

Exelon Generation
4300 Winfield Road
Warrenville, IL 60555

www.exeloncorp.com

10 CFR 50.90

RS-02-173

December 12, 2002

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

Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

Byron Station, Units 1 and 2
Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455

Subject: Request for a License Amendment to Add a Technical Specification Surveillance Requirement for the Diesel-Driven Auxiliary Feedwater Pump

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company, LLC (Exelon) is requesting an amendment to Appendix A, Technical Specifications (TS), of Facility Operating License Nos. NPF-72, NPF-77, NPF-37, and NPF-66 for Braidwood Station, Units 1 and 2, and Byron Station, Units 1 and 2, respectively. The proposed amendment would add a new Surveillance Requirement (SR) to TS Section 3.7.5, "Auxiliary Feedwater (AF) System," which requires operation of the diesel-driven AF pump on a monthly frequency (i.e., once every 31 days) for greater than or equal to 15 minutes.

The current TS SR 3.7.5.3 requires both the diesel-driven AF pump and the motor-driven AF pump to be operated once per quarter in accordance with the Inservice Testing Program; however, based on operating experience, Braidwood and Byron Stations conduct the diesel-driven AF pump surveillance on a monthly frequency to maintain a high level of assurance that the diesel engine would automatically start when called upon to perform its design basis function. Since the TS SR only requires a quarterly surveillance, a concern was raised that the SR may be non-conservative.

Consistent with 10 CFR 50.36, "Technical specifications," paragraph (c)(3), "Surveillance requirements," it is prudent to change the diesel-driven AF pump surveillance test frequency from quarterly to monthly to "assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met." Until this change is approved by the NRC, the diesel-driven AF pump at Braidwood Station and Byron Station will be tested on a monthly basis in accordance with the applicable station surveillance procedure. Note that at Braidwood Station, the motor-driven AF

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pump will remain on a quarterly test frequency as the motor-driven pump's operating history has shown that a quarterly surveillance test is sufficient to confirm pump and system operability. Byron Station currently performs the motor-driven AF pump surveillance test on a monthly frequency; however, will revise the test frequency to quarterly consistent with the current TS.

We request approval of the proposed amendment by December 1, 2003. Once approved, the amendment will be implemented within 30 days.

The attached amendment request is subdivided as shown below.

Attachment 1 is the notarized affidavit for the amendment request.

Attachment 2 provides an evaluation of the proposed changes and contains the following sections:

- 1.0 Introduction
- 2.0 Description of Proposed Amendment
- 3.0 Background
- 4.0 Regulatory Requirements and Guidance
- 5.0 Technical Analysis
- 6.0 Regulatory Analysis
- 7.0 No Significant Hazards Consideration

This section describes our evaluation performed using the criteria in 10 CFR 50.91(a), "Notice for public comment," paragraph (1), which provides information supporting a finding of no significant hazards consideration using the standards in 10 CFR 50.92, "Issuance of amendment," paragraph (c).

- 8.0 Environmental Consideration

This section provides information supporting an Environmental Assessment. We have determined that the proposed changes meet the criteria for a categorical exclusion set forth in paragraph (c)(10) of 10 CFR 51.22, "Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review."

- 9.0 Precedent

- 10.0 References

Attachments 3-A and 3-B include the marked-up TS pages with the proposed changes indicated for Braidwood Station and Byron Station, respectively.

Attachments 4-A and 4-B include the associated typed TS pages with the proposed changes incorporated for Braidwood Station and Byron Station, respectively. Also, included in Attachments 4-A and 4-B are the associated typed TS Bases pages for Braidwood Station and Byron Station with the proposed changes incorporated. The Bases pages are included for information only.

The proposed amendment has been reviewed by the Braidwood Station and the Byron Station Plant Operations Review Committees and approved by their respective Nuclear Safety Review Boards in accordance with the requirements of the Exelon Quality Assurance Program.

Exelon is notifying the State of Illinois of this application for a change to the TS by sending a copy of this letter and its attachments to the designated State Official.

Should you have any questions concerning this letter, please contact J. A. Bauer at (630) 657-2801.

Respectfully,



Keith R. Jury
Director - Licensing
Midwest Regional Operating Group

Attachments:

Attachment 1: Affidavit

Attachment 2: Evaluation of Proposed Changes

Attachment 3-A: Markup of Proposed Technical Specifications Page Changes for Braidwood Station

Attachment 3-B: Markup of Proposed Technical Specifications Page Changes for Byron Station

Attachment 4-A: Typed Pages for Technical Specification Changes and Bases Changes (for information only) for Braidwood Station

Attachment 4-B: Typed Pages for Technical Specification Changes and Bases Changes (for information only) for Byron Station

cc: Regional Administrator - NRC Region III
NRC Senior Resident Inspector - Braidwood Station
NRC Senior Resident Inspector - Byron Station
Office of Nuclear Facility Safety - Illinois Department of Nuclear Safety

ATTACHMENT 1

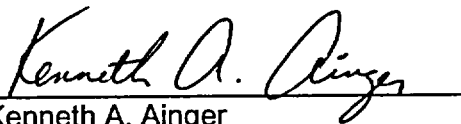
Affidavit

STATE OF ILLINOIS)
COUNTY OF DUPAGE)
IN THE MATTER OF)
EXELON GENERATION COMPANY, LLC) Docket Numbers
BRAIDWOOD STATION, UNITS 1 AND 2) STN 50-456 AND STN 50-457
BYRON STATION, UNITS 1 AND 2) STN 50-454 AND STN 50-455

SUBJECT: Request for a License Amendment to Add a Technical Specification
Surveillance Requirement for the Diesel-Driven Auxiliary Feedwater Pump

AFFIDAVIT

I affirm that the content of this submittal is true and correct to the best of my
knowledge, information and belief.


Kenneth A. Ainger
Manager - Licensing

Subscribed and sworn to before me, a Notary Public in and

for the State above named, this 12th day of

December, 2002.




Notary Public

ATTACHMENT 2
Evaluation of Proposed Changes

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- 2.0 DESCRIPTION OF PROPOSED AMENDMENT
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Evaluation of Proposed Changes

1.0 INTRODUCTION

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company, LLC (Exelon) is requesting an amendment to Appendix A, Technical Specifications (TS), of Facility Operating License Nos. NPF-72, NPF-77, NPF-37, and NPF-66 for Braidwood Station, Units 1 and 2, and Byron Station, Units 1 and 2, respectively. The proposed amendment would add a new Surveillance Requirement (SR) to TS Section 3.7.5, "Auxiliary Feedwater (AF) System," which requires operation of the diesel-driven AF pump on a monthly frequency (i.e., once every 31 days) for greater than or equal to 15 minutes.

The current TS SR 3.7.5.3 requires both the diesel-driven AF pump and the motor-driven AF pump to be operated once per quarter in accordance with the Inservice Testing Program; however, based on operating experience, Braidwood and Byron Stations conduct the diesel-driven AF pump surveillance on a monthly frequency to maintain a high level of assurance that the diesel engine would automatically start when called upon to perform its design basis function. Since the TS SR only requires a quarterly surveillance, a concern was raised that the SR may be non-conservative.

Consistent with 10 CFR 50.36, "Technical specifications," paragraph (c)(3), "Surveillance requirements," it is prudent to change the diesel-driven AF pump surveillance test frequency from quarterly to monthly to "assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met." Until this change is approved by the NRC, the diesel-driven AF pump at Braidwood Station and Byron Station will be tested on a monthly basis in accordance with the applicable station surveillance procedure. Note that the motor-driven AF pump will remain on a quarterly test frequency at Braidwood Station as the motor-driven pump's operating history has shown that a quarterly surveillance test is sufficient to confirm pump and system operability. Byron Station currently performs the motor-driven AF pump surveillance test on a monthly frequency; however, will revise the test frequency to quarterly consistent with the current TS.

2.0 DESCRIPTION OF PROPOSED AMENDMENT

The proposed amendment adds a new SR to TS Section 3.7.5, "Auxiliary Feedwater (AF) System," requiring operation of the diesel-driven AF pump every 31 days. The new SR will be inserted into the listed SRs for TS Section 3.7.5 as "SR 3.7.5.3" and existing SRs "3.7.5.3" through "3.7.5.7" will be renumbered as "3.7.5.4" through "3.7.5.8," respectively. The new SR 3.7.5.3 will state:

"Operate the diesel driven AF pump for ≥ 15 minutes."

As noted above, the new SR frequency will be "31 days." The associated TS Bases for the AF System will also require a revision to add a description of the new SR 3.7.5.3; and the existing SRs will be appropriately renumbered.

The proposed amendment is reflected on marked-up copies of the affected TS pages for Braidwood and Byron Stations in Attachments 3-A and 3-B, respectively. The typed TS pages, with the changes incorporated, are provided in Attachments 4-A and 4-B along with the

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associated revised TS Bases pages (for information only). Following NRC approval of this request, we will revise the Braidwood Station and Byron Station TS Bases in accordance with the TS Bases Control Program described in TS Section 5.5.14, "Technical Specifications (TS) Bases Control Program."

3.0 BACKGROUND

The AF system is discussed in the Updated Final Safety Analysis Report, Section 10.4.9, "Auxiliary Feedwater System," (Reference 1). The AF system automatically supplies feedwater to the steam generators (SGs) to remove decay heat from the reactor coolant system (RCS) upon the loss of normal feedwater supply. The AF pumps normally take suction from the condensate storage tank (CST) and pump to the SG secondary side via separate and independent connections to the feedwater piping outside containment. If the CST is not available, AF can be supplied by the essential service water system. Switchover from the CST to the essential service water system is automatically accomplished on low pressure in the suction line to the AF pump. The SGs function as a heat sink for core decay heat. The heat load is dissipated by releasing steam to the atmosphere from the SGs via the main steam safety valves (MSSVs) or SG power operated relief valves (PORVs). If the main condenser is available, steam may be released via the steam dump valves and recirculated to the CST.

The AF system consists of a motor driven pump and a diesel driven pump configured into two trains. Each pump provides 100% of the required AF capacity to the SGs, as assumed in the accident analysis. The pumps are equipped with independent recirculation lines to prevent pump operation against a closed system. The motor driven AF pump is powered from an independent Class 1E power supply and feeds all four SGs. The diesel-driven AF pump is powered from an independent diesel and also feeds all four SGs. The diesel-driven AF pump is supported by a diesel engine, an independent battery system, an essential service water booster pump, and a fuel oil day tank. Thus, the requirement for diversity in motive power sources for the AF system is met.

The AF system is capable of supplying, but does not normally supply, feedwater to the SGs during normal unit startup, shutdown, and hot standby conditions. One AF pump at full flow is sufficient to remove decay heat and cool the unit to residual heat removal (RHR) entry conditions. In addition, the AF system is designed to supply sufficient water to the SG(s) to remove decay heat with SG pressure at the setpoint of the MSSVs. Subsequently, the AF system supplies sufficient water to cool the unit to RHR entry conditions, with steam released through the SG PORVs. The AF system actuates automatically on low-2 SG water level, safety injection or undervoltage on the reactor coolant pump buses, and from the anticipated transient without scram (ATWS) mitigation system.

Currently, TS SR 3.7.5.3 requires the diesel-driven AF pump to be run quarterly in accordance with the In-Service Testing Program requirements. The original TS SR frequency for the AF pumps was monthly; however, in 1996, the TS SR Frequency for the AF pumps was changed from monthly to quarterly. Specifically, in response to NRC Generic Letter 93-05, "Line-Item Technical Specification Improvements to Reduce Surveillance Requirements for Testing During Power Operation," Commonwealth Edison Company (now Exelon) requested that the TS required surveillance testing frequency for the AF system be changed from 31 days to 92 days for Braidwood and Byron Stations (Reference 2). The NRC granted this surveillance testing

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frequency change in Amendment 74 for Braidwood Station and Amendment 82 for Byron Station (Reference 3).

4.0 REGULATORY REQUIREMENTS AND GUIDANCE

Paragraph (c)(2)(i) of 10 CFR 50.36, "Technical specifications," states: "Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility." In addition, Paragraph (c)(3) of 10 CFR 50.36 states: "Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met." An emergency auto-start of the diesel-driven AF pump is a functional capability required for safe operation of the plant; therefore, the surveillance test associated with the AF pumps must be of adequate scope and appropriate frequency to ensure this capability.

As previously noted, the original surveillance tests for the AF pumps were performed on a monthly frequency. In Reference 2, Commonwealth Edison Company (now Exelon) requested that the TS SR Frequency for the AF pumps be changed from monthly to quarterly consistent with NRC Generic Letter 93-05, "Line-Item Technical Specification Improvements to Reduce Surveillance Requirements for Testing During Power Operation." The basis for this change was presented in NUREG-1366, "Improvements to Technical Specifications Surveillance Requirements," dated December 1992. Subsequently, the NRC approved changing the AF pumps surveillance test frequency from monthly to quarterly in Reference 3.

5.0 TECHNICAL ANALYSIS

As noted above, the basis for changing the AF pump frequency from monthly to quarterly was presented in NUREG-1366. In this NUREG, the NRC discussed two studies that were performed on the AF System. Both studies concluded that a significant cause of AF pump failure is testing the pumps by recirculating flow through a minimum flow line that is not adequately sized. Manufacturers recommended that the pumps be tested at a flow no less than 25 percent of the best efficiency point flow. The studies discussed in NUREG-1366 acknowledged that most AF pump recirculation lines were sized between 5% and 15% of the best efficiency point flow and concluded that testing in the 10 percent flow range causes hydraulic instability of the pumps and leads to pump degradation. The NRC subsequently concluded that a reasonable solution to this problem would be to extend the test interval to reduce the rate of wear on the pumps.

During the surveillance tests at Braidwood and Byron Stations, the AF pumps take suction from the CST and return the water to the CST through a recirculation line. The flow rate during this test is approximately 10 percent of the design flow rate. The concern regarding inadequate recirculation flow had been previously addressed by Braidwood and Byron Stations in 1990. An evaluation was performed by the Engineering Department in concert with the pump Original Equipment Manufacturer, i.e., Dresser Pump. The theoretical minimum flow rate for the AF pumps was calculated to be 61 gpm considering both thermal and mechanical effects. Based on the vibration levels and pressure pulsations recorded during minimum flow operation, and the limited number of hours per year (i.e., approximately 15 minutes per surveillance test) that the pumps are run at minimum flow, it was concluded that operation of the pumps at the

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measured minimum flow of 85 gpm was acceptable. It is recognized that operation under low flow conditions for extended periods of time can lead to cavitation damage, wear, high vibrations, noise, and potentially seal, bearing and/or shaft failures. All of these problems develop over longer periods of time under low flow conditions and are monitored during the normal surveillance tests.

In summary, it was concluded that the measured minimum flow rates of the AF pumps at Byron and Braidwood Stations (i.e., 85 gpm) exceeds the calculated theoretical minimum flow rate of 61 gpm by a sufficient margin so as not to present an operational concern during pump surveillance testing.

Although the AF pump recirculation flow was shown not to be an immediate concern, Braidwood and Byron Stations requested that the TS SR Frequency for the AF pumps be changed from monthly to quarterly, consistent with NRC Generic Letter 93-05, in the interest of burden reduction and to avoid any potential long term pump degradation.

Shortly after receiving NRC approval to change the AF pump frequency from monthly to quarterly in Reference 3, Byron Station experienced operational problems with the diesel engine of the diesel-driven AF pump during the quarterly surveillance test. Due to these problems, Byron Station elected to resume monthly surveillance testing of both the diesel-driven and motor-driven AF pumps, and not continue with the quarterly test frequency allowed by the TS. Braidwood Station also did not implement the quarterly surveillance testing schedule for the diesel-driven AF pump and continued monthly surveillance testing. Braidwood Station did implement quarterly testing for the motor-driven AF pump. Testing the diesel-driven AF pumps monthly vice quarterly is considered conservative and meets the existing TS SR Frequency requirements. It should be noted that, although the diesel-driven AF pump discharge valve is closed during the surveillance test when the pump is run in the recirculation mode, the pump remains available to perform its design basis function as the pump discharge valve receives an auto-open signal from all pump auto-start signals.

In March 2002, during a review of the diesel-driven AF pumps maintenance and surveillance test history, a concern was raised that the TS SR was potentially non-conservative since it only required a quarterly surveillance test of the AF pumps whereas the diesel-driven pumps were being tested on a monthly frequency to maintain a high level of assurance that the diesel engine would automatically start when called upon to perform its design basis function. Based on the requirements in 10 CFR 50.36 noted above, it is prudent to formally return the diesel-driven TS SR to the original TS monthly frequency.

6.0 REGULATORY ANALYSIS

As previously noted, Paragraph (c)(2)(i) of 10 CFR 50.36, "Technical specifications," states: "Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility." In addition, Paragraph (c)(3) of 10 CFR 50.36 states: "Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met." An emergency auto-start of the diesel-driven AF pump is a functional capability required for safe operation of the plant; therefore, the surveillance test associated with the AF pumps must be of adequate scope and appropriate frequency to ensure this capability.

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The emergency auto-start feature of the diesel-driven AF pump is relied upon to accomplish the design basis function of the AF System. Based on operating experience, Braidwood and Byron Stations conduct the diesel-driven AF pump surveillance on a monthly frequency to maintain a high level of assurance that the diesel engine will automatically start when called upon to perform its design basis function even though the TS requires only a quarterly test. It is therefore prudent to change the associated TS SR Frequency from quarterly to monthly to meet the intent of 10 CFR 50.36. The proposed addition of a SR to operate the diesel-driven AF pump on a monthly frequency will ensure that the functional capability requirements for the AF system are satisfied and that the TS for the AF system remain conservative and satisfy the requirements of 10 CFR 50.36. Also, as previously noted, although the diesel-driven AF pump discharge valve is closed during the surveillance test when the pump is run in the recirculation mode, the pump remains available to perform its design basis function as the pump discharge valve receives an auto-open signal from all pump auto-start signals. Since the pump remains available, the monthly performance indicator for safety system unavailability of the auxiliary feedwater system will not be adversely affected.

Impact on Previous Submittals

We request approval of the proposed amendment by December 1, 2003. Once approved, the amendment will be implemented within 30 days. No other license amendment requests currently under review by the NRC are impacted by the information presented in this license amendment request.

7.0 NO SIGNIFICANT HAZARDS CONSIDERATION

According to 10 CFR 50.92, "Issuance of amendment," paragraph (c), a proposed amendment to an operating license involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or
- (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- (3) Involve a significant reduction in a margin of safety.

In support of this determination, an evaluation of each of the three criteria set forth in 10 CFR 50.92 is provided below regarding the proposed license amendment.

Overview

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company, LLC (Exelon) is requesting an amendment to Appendix A, Technical Specifications (TS), of Facility Operating License Nos. NPF-72, NPF-77, NPF-37, and NPF-66 for Braidwood Station, Units 1 and 2, and Byron Station, Units 1 and 2, respectively. The proposed amendment would add a new Surveillance Requirement (SR) to TS Section 3.7.5, "Auxiliary Feedwater (AF) System," which requires operation of the diesel-driven

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AF pump on a monthly frequency (i.e., once every 31 days) for greater than or equal to 15 minutes.

The current TS SR 3.7.5.3 requires both the diesel-driven AF pump and the motor-driven AF pump to be operated once per quarter in accordance with the Inservice Testing Program; however, based on operating experience, Braidwood and Byron Stations conduct the diesel-driven AF pump surveillance on a monthly frequency to maintain a high level of assurance that the diesel engine would automatically start when called upon to perform its design basis function. Testing the diesel-driven AF pumps monthly vice quarterly is considered conservative and meets the existing TS SR Frequency requirements. Since the TS SR only requires a quarterly surveillance, a concern was raised that the SR may be non-conservative.

Consistent with 10 CFR 50.36, "Technical specifications," paragraph (c)(3), "Surveillance requirements," it is prudent to change the diesel-driven AF pump surveillance test frequency from quarterly to monthly to "assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met." Until the NRC approves this change, the diesel-driven AF pump at Braidwood Station and Byron Station will be tested on a monthly basis in accordance with the applicable station surveillance procedure. The motor-driven AF pump will remain on a quarterly test frequency at Braidwood Station as the motor-driven pump's operating history has shown that a quarterly surveillance test is sufficient to confirm pump and system operability. Byron Station currently performs the motor-driven AF pump surveillance test on a monthly frequency; however, will revise the test frequency to quarterly consistent with the current TS.

1. The proposed TS change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed change adds a new TS SR to the AF System TS Section 3.7.5. The new SR requires that the diesel-driven AF pump be operated for greater than or equal to 15 minutes every month. Operating experience has shown that conducting the diesel-driven AF pump surveillance on a monthly frequency maintains a high level of assurance that the diesel engine will automatically start when called upon to perform its design basis function.

The previously analyzed events are initiated by the failure of plant structures, systems, or components. The AF system is not considered an initiator for any of these previously analyzed events. The proposed change does not have a detrimental impact on the integrity of any plant structure, system, or component that initiates an analyzed event. No active or passive failure mechanisms that could lead to an accident are affected. The proposed change will not alter the operation of, or otherwise increase the failure probability of any plant equipment that initiates an analyzed accident. Therefore, the proposed change does not involve a significant increase in the probability of an accident previously evaluated.

The initial conditions of design basis accident and transient analyses in the Byron/Braidwood Stations Updated Final Safety Analysis Report assume the AF system is operable. The operability of the AF system is assured by the proposed TS SR and is consistent with the initial assumptions of the accident analyses. Since functionality of the diesel engine can be better assured when the diesel-driven AF pump is operated monthly vice quarterly, Exelon is proposing to add a TS SR to operate the diesel-driven

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AF pump on a monthly frequency. The proposed SR will provide higher confidence that the diesel-driven AF pump will reliably start automatically during an emergency condition, consistent with the AF System design requirements, and continue to mitigate the consequences of the associated design basis accidents. Based on this evaluation, the proposed change does not involve a significant increase in the consequences of an accident previously evaluated.

- 2. The proposed TS change does not create the possibility of a new or different kind of accident from any accident previously evaluated.**

The proposed change does not involve the use or installation of new equipment and the currently installed equipment will not be operated in a new or different manner. No new or different system interactions are created and no new processes are introduced. The proposed changes will not introduce any new failure mechanisms, malfunctions, or accident initiators not already considered in the design and licensing bases. The current diesel-driven AF pump surveillance procedure is already conducted on a monthly basis and has been reviewed, approved and judged appropriate to provide high confidence that the AF diesel engine and pump will reliably start and operate during an emergency condition. The new SR formalizes this monthly surveillance practice in the TS. Based on this evaluation, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

- 3. The proposed TS change does not involve a significant reduction in a margin of safety.**

The proposed change does not alter any existing setpoints at which protective actions are initiated and no new setpoints or protective actions are introduced. The design and operation of the AF system remains unchanged and maintains the existing margins of safety. Since the increased frequency of the diesel-driven AF pump surveillance test maintains high assurance that the pump's diesel engine will successfully auto-start during an emergency, the proposed additional SR will provide high confidence that the AF system will continue to function as designed. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Exelon concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c).

8.0 ENVIRONMENTAL CONSIDERATION

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company, LLC (Exelon) is requesting an amendment to Appendix A, Technical Specifications (TS), of Facility Operating License Nos. NPF-72, NPF-77, NPF-37, and NPF-66 for Braidwood Station, Units 1 and 2, and Byron Station, Units 1 and 2, respectively. The proposed amendment would add a new Surveillance Requirement (SR) to TS Section 3.7.5, "Auxiliary Feedwater (AF) System," which requires operation of the diesel-driven AF pump on a monthly frequency (i.e., once every 31 days) for greater than or equal to 15 minutes.

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The current TS SR 3.7.5.3 requires both the diesel-driven AF pump and the motor-driven AF pump to be operated once per quarter in accordance with the Inservice Testing Program; however, based on operating experience, Braidwood and Byron Stations conduct the diesel-driven AF pump surveillance on a monthly frequency to maintain a high level of assurance that the diesel engine would automatically start when called upon to perform its design basis function. Testing the diesel-driven AF pumps monthly vice quarterly is considered conservative and meets the existing TS SR Frequency requirements. Since the TS SR only requires a quarterly surveillance, a concern was raised that the SR may be non-conservative.

Consistent with 10 CFR 50.36, "Technical specifications," paragraph (c)(3), "Surveillance requirements," it is prudent to change the diesel-driven AF pump surveillance test frequency from quarterly to monthly to "assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met." Until this change is approved by the NRC, the diesel-driven AF pump at Braidwood Station and Byron Station will be tested on a monthly basis in accordance with the applicable station surveillance procedure. The motor-driven AF pump will remain on a quarterly test frequency at Braidwood Station as the motor-driven pump's operating history has shown that a quarterly surveillance test is sufficient to confirm pump and system operability. Byron Station currently performs the motor-driven AF pump surveillance test on a monthly frequency; however, will revise the test frequency to quarterly consistent with the current TS.

Exelon has evaluated this proposed operating license amendment consistent with the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21, "Criteria for and identification of licensing and regulatory actions requiring environmental assessments." Exelon has determined that these proposed changes meet the criteria for a categorical exclusion set forth in paragraph (c)(9) of 10 CFR 51.22, "Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review," and as such, has determined that no irreversible consequences exist in accordance with paragraph (b) of 10 CFR 50.92, "Issuance of amendment." This determination is based on the fact that this change is being proposed as an amendment to a license issued pursuant to 10 CFR 50, "Domestic Licensing of Production and Utilization Facilities," which changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, "Standards for Protection Against Radiation," or which changes an inspection or a surveillance requirement, and the amendment meets the following specific criteria:

(i) The amendment involves no significant hazards consideration.

As demonstrated in Section 7.0, "No Significant Hazards Consideration," the proposed changes do not involve any significant hazards consideration.

(ii) There is no significant change in the types or significant increase in the amounts of any effluent that may be released offsite.

The proposed change, which adds a new SR to operate the diesel-driven AF pump on a monthly frequency, provides assurance that the diesel engine will function as required to support a reliable auto-start of the diesel-driven AF pump should an emergency condition arise. This change enhances the diesel-driven AF pump's capability to satisfy its design basis function. The proposed change does not result in an increase in power level, does not increase the production nor alter the flow path or method of disposal, of

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radioactive waste or byproducts; thus, there will be no change in the amounts of radiological effluents released offsite.

Since the diesel-driven AF pump will be operated on a monthly basis for approximately 15 minutes vice quarterly, there will be a minor increase in the amount of engine exhaust released offsite. The diesel-driven AF pump is considered an insignificant source of non-radiological pollutant emissions. For Byron Station, these emissions are not currently controlled or monitored under the site's Federal Enforceable State Operating Permit (FESOP); however, will be included in the operational limits of the next revision of the FESOP to be implemented in the near future. For Braidwood Station, the emissions from the diesel-driven AF pump are already subject to the operational limits of the site's FESOP. The proposed change in the pump surveillance frequency will not result in any limit of the Braidwood Station FESOP or the pending Byron Station FESOP to be exceeded.

Based on the above evaluation, the proposed change will not result in a significant change in the types or significant increase in the amounts of any effluent released offsite.

(iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed change will not result in any changes to the configuration of the facility. The proposed change adds a new SR to operate the diesel-driven AF pump on a monthly frequency to maintain a high level of assurance that the diesel engine will automatically start when called upon to perform its design basis function. There will be no change in the level of controls or methodology used for the processing of radioactive effluents or handling of solid radioactive waste, nor will the proposal result in any change in the normal radiation levels in the plant. Therefore, there will be no increase in individual or cumulative occupational radiation exposure resulting from this change.

9.0 PRECEDENT

There is no known precedent for a similar licensing action regarding this proposed change to the SR for a diesel-driven AF pump; however, the surveillance frequency prior to 1996 was identical to the proposed SR Frequency.

10.0 REFERENCES

1. Byron/Braidwood Stations Updated Final Safety Analysis Report, Section 10.4.9, "Auxiliary Feedwater System."
2. Letter from Harold D. Pontious, Jr. (Commonwealth Edison Company) to U. S. NRC, "Generic Letter 93-05 Line Item Improvements," dated October 3, 1995.
3. NRC Safety Evaluation for Amendment No. 82 to Facility Operating License Nos. NPF-37 and NPF-66 and for Amendment No. 74 to Facility Operating License Nos. NPF-72 and NPF-77, dated April 10, 1996.

ATTACHMENT 3-A

Markup of Proposed Technical Specifications Page Changes

BRAIDWOOD STATION

REVISED TS PAGES

3.7.5-2

3.7.5-3

SR 3.7.5.3 Operate the diesel driven AF pump for ≥ 15 minutes. **31 days**

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	Verify each AF manual, power operated, and automatic valve in each water flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.7.5.2	Verify day tank contains ≥ 420 gal of fuel oil.	31 days
SR 3.7.5.4	Verify the developed head of each AF pump at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.7.5.5	Verify each AF automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.7.5.6	Verify each AF pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.7.5.7	Verify proper alignment of the required AF flow paths by verifying flow from the condensate storage tank to each steam generator.	Prior to entering MODE 2 whenever unit has been in MODE 5, MODE 6, or defueled for a cumulative period of > 30 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.7.5. ⁸ Verify fuel oil properties are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program

ATTACHMENT 3-B

Markup of Proposed Technical Specification Page Changes

BYRON STATION

REVISED TS PAGES

3.7.5-2

3.7.5-3

SR 3.7.5.3 Operate the diesel driven AF Pump for ≥ 15 minutes. 31 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	Verify each AF manual, power operated, and automatic valve in each water flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.7.5.2	Verify day tank contains ≥ 420 gal of fuel oil.	31 days
SR 3.7.5.4	Verify the developed head of each AF pump at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.7.5.5	Verify each AF automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.7.5.6	Verify each AF pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.7.5.7	Verify proper alignment of the required AF flow paths by verifying flow from the condensate storage tank to each steam generator.	Prior to entering MODE 2 whenever unit has been in MODE 5, MODE 6, or defueled for a cumulative period of > 30 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.7.5 ⁸ Verify fuel oil properties are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program

ATTACHMENT 4-A

Typed Pages

for

Technical Specification Changes

and

**Bases Changes
(for information only)**

BRAIDWOOD STATION

REVISED TS PAGES

3.7.5-2

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REVISED BASES PAGES

B 3.7.5-6

B 3.7.5-7

B 3.7.5-8

B 3.7.5-9

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	Verify each AF manual, power operated, and automatic valve in each water flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.7.5.2	Verify day tank contains ≥ 420 gal of fuel oil.	31 days
SR 3.7.5.3	Operate the diesel driven AF pump for ≥ 15 minutes.	31 days
SR 3.7.5.4	Verify the developed head of each AF pump at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.7.5.5	Verify each AF automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.7.5.6	Verify each AF pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.7.5.7	Verify proper alignment of the required AF flow paths by verifying flow from the condensate storage tank to each steam generator.	Prior to entering MODE 2 whenever unit has been in MODE 5, MODE 6, or defueled for a cumulative period of > 30 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.7.5.8 Verify fuel oil properties are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.7.5.1

Verifying the correct alignment for manual, power operated, and automatic valves in the AF System provides assurance that the proper flow paths will exist for AF operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position.

The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.

SR 3.7.5.2

This SR provides verification that the level of fuel oil in the day tank is at or above the level at which fuel oil is added. The level is expressed as an equivalent volume in gallons.

The 31 day Frequency is adequate to assure that a sufficient supply of fuel oil is available, since low level alarms are provided and facility operators would be aware of any large uses of fuel oil during this period.

SR 3.7.5.3

This SR verifies that each diesel driven AF pump is run for greater than or equal to 15 minutes.

The 31 day Frequency is based on operating experience and the low probability of significant degradation of the AF diesel prime mover occurring between performances of the surveillance.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.5.4 |

Verifying that each AF pump's developed head at the flow test point is greater than or equal to the required developed head ensures that AF pump performance has not degraded during the cycle. Flow and differential head are normal tests of centrifugal pump performance required by Section XI of the ASME Code (Ref. 4). Because it is undesirable to introduce cold AF into the steam generators while they are operating, this testing is performed on recirculation flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. Performance of inservice testing discussed in the ASME Code, Section XI (Ref. 4) (only required at 3 month intervals) satisfies this requirement.

SR 3.7.5.5 |

This SR verifies that AF can be delivered to the steam generators in the event of any accident or transient that generates an ESFAS, by demonstrating that each automatic valve in the flow path actuates to its correct position on an actual or simulated actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 18 month Frequency is acceptable based on operating experience and the design reliability of the equipment.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.5.6 |

This SR verifies that the AF pumps will start in the event of any accident or transient that generates an ESFAS by demonstrating that each AF pump starts automatically on an actual or simulated actuation signal. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power.

SR 3.7.5.7 |

This SR verifies that the AF is properly aligned by verifying the flow paths from the CST to each steam generator prior to entering MODE 2 after more than 30 days in any combination of MODE 5, MODE 6, or defueled. OPERABILITY of AF flow paths must be verified before sufficient core heat is generated that would require the operation of the AF System during a subsequent shutdown. The Frequency is reasonable, based on engineering judgement and other administrative controls that ensure that flow paths remain OPERABLE. To ensure AF System alignment, flow path OPERABILITY is verified following extended outages to determine no misalignment of valves has occurred. This SR ensures that the flow path from the CST to the steam generators is properly aligned.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.5.8

The tests of fuel oil are a means of assuring it has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. The tests, limits, and applicable ASTM standards are listed in the Diesel Fuel Oil Testing Program, as described in Specification 5.5.13.

Fuel oil degradation during long term storage shows up as an increase in particulate, due mostly to oxidation. The presence of particulate does not mean the fuel oil will not burn properly in a diesel engine. The particulate can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

Particulate concentrations should be determined in accordance with ASTM D5452-98 (Ref. 5). This method involves a determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing.

Fuel Oil to the Auxiliary Feedwater Pump Day Tank is supplied from the outside fuel oil storage tanks. These tanks are also subject to the requirements of the Diesel Fuel Oil Testing Program, as described in Specification 5.5.13.

The Frequency of this test takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between Frequency intervals.

ATTACHMENT 4-B

Typed Pages

for

Technical Specification Changes

and

**Bases Changes
(for information only)**

BYRON STATION

REVISED TS PAGES

3.7.5-2

3.7.5-3

REVISED BASES PAGES

B 3.7.5-6

B 3.7.5-7

B 3.7.5-8

B 3.7.5-9

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	Verify each AF manual, power operated, and automatic valve in each water flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.7.5.2	Verify day tank contains ≥ 420 gal of fuel oil.	31 days
SR 3.7.5.3	Operate the diesel driven AF pump for ≥ 15 minutes.	31 days
SR 3.7.5.4	Verify the developed head of each AF pump at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.7.5.5	Verify each AF automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.7.5.6	Verify each AF pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.7.5.7	Verify proper alignment of the required AF flow paths by verifying flow from the condensate storage tank to each steam generator.	Prior to entering MODE 2 whenever unit has been in MODE 5, MODE 6, or defueled for a cumulative period of > 30 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.7.5.8 Verify fuel oil properties are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.7.5.1

Verifying the correct alignment for manual, power operated, and automatic valves in the AF System provides assurance that the proper flow paths will exist for AF operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position.

The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.

SR 3.7.5.2

This SR provides verification that the level of fuel oil in the day tank is at or above the level at which fuel oil is added. The level is expressed as an equivalent volume in gallons.

The 31 day Frequency is adequate to assure that a sufficient supply of fuel oil is available, since low level alarms are provided and facility operators would be aware of any large uses of fuel oil during this period.

SR 3.7.5.3

This SR verifies that each diesel driven AF pump is run for greater than or equal to 15 minutes.

The 31 day Frequency is based on operating experience and the low probability of significant degradation of the AF diesel prime mover occurring between performances of the surveillance.

BASES

SURVEILLANCE REQUIREMENTS (continued)SR 3.7.5.4 |

Verifying that each AF pump's developed head at the flow test point is greater than or equal to the required developed head ensures that AF pump performance has not degraded during the cycle. Flow and differential head are normal tests of centrifugal pump performance required by Section XI of the ASME Code (Ref. 4). Because it is undesirable to introduce cold AF into the steam generators while they are operating, this testing is performed on recirculation flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. Performance of inservice testing discussed in the ASME Code, Section XI (Ref. 4) (only required at 3 month intervals) satisfies this requirement.

SR 3.7.5.5 |

This SR verifies that AF can be delivered to the steam generators in the event of any accident or transient that generates an ESFAS, by demonstrating that each automatic valve in the flow path actuates to its correct position on an actual or simulated actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 18 month Frequency is acceptable based on operating experience and the design reliability of the equipment.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.5.6 |

This SR verifies that the AF pumps will start in the event of any accident or transient that generates an ESFAS by demonstrating that each AF pump starts automatically on an actual or simulated actuation signal. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power.

SR 3.7.5.7 |

This SR verifies that the AF is properly aligned by verifying the flow paths from the CST to each steam generator prior to entering MODE 2 after more than 30 days in any combination of MODE 5, MODE 6, or defueled. OPERABILITY of AF flow paths must be verified before sufficient core heat is generated that would require the operation of the AF System during a subsequent shutdown. The Frequency is reasonable, based on engineering judgement and other administrative controls that ensure that flow paths remain OPERABLE. To ensure AF System alignment, flow path OPERABILITY is verified following extended outages to determine no misalignment of valves has occurred. This SR ensures that the flow path from the CST to the steam generators is properly aligned.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.5.8

The tests of fuel oil are a means of assuring it has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. The tests, limits, and applicable ASTM standards are listed in the Diesel Fuel Oil Testing Program, as described in Specification 5.5.13.

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Particulate concentrations should be determined in accordance with ASTM D5452-98 (Ref. 5). This method involves a determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing.

Fuel Oil to the Auxiliary Feedwater Pump Day Tank is supplied from the outside fuel oil storage tanks. These tanks are also subject to the requirements of the Diesel Fuel Oil Testing Program, as described in Specification 5.5.13.

The Frequency of this test takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between Frequency intervals.