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10 CFR 50.90

March 24, 2021
Serial: RA-21-0052

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

Shearon Harris Nuclear Power Plant, Unit 1
Docket No. 50-400
Renewed License No. NPF-63

Subject: License Amendment Request Regarding Change to Containment Spray Nozzle Test Frequency

Ladies and Gentlemen:

In accordance with the provisions of 10 CFR 50.90, Duke Energy Progress, LLC (Duke Energy), hereby requests a revision to the Shearon Harris Nuclear Power Plant, Unit 1 (HNP), Technical Specifications (TS). The proposed amendment would revise the surveillance frequency associated with containment spray nozzle testing specified by Surveillance Requirement 4.6.2.1.d. Specifically, the proposed change would replace the current testing frequency, as specified by the Surveillance Frequency Control Program, with an event-based frequency.

The proposed change has been evaluated in accordance with 10 CFR 50.91(a)(1) using criteria in 10 CFR 50.92(c), and it has been concluded that the proposed change involves no significant hazards consideration.

Enclosure 1 provides a description and assessment of the proposed change. Additionally, Enclosures 2 and 3 provide copies of the proposed changes to the TS and TS Bases, respectively. Enclosure 3 is provided for information only, as changes to the HNP TS Bases will be processed in accordance with HNP TS 6.8.4.n, “Technical Specifications (TS) Bases Control Program,” upon implementation of the amendment.

Approval of the proposed license amendment is requested within twelve months of acceptance. The amendment shall be implemented within 90 days from approval.

In accordance with 10 CFR 50.91, a copy of this application, with enclosures, is being provided to the designated North Carolina State Official.

This letter contains no regulatory commitments.

Please refer any questions regarding this submittal to Art Zaremba, Manager – Nuclear Fleet Licensing, at (980) 373-2062.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on March 24, 2021.

Sincerely,

Kim E Maza

Kim Maza
Site Vice President
Harris Nuclear Plant

Enclosures:

1. Evaluation of the Proposed Change
2. Proposed Technical Specification Changes (Mark-up)
3. Proposed Technical Specification Bases Changes (Mark-up)

cc: J. Zeiler, NRC Sr. Resident Inspector, HNP
W. L. Cox, III, Section Chief, N.C. DHSR
M. Mahoney, NRC Project Manager, HNP
L. Dudes, NRC Regional Administrator, Region II

ENCLOSURE 1

EVALUATION OF THE PROPOSED CHANGE

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-400

RENEWED LICENSE NUMBER NPF-63

7 PAGES PLUS THE COVER

Evaluation of the Proposed Change

License Amendment Request Regarding Change to Containment Spray Nozzle Test Frequency

1.0 SUMMARY DESCRIPTION

In accordance with the provisions of 10 CFR 50.90, Duke Energy Progress, LLC (Duke Energy), hereby requests a revision to the Shearon Harris Nuclear Power Plant, Unit 1 (HNP), Technical Specifications (TS). The proposed amendment would revise the surveillance frequency associated with containment spray nozzle testing specified by Surveillance Requirement (SR) 4.6.2.1.d. Specifically, the proposed change would replace the current testing frequency, as specified by the Surveillance Frequency Control Program (SFCP), with an event-based frequency.

2.0 DETAILED DESCRIPTION

2.1 Background

The purpose of the containment spray system (CSS) is to spray borated sodium hydroxide solution into the containment to cool the atmosphere and to remove the fission products that may be released into the containment atmosphere following a loss-of-coolant accident (LOCA) or main steam line break (MSLB). As identified in Section 6.2.2.2.2 of the HNP Final Safety Analysis Report (FSAR), the CSS consists of two independent and redundant loops, each containing a spray pump, piping, valves, spray headers, and spray valves. Operation of the CSS is automatically initiated on receipt of the containment spray actuation signal, which occurs when a containment pressure HI-3 signal is reached. Upon receiving this signal, the containment spray pumps start operation and the containment spray isolation valves open, discharging borated water from the refueling water storage tank (RWST) into the containment through the containment spray headers. In addition to the initial injection mode, the CSS also has a recirculation mode where pump suction is transferred from the RWST to the containment sump when the RWST reaches low-low level.

Located in the containment dome, the average height above the operating deck for containment spray trains A and B is 133 ft. and 140 ft., respectively, with the average fall height of the spray droplets conservatively estimated to be 125 ft. for determination of the iodine removal coefficient. Each train of the CSS has two headers which conform to the shape of the containment and contain a total of 106 spray nozzles per train that break the flow into small droplets that increase the cooling effectiveness on the containment atmosphere. These nozzles are of open throat design, with a minimum inside diameter of approximately 0.375 inches and no moving parts. The number of spray nozzles in the system provides 100 percent redundancy for effective heat removal and iodine removal.

The system components are fabricated of corrosion-resistant materials and designed to operate in the environment to which they will be exposed following the worst postulated design basis accident.

2.2 Current Technical Specification

The HNP TS are based upon the format and content of the NUREG-0452, "Standard Technical Specifications for Westinghouse Pressurized Water Reactors," series. As a result, the HNP TS numbers and associated Bases numbers differ from those contained in NUREG-1431, “Standard Technical Specifications – Westinghouse Plants” (Revision 4, ADAMS Accession No. ML12100A222).

HNP TS 3/4.6.2.1 addresses the operability of the CSS, with SR 4.6.2.1.d requiring the performance of an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed, at the frequency specified in the SFCP. This is currently performed once every ten years.

2.3 Reason for the Proposed Change

The proposed change will eliminate unnecessary testing of the spray nozzles. The design of the CSS and cleanliness controls utilized during maintenance activities ensure that line or nozzle blockage is unlikely. Performance of SR 4.6.2.1.d at the current frequency has the potential to result in unwarranted occupational radiation exposure and increased outage costs without a commensurate increase in system reliability or performance. Testing would be performed based on activities or conditions that could potentially cause nozzle blockage.

Additionally, as stated above, HNP TS are based upon the format and content of NUREG-0452. However, the NRC allows for selective incorporation of Improved Standard Technical Specifications (ISTS) requirements (i.e., NUREG-1431 for Westinghouse Plants). As discussed in Section 16.0, Revision 3, “Technical Specifications,” dated March 2010 (ADAMS Accession No. ML100351425), of NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: Light Water Reactor (LWR) Edition,” TS change requests for facilities with TS based on previous standard TS should comply with comparable provisions in current ISTS NUREGs to the extent possible or justify deviations from the ISTS. The proposed change will remove details regarding the method in which the surveillance is performed, as consistent with ISTS SR 3.6.6A.8 in NUREG-1431. ISTS SR 3.6.6A.8 states: "Verify each spray nozzle is unobstructed." While the method of performing the verification is not included in the SR, the ISTS Bases for SR 3.6.6A.8 discuss that, with the containment spray inlet valves closed and the spray header drained of any solution, low pressure air or smoke can be blown through test connections to verify each spray nozzle is unobstructed. Enclosure 3 of this license amendment request provides Duke Energy’s proposed inclusion of content related to the method of performing the surveillance using low pressure air or smoke, similar to that found in the corresponding ISTS Bases.

2.4 Description of the Proposed Change

The text for SR 4.6.2.1.d will be revised to read as follows (new text in **bold**):

4.6.2.1 Each Containment Spray System shall be demonstrated OPERABLE:

d. ~~At the frequency specified in the Surveillance Frequency Control Program by performing an air or smoke flow test through each spray header and~~ **By** verifying each spray nozzle is unobstructed **following activities that could result in nozzle blockage.**

3.0 TECHNICAL EVALUATION

The proposed amendment will modify HNP TS SR 4.6.2.1.d to change the frequency for verifying spray nozzles are unobstructed from a fixed periodic basis to one based on the occurrence of activities that could cause nozzle blockage. Currently, the surveillance requires the verification of containment spray nozzle operability to be performed at the frequency specified in the SFCP, which currently equates to every ten years, by blowing low pressure air or smoke through the nozzles. This change in frequency is based on both industry and plant experience that supports the position that containment spray nozzle blockage during normal plant operation is not likely to occur.

The NRC staff previously performed a comprehensive examination of all TS SR in order to identify those that should be improved, as documented in NUREG-1366, “Improvements to Technical Specifications Surveillance Requirements” (December 1992). This evaluation considered the purpose of the SR and the effect that the performance of the SR has on personnel and on plant equipment. As it relates to the CSS, the report identified that the only reported problems regarding nozzle blockage were related to construction activities. In general, once the system is tested after construction, it is not subject to blockage.

Preoperational testing of the CSS at HNP was performed in June 1986 and verified air flow through each containment spray nozzle. Additionally, in April 1991, a CSS nozzle flow test was performed to satisfy the previous five-year frequency of TS SR 4.6.2.1.d, with verification of air flow through each nozzle.

On September 27, 1993, the NRC issued Generic Letter 93-05, “Line-Item Technical Specification Improvements to Reduce Surveillance Requirements for Testing During Power Operation.” The Generic Letter encouraged licensees to adopt the line-item TS improvements and provided guidance for licensees to use in preparing license amendments to reduce testing commensurate with the recommendations of NUREG-1366.

In Generic Letter 93-05, the NRC identified an additional problem at a plant which experienced nozzle clogging due to coating degradation in carbon steel piping. Consistent with the NRC’s recommendations in Generic Letter 93-05, the containment spray piping design at HNP is austenitic stainless steel, and thus is not susceptible to the coating degradation described in the generic letter.

By letter dated October 3, 1996 (ADAMS Accession No. ML020580045), the NRC issued License Amendment No. 67 to the HNP Facility Operating License to extend the surveillance frequency of the containment spray nozzle test in TS SR 4.6.2.1.d from 5 to 10 years, as aligned with the guidance in NUREG-1366 and Generic Letter 93-05. Two additional periodic CSS nozzle flow tests have been conducted at HNP since the implementation of this amendment. In both May of 2003 and 2012, air flow tests of the containment spray headers were performed to verify that the spray nozzles were unobstructed. The results of these tests demonstrated unobstructed flow through each nozzle.

The greatest potential for introduction of debris that could result in blocking the nozzles is during maintenance activities on the spray header or nozzles. The spray nozzles are a passive system and are located at the upper elevations of containment, further reducing the potential of foreign material intrusion. However, the Foreign Material Exclusion (FME) program contains the appropriate level of controls to provide a high level of confidence that foreign materials will not be introduced when CSS boundaries are breached for maintenance or testing activities on the spray header or nozzles.

The fleet-wide FME program at Duke Energy is governed by procedure AD-MN-ALL-0002, “Foreign Material Exclusion.” This procedure establishes the Duke Energy Nuclear Fleet FME standards and requirements in order to: (1) prevent foreign material intrusion (FMI) into nuclear station structures, systems, and components (SSCs); (2) implement recommendations of INPO SOER 95-1, “Reducing Events Resulting from Foreign Material Intrusion;” (3) implement recommendations of INPO 07-008, “Guidelines for Achieving Excellence in FME;” and (4) implement recommendations of IER L2-19-6, “Preventing Debris-Induced Fuel Failures.”

The Duke Energy FME program ensures that the appropriate precautions are taken as needed to minimize the inadvertent and uncontrolled introduction of foreign materials into plant systems and components. Breached fluid or piping systems are required to be covered with approved FME devices when not being directly accessed for inspection or maintenance. Administrative FME controls also delineate program requirements for maintaining cleanliness of plant systems and components. Initial breach inspections are conducted with a focus on identification of tools, materials, dirt, debris, and SSC degradation, with unexpected discoveries documented within the applicable work order package and Corrective Action Program. Close-out inspections are also conducted to verify all SSCs are free of foreign material. If FME integrity should be lost through the intrusion or discovery of foreign material, the program procedure directs the worker(s) to enter the issue into the Corrective Action Program, make the proper notifications to site staff, and retrieve the foreign material if it is immediately retrievable. In the event the foreign material is not immediately retrievable, a foreign material plan is developed in accordance with the procedure to address.

A review of the maintenance history of the containment spray nozzles and spray ring headers was performed to determine whether any work has taken place since the most recent surveillance test conducted in May 2012. This review determined that no maintenance or modification activities have been conducted during this timeframe which could introduce foreign material into the containment spray nozzles or spray ring headers.

Additionally, there have been no occurrences of inadvertent flow through the spray nozzles subsequent to the performance of the last nozzle flow test. The CSS spray headers are maintained dry above the RWST static height and are isolated from system flow during pump testing, therefore minimizing the potential for boric acid accumulation. In the event of inadvertent fluid flow through the nozzles, such as the result of spurious actuation, Duke Energy would evaluate testing to determine if the nozzles have remained unobstructed.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements and Guidance

10 CFR 50 Appendix A, General Design Criteria 38, 39, 40, and 50

10 CFR Part 50 Appendix A, General Design Criterion (GDC) 38, “Containment Heat Removal,” states, in relevant part, that a system to remove heat from the reactor containment shall be

provided and that the system safety function shall be to reduce rapidly the containment pressure and temperature following any LOCA and maintain them at acceptably low levels.

10 CFR 50 Appendix A, GDC 39, “Inspection of Containment Heat Removal System,” states, in relevant part, that the containment heat removal system shall be designed to permit appropriate periodic inspection of important components, such as the torus, sumps, spray nozzles, and piping to assure the integrity and capability of the system.

10 CFR 50 Appendix A, GDC 40, “Testing of Containment Heat Removal System,” states, in relevant part, that the containment heat removal system shall be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leaktight integrity of its components, (2) the operability and performance of the active components of the system, and (3) the operability of the system as a whole, and under conditions as close to the design as practical the performance of the full operational sequence that brings the system into operation.

10 CFR 50 Appendix A, GDC 50, “Containment Design Basis,” states, in relevant part, that the reactor containment structure, including access openings, penetrations, and the containment heat removal system shall be designed so that the containment structure and its internal compartments can accommodate, without exceeding the design leakage rate and with sufficient margin, the calculated pressure and temperature conditions resulting from any LOCA.

10 CFR 50.36, “Technical specifications”

The NRC's regulatory requirements related to the content of the TS are set forth in 10 CFR 50.36, "Technical specifications." This regulation requires that the TS include items in the following five specific categories: (1) safety limits, limiting safety system settings, and limiting control settings, (2) LCOs, (3) Surveillance Requirements, (4) design features, and (5) administrative controls. The regulation does not specify the particular requirements to be included in a plant's TS.

Per 10 CFR 50.36(c)(3), 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.

Conclusion

Duke Energy has evaluated the proposed changes against the applicable regulatory requirements described above. Based on this evaluation, there is reasonable assurance that the health and safety of the public will remain unaffected following the approval of these proposed changes.

4.2 Precedents

The NRC has previously reviewed and approved similar license amendments to change the surveillance frequency for spray nozzle testing to an event-based frequency for the following sites:

- Seabrook Station, Unit No. 1, per letter dated January 30, 2012 (ADAMS Accession No. ML113260577)
- Catawba Nuclear Station, Units 1 and 2, McGuire Nuclear Station, Units 1 and 2, and Oconee Nuclear Station, Units 1, 2, and 3, per letter dated August 24, 2010 (ADAMS Accession No. ML100690007)
- Prairie Island Units, 1 and 2, per letter dated November 6, 2008 (ADAMS Accession No. ML082740226)
- Millstone Power Station, Unit 2, per letter dated March 31, 2008 (ADAMS Accession No. ML080720304)
- R.E. Ginna Nuclear Power Station, per letter dated July 31, 2006 (ADAMS Accession No. ML061980055)

4.3 Significant Hazards Consideration

Pursuant to 10 CFR 50.90, Duke Energy Progress, LLC (Duke Energy), hereby requests a revision to the Shearon Harris Nuclear Power Plant, Unit 1 (HNP), Technical Specifications (TS). The proposed amendment would revise the surveillance frequency associated with containment spray nozzle testing specified by Surveillance Requirement (SR) 4.6.2.1.d. Specifically, the proposed change would replace the current testing frequency, as specified by the Surveillance Frequency Control Program (SFCP), with an event-based frequency.

Duke Energy has evaluated whether a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

Response: No.

The proposed amendment modifies the frequency for performance of a surveillance test which does not impact any failure modes that could lead to an accident. The proposed frequency change does not affect the ability of the spray nozzles or spray system to perform its accident mitigation function as assumed and therefore there is no effect on the consequence of any accident. Verification of no blockage continues to be required, but now verification will be performed following activities that could result in nozzle blockage. 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.

The containment spray system is not being physically modified and there is no impact on the capability of the system to perform accident mitigation functions. No system setpoints are being modified and no changes are being made to the method in which borated water is delivered to the spray nozzles. The testing requirements imposed by this proposed change to check for nozzle blockage following activities that could cause nozzle blockage do not introduce new failure modes for the system. The proposed amendment does not introduce accident initiators or malfunctions that would cause a new or different kind of accident. 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 amendment involve a significant reduction in a margin of safety?*

Response: No.

The proposed amendment does not change or introduce any new setpoints at which mitigating functions are initiated. No changes to the design parameters of the spray systems are being proposed. There are no changes in system operation being proposed by this change that would impact an established safety margin. The proposed change modifies the frequency for verification of nozzle operability in such a way that continued high confidence exists that the spray systems will continue to function as designed. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based upon the above evaluation, Duke Energy 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 Commission'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 CONSIDERATIONS

Duke Energy 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 by 10 CFR 20, or it would change an inspection or surveillance requirement. However, the proposed changes do 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 needs be prepared in connection with the proposed amendment.

ENCLOSURE 2

PROPOSED TECHNICAL SPECIFICATION CHANGES (MARK-UP)

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-400

RENEWED LICENSE NUMBER NPF-63

1 PAGE PLUS THE COVER

CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two independent Containment Spray Systems shall be OPERABLE with each Spray System capable of taking suction from the RWST and transferring suction to the containment sump.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With one Containment Spray System inoperable, restore the inoperable Spray System to OPERABLE status within 72 hours** or be in at least HOT STANDBY within the next 6 hours; restore the inoperable Spray System to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours. Refer also to Specification 3.6.2.3 Action.

-- NOTE --

**One Containment Spray System train is allowed to be inoperable for a total of 7 days to allow for maintenance on the Essential Services Chilled Water System and air handlers supported by the Essential Services Chilled Water System. Prior to exceeding 72 hours, the compensatory measures described in HNP LAR correspondence letter RA-19-0007 shall be implemented.

SURVEILLANCE REQUIREMENTS

4.6.2.1 Each Containment Spray System shall be demonstrated OPERABLE:

a. At the frequency specified in the Surveillance Frequency Control Program by verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position*;

b. By verifying that, on an indicated recirculation flow of at least 1832 gpm, each pump develops a differential pressure of greater than or equal to 186 psi when tested pursuant to the INSERVICE TESTING PROGRAM;

c. At the frequency specified in the Surveillance Frequency Control Program by:

   1. Verifying that each automatic valve in the flow path actuates to its correct position on a containment spray actuation test signal and

   2. Verifying that each spray pump starts automatically on a containment spray actuation test signal.

   3. Verifying that, coincident with an indication of containment spray pump running, each automatic valve from the sump and RWST actuates to its appropriate position following an RWST Lo-Lo test signal.

By

d. ~~At the frequency specified in the Surveillance Frequency Control Program by performing an air or smoke flow test through each spray header and~~ verifying each spray nozzle is unobstructed.

e. At the frequency specified in the Surveillance Frequency Control Program by verifying that containment spray locations susceptible to gas accumulation are sufficiently filled with water.

following activities that could result in nozzle blockage.

* Not required to be met for system vent flow paths opened under administrative control.

ENCLOSURE 3

PROPOSED TECHNICAL SPECIFICATION BASES CHANGES (MARK-UP)

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-400

RENEWED LICENSE NUMBER NPF-63

2 PAGES PLUS THE COVER

CONTAINMENT VENTILATION SYSTEM (Continued)

gross leakage failures could develop. The 0.60 L_a leakage limit of Specification 3.6.1.2b. shall not be exceeded when the leakage rates determined by the leakage integrity tests of these valves are added to the previously determined total for all valves and penetrations subject to Type B and C tests.

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

3/4.6.2.1 CONTAINMENT SPRAY SYSTEM

The OPERABILITY of the Containment Spray System ensures that containment depressurization and cooling capability will be available in the event of a LOCA or steam line break. The pressure reduction and resultant lower containment leakage rate are consistent with the assumptions used in the safety analyses.

The Containment Spray System and the Containment Fan Coolers are redundant to each other in providing post-accident cooling of the containment atmosphere. However, the Containment Spray System also provides a mechanism for removing iodine from the containment atmosphere and therefore the time requirements for restoring an inoperable spray system to OPERABLE status have been maintained consistent with that assigned other inoperable ESF equipment.

Management of gas voids is important to Containment Spray System OPERABILITY. Containment Spray System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the containment spray trains and may also prevent water hammer and pump cavitation.

A Surveillance Requirement verifies that required Containment Spray System locations susceptible to gas accumulation are sufficiently filled with water. Selection of Containment Spray System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

The Containment Spray System is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the Containment Spray System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits. If any accumulated gas is eliminated or brought within the acceptance criteria limits as part of the Surveillance performance, the Surveillance is considered met and the system is OPERABLE. Past operability is then evaluated under the Corrective Action program. If it is suspected that a gas intrusion event is occurring, then this is evaluated under the Operability Determination Process.

Containment Spray System locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms

CONTAINMENT SPRAY SYSTEM (Continued)

may be verified by monitoring a representative sub-set of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

The Surveillance Requirement provided to verify the correct position of valves in the flow path is modified by a note which exempts system vent flow paths opened under administrative control. The administrative control should be proceduralized and include stationing a dedicated individual at the system vent flow path who is in continuous communication with the operators in the control room. The individual will have a method to rapidly close the system vent flow path if directed.

3/4.6.2.2 SPRAY ADDITIVE SYSTEM

The OPERABILITY of the Spray Additive System ensures that sufficient NaOH is added to the containment spray in the event of a LOCA. The limits on NaOH volume and concentration ensure a pH value of between 7.0 and 11.0 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components. The contained solution volume limit includes an allowance for solution not usable because of tank discharge line location or other physical characteristics. These assumptions are consistent with the iodine removal efficiency assumed in the safety analyses.

The maximum and minimum volumes for the Spray Additive Tank are based on the analytical limits. The specified indicated levels used for surveillance include instrument uncertainties and unusable tank volume.

3/4.6.2.3 CONTAINMENT COOLING SYSTEM

The OPERABILITY of the Containment Fan Coolers ensures that adequate heat removal capacity is available when operated in conjunction with the Containment Spray Systems during post-LOCA conditions.

ESW flowrate to the Containment Fan Coolers will vary based on reservoir level. Acceptable ESW flowrate is dependent on the number of heat exchanger tubes in service. Surveillance test acceptance criteria should be adjusted for these factors.

ADD:
With the containment spray inlet valves closed and the spray header drained of any solution, low pressure air or smoke can be 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.