

Exelon Generation
4300 Winfield Road
Warrenville, IL 60555

www.exeloncorp.com

10CFR50.90

April 19, 2002

RS-02-045

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 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 License Amendment for Technical Specifications Surveillance
Requirement for Containment Spray Nozzles

References: (1) Letter from D. V. Pickett (NRC) to J. K. Wood (FirstEnergy Nuclear
Operating Company), "Perry Nuclear Power Plant, Unit 1 – Issuance of
Amendment," dated June 29, 2000

(2) Letter from J. B. Hopkins (NRC) to O. D. Kingsley (Exelon Generation
Company, LLC), "Clinton Power Station, Unit 1 – Issuance of Amendment,"
dated March 28, 2002

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," we are proposing a change to the Technical Specifications (TS) of Facility Operating License Nos. NPF-72, NPF-77, NPF-37, and NPF-66 for the Braidwood Station, Units 1 and 2 and the Byron Station, Units 1 and 2, respectively. TS 3.6.6, "Containment Spray and Cooling Systems," contains a Surveillance Requirement (SR) to verify each spray nozzle on the containment spray ring headers at the top of the containment dome is unobstructed. The Frequency for this SR (i.e., SR 3.6.6.8) is "10 years." We are proposing to revise this Frequency to "Following maintenance that could result in nozzle blockage OR Following fluid flow through the nozzles." The proposed Frequency of "Following maintenance that could

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result in nozzle blockage" is consistent with similar changes previously approved by the NRC in References 1 and 2 for the Perry Nuclear Plant and the Clinton Power Station, respectively. The air flow test that verifies each spray nozzle is unobstructed presents a personnel safety risk for the individuals required to access the over-head crane in containment to check the nozzle air flow. Additionally, the air flow test has the potential to impact fuel movement and other maintenance that is critical path in containment, thereby extending the outage duration. Review of industry experience indicates that Containment Spray systems of similar design are highly reliable and are not susceptible to plugging. As such, the proposed Frequency has been shown to be acceptable through operating experience.

The proposed frequency change is being submitted for approval prior to November 19, 2002 (i.e., prior to when the test is next scheduled for performance at Braidwood Station).

This proposed amendment request is subdivided as follows.

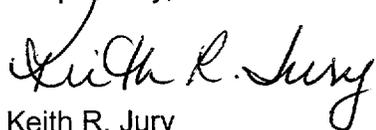
1. Attachment A contains a description and safety analysis of the proposed change.
2. Attachments B-1 and B-2 include the marked-up TS pages with the proposed change indicated for Braidwood Station and Byron Station, respectively. Attachments B-3 and B-4 include the associated typed TS pages with the proposed change incorporated for Braidwood Station and Byron Station, respectively. Attachments B-5 and B-6 include the associated typed TS Bases pages with the proposed change incorporated for information only for Braidwood Station and Byron Station, respectively.
3. Attachment C describes our evaluation performed using the criteria in 10 CFR 50.91(a)(1), "Notice for public comment," which provides information supporting a finding of no significant hazards consideration using the standards in 10 CFR 50.92(c), "Issuance of amendment."
4. Attachment D provides information supporting an environmental assessment and a finding that the proposed change satisfies the criteria for a categorical exclusion.

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

Exelon Generation Company, LLC 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 Ms. Kelly M. Root at (630) 657-2820.

Respectfully,



Keith R. Jury
Director - Licensing
Mid-West Regional Operating Group

U. S. Nuclear Regulatory Commission

April 19, 2002

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Affidavit

Attachments:

Attachment A: Description and Safety Analysis of the Proposed Change

Attachment B-1: Marked-Up TS Page for Braidwood Station

Attachment B-2: Marked-Up TS Page for Byron Station

Attachment B-3: Incorporated TS Page for Braidwood Station

Attachment B-4: Incorporated TS Page for Byron Station

Attachment B-5: Incorporated TS Bases Page for Braidwood Station

Attachment B-5: Incorporated TS Bases Page for Byron Station

Attachment C: Information Supporting a Finding of No Significant Hazards Consideration

Attachment D: Information Supporting an Environmental Assessment

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

STATE OF ILLINOIS)
COUNTY OF DUPAGE)
IN THE MATTER OF)
EXELON GENERATION CO., 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 License Amendment for Technical Specifications Surveillance Requirement for Containment Spray Nozzles

AFFIDAVIT

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

Keith R. Jury

Keith R. Jury
Director - Licensing
Mid-West Regional Operating Group

Subscribed and sworn to before me, a Notary Public in and
for the State above named, this 19th day of
April, 2002.

Betty Fox

Notary Public



ATTACHMENT A

DESCRIPTION AND SAFETY ANALYSIS OF THE PROPOSED CHANGE

A. SUMMARY OF PROPOSED CHANGE

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," we are proposing a change to the Technical Specifications (TS) of Facility Operating License Nos. NPF-72, NPF-77, NPF-37 and NPF-66 for the Braidwood Station, Units 1 and 2 and the Byron Station, Units 1 and 2, respectively. The Frequency for Technical Specifications (TS) Surveillance Requirement (SR) 3.6.6.8 for verifying each spray nozzle is unobstructed is revised from "10 years" to "Following maintenance that could result in nozzle blockage OR Following fluid flow through the nozzles." The proposed Frequency of "Following maintenance that could result in nozzle blockage" is consistent with a similar change previously approved by the NRC in the referenced letters for the Perry Nuclear Plant and the Clinton Power Station.

The proposed Frequency has been shown to be acceptable through operating experience. Review of industry experience indicates that Containment Spray (CS) systems of similar design are highly reliable and not susceptible to plugging when tested following construction. While there have been exceptions identified in CS and fire protection systems in which water leakage resulted in partial blockage, as described below, the Braidwood and Byron Stations' CS system design precludes this condition.

B. DESCRIPTION OF THE CURRENT REQUIREMENTS

SR 3.6.6.8 verifies that each spray nozzle is unobstructed on a Frequency of 10 years.

C. BASES FOR THE CURRENT REQUIREMENTS

With the containment spray inlet valves closed and the spray ring header drained of any solution, low-pressure air or smoke is blown through test connections. This SR ensures that each spray nozzle is unobstructed and provides assurance that spray coverage of the containment during an accident is not degraded. Due to the passive design of the nozzle, a test at 10-year intervals is considered adequate to detect obstruction of the nozzles.

D. NEED FOR REVISION OF THE REQUIREMENTS

The air flow test that verifies each spray nozzle is unobstructed presents a personnel safety risk for the individuals required to access the over-head crane in containment to check the nozzle air flow and impacts fuel movement and other maintenance that is critical path in containment. Since plant safety is ensured at the proposed Frequency, we are proposing to revise the CS system testing provisions to require nozzle testing only after activities that could result in nozzle blockage, i.e., following maintenance that could result in nozzle blockage or following fluid flow through the nozzles. Nozzle blockage is considered unlikely

during periods without maintenance or without fluid flow through the nozzles, since the nozzles are of a passive design and this portion of the CS system is normally kept in a dry state, thus minimizing corrosion susceptibility. In addition, the location of the nozzles at the top of the containment dome limits the possibility of the introduction of foreign material from sources external to the CS system. The proposed Frequency will continue to provide confidence that an unobstructed flow path is available, and will preclude the need for unnecessary testing when activities have not occurred that could introduce debris to the spray ring headers, or when other active degradation mechanisms are not present.

In addition, verifying that each spray nozzle is unobstructed requires the use of the overhead crane in containment, which impacts fuel movement and other maintenance that is critical path during a refueling outage, thereby extending the outage duration.

E. DESCRIPTION OF THE PROPOSED CHANGE

SR 3.6.6.8 is revised to verify that each spray nozzle is unobstructed on a Frequency of "Following maintenance that could result in nozzle blockage OR Following fluid flow through the nozzles."

F. SAFETY ANALYSIS OF THE PROPOSED CHANGES

The Containment Spray (CS) system provides a spray of cold, borated water mixed with sodium hydroxide (NaOH) from the spray additive tank into the upper regions of the containment to reduce the containment pressure and temperature and to reduce fission products from the containment atmosphere during a DBA.

The CS system consists of two separate 100% capacity trains, each capable of meeting the design bases. Each train includes a CS pump, spray ring headers, nozzles, valves, and piping. Each train is powered from a separate Engineered Safety Feature (ESF) bus. Each train consists of three spray rings located at the top of the containment dome with 219 spray nozzles in train A and 253 spray nozzles in train B. The minimum restriction in the CS system is the orifice for the spray nozzles. This orifice will pass particles less than 0.375 inches in diameter. The CS system, including the nozzles, is constructed of stainless steel that is inherently immune to corrosion, a mechanism that could potentially obstruct the nozzles. The nozzles are constructed with a swirl chamber design and do not have any internal parts, such as swirl vanes, etc., which would be susceptible to clogging. The spray ring headers are maintained dry and are isolated from the water in the CS system by a normally closed, motor-operated containment isolation valve (CIV) and a CIV check valve, which are subject to testing in accordance with the Inservice Testing (IST) Program and the Local Leakrate Testing (LLRT) Program. The height of the water in the header upstream of the CIV corresponds to the level of water in the Refueling Water Storage Tank (RWST), the source of borated water during the injection phase following a CS Actuation signal. Therefore, the design of the CS system at Braidwood and Byron Stations precludes borated water from reaching the spray nozzles, even with the CIV open for testing, except during a CS actuation. In addition, the location of the nozzles at the top of the containment dome limits the possibility of the introduction of foreign material from sources external to the CS

system. It is anticipated that only dust or other lightweight airborne particles could possibly accumulate at the nozzles. These types of substances would be readily flushed off or out of the nozzles when subjected to the 15 gpm flowrates seen at the nozzle during a CS actuation.

The current Foreign Material Exclusion (FME) program requires that any breaches of system boundaries during maintenance activities be appropriately protected from the intrusion of foreign material. These controls normally include, but are not limited to, covers for open pipes, in-progress and closeout inspections, and accounting for tools and materials during work performance. The FME program provides guidelines that establish cleanliness requirements and accounting of material, tools, and parts to preclude the introduction of foreign materials into systems or components during maintenance, modification, test, or inspection activities. The FME program demands the highest level of controls for safety-related systems such as the CS system. The program requires supervision and management involvement if FME integrity is lost and requires a Condition Report be written if an item cannot be found or retrieved. These controls are sufficient to ensure that material is not inadvertently introduced.

Previous testing has verified that the nozzles are not blocked. Since the time most likely for debris to be introduced into the CS ring headers is during the initial construction and installation of the system, confidence exists that debris that would cause blockage is not present. Initial preoperational testing was conducted at Braidwood Station, Unit 1 in April 1986 and at Braidwood Station, Unit 2 in March 1987. Similarly, initial preoperational testing was conducted at Byron Station, Unit 1 in December 1982 and at Byron Station, Unit 2 in January 1986. Preoperational testing successfully verified flow through each nozzle prior to initial operation. Based on these test results, it is unlikely that there is any residual debris in the spray ring headers or nozzles from original construction. Nozzle tests following preoperational testing were subsequently conducted at Braidwood Station, Unit 1 in March 1991, at Braidwood Station, Unit 2 in September 1991, at Byron Station, Unit 1 in October 1991, and at Byron Station, Unit 2 in March 1992. These tests, performed approximately five years after initial operation, demonstrated unobstructed flow through each nozzle, confirming that the system was free from construction debris, as well as free from obstructions and foreign material following startup of the plants. If conditions were favorable for corrosion to form, it is expected that some nozzle blockage would have occurred after five years. Additionally, there have been no CS actuations at either Braidwood or Byron Station.

A review of the maintenance history at Braidwood and Byron Stations shows no work has been done on the spray nozzles since the last performance of the SR which verified each spray nozzle was unobstructed. However, system breaches have been made from the outside CIV (i.e., normally closed, motor-operated CIV) to a portion of the vertical riser that leads to the spray ring header for IST check valve disassembly/inspections, LLRT testing on CIVs, and ASME code required flow tests. Other portions of the CS system have been drained to support TS testing, sampling, and pump/valve work. FME controls were in place during the time this work was performed; therefore, the likelihood that any unknown foreign materials were introduced to the system is extremely low.

SR 3.6.6.8 requires that each spray nozzle be verified unobstructed on a 10-year frequency. The Bases further clarifies that the test is performed using an air or smoke flow test to verify that the spray nozzles are not obstructed. This change would require verification that the nozzles are unobstructed after operations or maintenance that could cause obstruction. Normal plant operation and maintenance activities at Braidwood and Byron Stations are not expected to trigger the performance of the proposed SR. Only an unanticipated circumstance would initiate the performance of the proposed SR, such as a CS actuation, a major system configuration change, or a loss of FME control when working within the affected system boundary. In these cases, station procedures and/or the Corrective Action Program would include remedial actions to ensure the spray nozzles are operable prior to being returned to service, and actions to prevent recurrence would address long-term operability. In the event that remedial actions could not assure operability of the spray nozzles, the existing test method, using an air or smoke flow test, would be used to assure operability by verifying that the spray nozzles are not obstructed. Braidwood and Byron Station procedures/processes currently require or will require, performance of an evaluation to determine whether a spray nozzle test would be required to ensure the nozzles remain unobstructed.

The passive design of the CS system, the use of stainless steel in the construction of the system, the normally dry state of the spray ring headers and nozzles, and the location of the nozzles make the potential for spray nozzle obstruction very low. The proposed Frequency will continue to provide confidence that an unobstructed flow path is available and will preclude the need for unnecessary testing. Verifying that the spray nozzles are not obstructed "Following maintenance that could result in nozzle blockage OR Following fluid flow through the nozzles" is a more appropriate Frequency. The proposed Frequency of "Following maintenance that could result in nozzle blockage" is consistent with a similar change previously approved by the NRC for the Perry Nuclear Power Plant (Ref. 1) and the Clinton Power Station (Ref. 2).

G. IMPACT ON PREVIOUS SUBMITTALS

We have reviewed the proposed change regarding its impact on any previous submittals and have determined that there is no impact on any previous submittals.

H. SCHEDULE REQUIREMENTS

The proposed frequency change is being submitted for approval prior to November 19, 2002 (i.e., prior to when the test is next scheduled for performance at Braidwood Station).

I. REFERENCES

- (1) Letter from D. V. Pickett (NRC) to J. K. Wood (FirstEnergy Nuclear Operating Company), "Perry Nuclear Power Plant, Unit 1 – Issuance of Amendment," dated June 29, 2000
- (2) Letter from J. B. Hopkins (NRC) to O. D. Kingsley (Exelon Generation Company, LLC), "Clinton Power Station, Unit 1 – Issuance of Amendment," dated March 28, 2002

ATTACHMENT B-1

MARKED-UP TS PAGE

BRAIDWOOD STATION, UNITS 1 AND 2

ATTACHMENT B-2

**MARKED-UP TS PAGE
BYRON STATION, UNITS 1 AND 2**

ATTACHMENT B-3

**INCORPORATED TS PAGE
BRAIDWOOD STATION, UNITS 1 AND 2**

ATTACHMENT B-4

**INCORPORATED TS PAGE
BYRON STATION, UNITS 1 AND 2**

ATTACHMENT B-5

INCORPORATED TS BASES PAGE (FOR INFORMATION ONLY)

BRAIDWOOD STATION, UNITS 1 AND 2

ATTACHMENT B-6

INCORPORATED TS BASES PAGE (FOR INFORMATION ONLY)

BYRON STATION, UNITS 1 AND 2

ATTACHMENT C

INFORMATION SUPPORTING A FINDING OF NO SIGNIFICANT HAZARDS CONSIDERATION

According to 10 CFR 50.92(c), "Issuance of amendment," 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 accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," we are proposing a change to the Technical Specifications (TS) of Facility Operating License Nos. NPF-72, NPF-77, NPF-37 and NPF-66 for the Braidwood Station, Units 1 and 2 and the Byron Station, Units 1 and 2, respectively. The Frequency for Technical Specifications (TS) Surveillance Requirement (SR) 3.6.6.8 for verifying each spray nozzle is unobstructed is revised from "10 years" to "Following maintenance that could result in nozzle blockage OR Following fluid flow through the nozzles." The air flow test that verifies each spray nozzle is unobstructed presents a personnel safety risk for the individuals required to access the over-head crane in containment to check the nozzle air flow, and impacts fuel movement and other maintenance that is critical path in containment, thereby extending the outage duration. The proposed Frequency has been shown to be acceptable through operating experience. Review of industry experience indicates that Containment Spray systems of similar design are highly reliable and are not susceptible to plugging.

Information supporting the determination that the criteria set forth in 10 CFR 50.92 are met for this amendment request is indicated below.

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

The proposed change revises the Frequency for Technical Specifications (TS) Surveillance Requirement (SR) 3.6.6.8 for verifying each spray nozzle is unobstructed from "10 years" to "Following maintenance that could result in nozzle blockage OR Following fluid flow through the nozzles."

Analyzed events are initiated by the failure of plant structures, systems, or components. The Containment Spray (CS) system is not considered as an initiator of any analyzed event. 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 (DBA) and transient analyses in the Byron/Braidwood Stations' UFSAR assume the CS system is operable. The operability of the CS system in accordance with the proposed TS is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the plant. Since plant safety can be ensured at the proposed Frequency, we are proposing to revise the CS system testing provisions to require nozzle testing only after activities that could result in nozzle blockage, i.e., following maintenance that could result in nozzle blockage or following fluid flow through the nozzles. Nozzle blockage is considered unlikely during periods without maintenance or without fluid flow through the nozzles, since the nozzles are of a passive design and the system is kept in a normally dry state, thus minimizing corrosion susceptibility. In addition, the location of the nozzles at the top of the containment dome limits the possibility of the introduction of foreign material from sources external to the CS system. The proposed Frequency will continue to provide confidence that an unobstructed flow path is available, and will preclude the need for unnecessary testing when no activities have occurred that would introduce debris to the spray ring headers, or when no other active degradation mechanism is present. Operability of the CS system will not be affected. Therefore, the proposed change does not involve a significant increase in the consequences of an accident previously evaluated.

2. Does the proposed change 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. Installed equipment is not operated in a new or different manner. No new or different system interactions are created, and no new processes are introduced. The current foreign material exclusion practices have been reviewed and judged sufficient to provide high confidence that debris will not be introduced during times when the CS system boundary is breached. The design of the CS system at Braidwood and Byron Stations precludes borated water from reaching the spray nozzles, except during a CS actuation. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

The proposed change does not introduce any new setpoints at which protective or mitigative actions are initiated. No current setpoints are altered by this change. The design and functioning of the CS system is unchanged. Since the system is not susceptible to corrosion induced obstruction nor is the introduction of foreign material from external sources likely, and the design of the CS system at Braidwood and Byron Stations precludes borated water from reaching the spray nozzles except during a CS actuation, the proposed testing Frequency is sufficient to provide high confidence that the CS system will continue to function as designed. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Therefore, based on the above evaluation, we have concluded that the proposed change does not involve any significant hazards consideration.

ATTACHMENT D

INFORMATION SUPPORTING AN ENVIRONMENTAL ASSESSMENT

Exelon Generation Company, LLC (Exelon) has evaluated the proposed change against 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 the proposed change meets the criteria for a categorical exclusion set forth in 10 CFR 51.22(c)(9), "Criteria 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 10 CFR 50.92(b), "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 Attachment C, the proposed change does not involve any significant hazards consideration.

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

The proposed change does not allow for an increase in the unit power level, and does not increase the production, nor alter the flow path or method of disposal of radioactive waste or by-products. The proposed change does not affect actual unit effluents. Therefore, the proposed change does not change the types or increase the amounts of any effluents released offsite.

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

The proposed change will not result in changes in the operation or configuration of the facility. There will be no change in the level of controls or methodology used for processing of radioactive effluents or handling of solid radioactive waste, nor will the proposal result in any change in the normal radiation levels within the plant. Therefore, there will be no increase in individual or cumulative occupational radiation exposure resulting from the proposed change.