state for the existing unit condition. This action manually accomplishes the function of the interlock. Determination must be made within 1 hour. The 1 hour Completion Time is equal to the time allowed by LCO 3.0.3 to initiate shutdown actions in the event of a complete loss of ESFAS function.

H.1

Condition H applies to a Trip of all Main Feedwater Pumps.

If one or more required channels are inoperable, 48 hours is allowed to return it to an OPERABLE status. This action recognizes the lack of manual trip provisions for a failed channel. The specified Completion Times are reasonable, considering the nature of this Function (i.e., Main Feedwater Pump Function is not credited in the safety analysis), the available redundancy, and the low probability of an event occurring during this interval.

The required actions are modified by a note that allows both channels on the same Main Feedwater pump to be non-functional for up to 4 hours without a required entry into Action Condition H. This provision allows pump startup and shutdown to occur when the Main Feedwater pump is reset and/or is not capable of feeding the steam generators.

H.1

If any Required Action and associated Completion Time cannot be met, the unit must be brought to a MODE in which the LCO does not apply. To

achieve this status, the unit must be brought to MODE 3 within 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

I.J.1 and I.2

If any Required Action and associated Completion Time cannot be met, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to MODE 3 within 6 hours and MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

BASES

ACTIONS (continued)

JK.1 and JK.2

If any Required Action and associated Completion Time cannot be met, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to MODE 3 within 6 hours and MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

KL.1

If any Required Action and associated Completion Time of Condition B cannot be met, the associated SGSV must be declared inoperable. This will require entry into the associated Conditions and Required Actions of LCO 3.7.2, "Steam Generator Stop Valves."

SURVEILLANCE REQUIREMENTS

The SRs for each ESFAS Function are identified by the SRs column of Table 3.3.2-1.

A Note has been added to the SR Table to clarify that Table 3.3.2-1 determines which SRs apply to which ESFAS Functions.

Note that each channel of process protection supplies both trains of the ESFAS. When testing channel I, train A and train B must be examined. Similarly, train A and train B must be examined when testing channel II, channel III, and channel IV (if applicable). The CHANNEL CALIBRATION and COTs are performed in a manner that is consistent with the assumptions used in analytically calculating the required channel accuracies.

SR 3.3.2.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.