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RS-03-069

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

Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No 50-461

Subject: Supplemental Information Supporting the License Amendment Request to Permit Inclined Fuel Transfer System Blind Flange Removal During Power Operations

References: (1) Letter from J. M. Heffley (AmerGen Energy Company, LLC) to U.S. NRC, "Request for License Amendment to Technical Specifications to Permit Inclined Fuel Transfer System Blind Flange Removal During Power Operations," dated April 2, 2001

(2) Letter from K. R. Jury (Exelon Generation Company, LLC) to U.S. NRC, "Response to Request for Additional Information Regarding Risk Aspects of Inclined Fuel Transfer System License Amendment Request for Clinton Power Station," dated January 15, 2002

(3) Letter from T. W. Simpkin (Exelon Generation Company, LLC) to U. S. NRC, "Additional Information Supporting the License Amendment Request to Permit Inclined Fuel Transfer System Blind Flange Removal During Power Operations," dated August 23, 2002

In Reference 1, AmerGen Energy Company (AmerGen), LLC submitted a request for changes to the Facility Operating License No. NPF-62 and Appendix A to the Facility Operating License, Technical Specifications (TS), for Clinton Power Station (CPS) to permit Inclined Fuel Transfer System (IFTS) blind flange removal during power operations. The proposed changes in Reference 1 requested the addition of a conditional note before the Actions for TS Section 3.6.1.3, "Primary Containment Isolation Valves (PCIVs)," which will identify the controls required for allowing the IFTS blind flange to be removed during Modes 1, 2, or 3. Additional information concerning the risk aspects of the proposed change was provided in Reference 2. The NRC requested additional follow-up information regarding the information provided in the References 1 and 2. Reference 3 provided the requested information.

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In a conference call on September 5, 2002, the NRC requested supplemental information in support of their review of this request. Specifically, the NRC requested additional information concerning the ultimate pressure capacity and seismic capabilities of the IFTS components. In addition, in a follow-up conference call on February 5, 2003, the NRC requested clarification on the ability to perform manual actions in the containment following a reactor scram and the seismic qualification of the IFTS when the blind flange is in the unbolted configuration. Attachment 2 to this letter provides the requested information.

The evaluation supporting this request for information has resulted in a need to add a conditional note to TS Section 3.6.1.1, "Primary Containment – Operating," and its associated Bases. These proposed changes are in addition to those changes proposed in Reference 1. Attachment 3 provides the marked-up TS pages and Bases pages (for information only) reflecting the revised wording. The information supporting a No Significant Hazards Consideration provided in Reference 1 has also been revised to address the changes proposed in Attachment 3 to this letter. The revised No Significant Hazards Consideration is provided in Attachment 4.

Should you have any questions related to this information, please contact Mr. Timothy A. Byam at (630) 657-2804.

Sincerely,

Keith R. Jury

Keith R. Jury
Director – Licensing and Regulatory Affairs
Mid-West Regional Operating Group
AmerGen Energy Company, LLC

Attachments:

1. Affidavit
2. Supplemental Information Supporting the License Amendment Request to Permit Inclined Fuel Transfer System Blind Flange Removal During Power Operations
3. Markup of Proposed Technical Specification Changes and Bases Changes (for information only)
4. Information Supporting a Finding of No Significant Hazards Consideration

cc: Regional Administrator – NRC Region III
NRC Project Manager, NRR – Clinton Power Station
NRC Senior Resident Inspector – Clinton Power Station
Office of Nuclear Facility Safety – Illinois Department of Nuclear Safety

STATE OF ILLINOIS	**)**	
COUNTY OF DUPAGE	**)**	
IN THE MATTER OF	**)**	
AMERGEN ENERGY COMPANY, LLC	**)**	**Docket Number**
CLINTON POWER STATION, UNIT 1	**)**	**50-461**

SUBJECT: **Supplemental Information Supporting the License Amendment Request to Permit Inclined Fuel Transfer System Blind Flange Removal During Power Operations**

AFFIDAVIT

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

Keith R. Jury

Keith R. Jury
Director – Licensing and Regulatory Affairs
Mid-West Regional Operating Group
AmerGen Energy Company, LLC

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

for the State above named, this 28th day of

March, 2003.

Notary Public

"OFFICIAL SEAL"
TIMOTHY A. BYAM
NOTARY PUBLIC STATE OF ILLINOIS
COMMISSION EXPIRES 12/04/06

ATTACHMENT 2

Supplemental Information Supporting the License Amendment Request to Permit Inclined Fuel Transfer System Blind Flange Removal During Power Operations

IFTS Ultimate Pressure Capacity Evaluation

An engineering evaluation was performed to document the impact of a beyond-design-basis containment pressure on the pressure capacity of the Inclined Fuel Transfer System (IFTS) components and piping when the blind flange is removed. This evaluation was performed to assess the ability of selected IFTS components to maintain their pressure retention capability for a beyond-design-basis containment pressure of 63 psig with the blind flange removed. This 63 psig value corresponds to the containment ultimate capacity as described in the Clinton Power Station (CPS) Updated Safety Analysis Report (USAR), Section 3.8.1.4.8. The components that were evaluated included the transfer tube (1F42-D001), the bellows (1F42-G001, 1F42-G002), the expansion joints (1F42-D300, 1F42-D301), the upper and bottom gate valves (1F42-F002, 1F42-F004), the drain line (1FH07A) and the drain line isolation valves (1F42-F003 and 1F42-F301). The evaluation was limited to components that would be impacted by removal of the blind flange. It did not evaluate the impact on components for which removal of the blind flange would not impact the pressure that the component would experience.

1) **1F42D001**
The design pressure of the containment isolation assembly portion of the IFTS transfer tube is 40 psig (Reference 1). Based on a comparison of the IFTS tube thickness and material type against the material properties of the containment isolation assembly, a 40 psig design pressure is assumed for the IFTS tube. This comparison is necessitated because the design specification does not list a specific design pressure. The structural and seismic analysis for the IFTS tube, as documented in Reference 1, does not use 40 psig but assumes lower internal pressures dependent on the tube elevation. Review of the analysis shows there is margin between the calculated and allowable stresses. In addition, the analysis is based on material allowable stresses that are considerably less than the specified material yield strength. For example, at room temperature the material yield strength is 30 ksi and the material allowable stresses are approximately 19 ksi. There would be additional margin between the specified minimum material yield and ultimate strengths. Also, there are generally margins available between the minimum required and actual material properties. As a result, it is concluded that the pressure retaining capacity will be maintained for beyond-design-basis containment pressures of 63 psig with the IFTS blind flange removed.

2) **1F42-G001, 1F42-G002, 1F42-D301**
Removal of the IFTS flange does not impact the pressure load on these items. 1F42-G001, the expansion bellows, is part of the containment pressure boundary even with the IFTS blind flange closed. 1F42-G002 and 1F42-D301, expansion bellows and expansion joint respectively, are on sleeves surrounding the IFTS tube and would not be exposed to containment atmosphere regardless of the position of the IFTS blind flange. Therefore, these components were not evaluated for beyond-design-basis pressures.

Supplemental Information Supporting the License Amendment Request to Permit Inclined Fuel Transfer System Blind Flange Removal During Power Operations

3) 1F42-D300

The centerline elevation of the 1F42-D300 expansion joint is approximately 755'-7" (i.e., 755.58 ft). The maximum upper pool water elevation is less than the elevation of the floor, which is 828'-3" (i.e., 828.25 ft). Assuming the maximum density of water of 62.4 lb/ft^3, the potential hydrostatic pressure at this component is 31.5 psig [(828.25 ft – 755.58 ft)*62.4 $lb/ft^3/(144in^2/ft^2)$]. Adding 63 psig for beyond-design-basis containment pressure results in a pressure of 94.5 psig. The design pressure for the expansion joint is 50 psig (Reference 2). Catastrophic pressure retention failure at 94.5 psig would not be expected, however, for the following reasons.

This expansion joint is a "Tied Universal Bellows" manufactured by Pathway Bellows. Reference 3 identifies that the manufacturer's pressure test would have been 1.5 times the design pressure, or 75 psig. The test pressure would not have been allowed to exceed the material yield strength. The pressure retaining components of the bellows assembly (i.e., the bellows and connected piping) are constructed of ASTM A240, Type 304 and ASTM A312, Type P304 materials, respectively (Reference 2). Both materials have specified minimum yield and ultimate strengths of 30 ksi and 75 ksi, respectively. The design would be based on yield strength. A safety factor is typically applied to design and the actual material strengths normally exceed minimum specification requirements.

Pathway Bellows was contacted to provide an estimate of the pressure retaining capacity of the bellows. They performed an informal evaluation and concluded that when a 2.25 safety factor is applied, the bellows could withstand a pressure of 117 psig. In addition, it was concluded that the associated hardware is capable of withstanding a pressure of 117 psig and will remain within allowable stress limits at this pressure.

Engineering judgment, based on the above discussion, concludes that 1F42-D300 will maintain its pressure retention ability for beyond-design-basis containment pressures as high as 63 psig.

4) 1F42-F002, 1F42-F004

1F42-F002 and 1F42-F004 are double disc gate valves manufactured by Anchor Darling (Reference 5). They have ANSI Class 150# flanges welded to their inlets and outlets. Their specified primary service rating is 75 psig and their specified design pressure is 50 psig (Reference 4). These valves were hydrostatic tested at 113 psig (Reference 5). The hydrostatic test pressure would not have been allowed to exceed the material yield strength. The outlet elevation of the lower of the two valves is 728'11" (i.e., 728.92 ft). Assuming the maximum water density of 62.4 lb/ft^3, the hydrostatic head pressure would be 43 psig [(828.25 ft – 728.92 ft)*62.4 $lb/ft^3/(144in^2/ft^2)$]. The maximum pressure at the valve for a beyond-design-basis containment pressure of 63 psig (i.e., 63 psig + 43 psig equals 106 psig) would be less than the hydrostatic test pressure (i.e., 113 psig). The flange material is A351, Gr. CF8M (Reference 5). The ANSI allowable pressure for the flanges at 200° F is 240 psig. As a result, it is judged that these valves will maintain their pressure retaining integrity if they are subjected to a beyond-design-basis containment pressure of 63 psig.

5) **1FH07A**
The design pressure for this line is 100 psig. The lowest piping elevation is 752'–3" (i.e., 752.25 ft). Assuming the maximum water density of 62.4 lb/ft^3, the hydrostatic pressure would be 33 psig [(828.25 ft – 752.25 ft)*62.4 $lb/ft^3/(144in^2/ft^2)$]. Adding 63 psig for beyond-design-basis containment pressure results in a total pressure of 96 psig. As a result, a beyond-design-basis containment pressure of 63 psig does not represent a pressure retention concern for this drain line.

6) **1F42-F003**
1F42-F003 is a Hills-McCanna 4-inch ball valve with a specified 50 psig process design pressure (References 6 and 7). The design specification requires the valve to be a 150# pressure class valve per ANSI B16.5 (Reference 6). The construction material for the body and bonnet is ASTM 351, Gr. CF8M (Reference 7). The allowable operating pressure for ANSI 150# class valves constructed from this material at 200° F is 240 psig. The valve elevation is 752'–3" (i.e., 752.25 ft). Assuming the maximum density of water of 62.4 lb/ft^3 and maximum possible upper pool level, the hydrostatic head pressure is 33 psig [(828.25 ft – 752.25 ft)*62.4 $lb/ft^3/(144in^2/ft^2)$]. Adding 63 psig for beyond-design-basis containment pressure results in a pressure of 96 psig. This is much less than the ANSI allowable operating pressure of 240 psig. As a result, a beyond-design-basis containment pressure of 63 psig does not represent a pressure retention concern for this valve.

7) **1F42-F301**
The applicable piping design table for 1F42-F301 requires this valve to be an ANSI Class 150# valve. The valve material is ASTM A351 CF8M stainless steel (Reference 8). The allowable pressure at a temperature of 200° F is 240 psig. The valve elevation is 752'–3" (i.e., 752.25 ft). Assuming the maximum density of water of 62.4 lb/ft^3 and maximum possible upper pool level, the hydrostatic head pressure is 33 psig [(828.25 ft – 752.25 ft)*62.4 $lb/ft^3/(144in^2/ft^2)$]. Adding 63 psig for beyond-design-basis containment pressure results in a pressure of 96 psig. This is much less than the ANSI allowable operating pressure of 240 psig. As a result, a beyond-design-basis containment pressure of 63 psig does not represent a pressure retention concern for this valve.

In summary, it is expected that the pressure retention capability of the IFTS components included in this evaluation will be maintained during beyond-design-basis events in which the IFTS blind flange is removed and the containment pressure reaches 63 psig.

IFTS Seismic Capacity Evaluation

Rotation of the IFTS spectacle flange to the open position does not significantly change the seismic characteristics of the IFTS tube, however it does change the pressure-retaining boundary for the containment. Where the spectacle flange is normally the pressure boundary for the containment, the IFTS tube, drain line piping and valves would become the pressure boundary with the IFTS flange in the open position. This change in containment boundary does not make an appreciable difference in the seismic capacity of the containment as discussed below.

CPS did not utilize a seismic PRA analysis to determine the seismic fragility of the containment. Instead, for the Individual Plant Examination for External Events (IPEEE), CPS used the Seismic Margins Assessment (SMA) approach. In this approach the seismic capacity of a set of safe shutdown equipment was confirmed to meet or exceed the Seismic Margins Earthquake (SME) of 0.3 g peak ground acceleration. The SMA concluded that the containment and components are seismically rugged when analyzed for the SME. The SMA determined that, because of conservatisms used in the seismic design approach, the 0.25 g peak ground acceleration Safe Shutdown Earthquake (SSE), as used for design, would bound the SME of 0.3 g. This means that structures and components designed for the CPS SSE would also be capable of withstanding the SME. It is therefore concluded that the containment has a High Confidence of a Low Probability of Failure (HCLPF) of at least 0.3 g.

Adding the IFTS tube, drain piping and valves to the containment pressure boundary should not reduce the containment seismic capacity below a HCLPF of 0.3 g. This is because the IFTS tube and drain piping are essentially piping systems. Piping systems are inherently rugged as demonstrated by actual performance of above ground, welded steel piping in industrial plants that have experienced large earthquakes. The SMA approach recognizes this. When reviewing piping systems for the SMA, the major concern is that the piping systems retain adequate flexibility to accommodate seismic motions. In particular, there should be sufficient flexibility to deal with differential motion of pipe anchorage points. Seismic inertial effects in welded steel piping systems are not considered to be primary failure initiators. A review of the seismic design for the IFTS tube, drain line piping and valves confirms this as is discussed below.

1) **1F42-D001**
   The IFTS tube (i.e., 1F42-D001) was seismically analyzed in Reference 1. The analysis shows substantial margin between the calculated and allowable stresses. In addition, the referenced analysis is based on ASME code allowable stresses based on material yield strength. There is margin between the minimum yield and ultimate strength requirements for the material. In addition, there is generally some margin between the actual and minimum required material strength. As a result, it is judged that the IFTS tube will maintain pressure-retaining integrity when the SME is applied.

2) **1F42-G001, 1F42-G002, 1F42-D301**
   Rotation of the IFTS flange does not impact the pressure on these items. 1F42-G001, the expansion bellows, is part of the containment pressure boundary even with the IFTS blind flange closed. 1F42-G002 and 1F42-D301, expansion bellows and expansion joint respectively, are on sleeves surrounding the IFTS tube and would not be exposed to containment atmosphere regardless of the position of the

IFTS blind flange. Therefore, these items produce no new seismic capacities for the containment boundary with the IFTS flange open.

3) **1F42-D300**
1F42-D300 (i.e., expansion joint) is a Tied Universal Bellows manufactured by Pathway Bellows. The bellows material is ASTM A240, Type 304. The seismic loading on the bellows was evaluated (Reference 9) and the loading and displacement were found to be within vendor specified requirements. The minimum specified yield and minimum specified ultimate strengths for this material are 30 ksi and 75 ksi, respectively. The bellows design would be based on yield strength. Also, these bellows were qualified to operate at temperatures as high as 700° F. Review of ASME Section III, Division 1 Subsection NA, Appendix I for this type of material shows that the allowable yield strength at 200° F is significantly higher than at 700° F. In addition, a safety factor is typically applied to design and the actual material strengths normally exceed minimum specification requirements. Based on engineering judgment, it is concluded that 1F42-D300 will maintain its pressure retaining integrity if the SME is applied.

4) **1F42-F002, 1F42-F004**
The upper and lower gate valves, 1F42-F002 and 1F42-F004 respectively, are isolation valves on the IFTS tube. They are more robust than the IFTS tube piping itself. Operators on these valves are not unusually long or massive relative to the size of the IFTS tube. Therefore, the operators will not apply excessive bending loads to the valves or IFTS tube. Based on the above, these valves do not constitute a weakness in the IFTS tube seismic capacity.

5) **1FH07A**
1FH07A, the IFTS tube drain line, was seismically analyzed in References 9 and 10. The Reference 9 analysis covered the portion of piping from the IFTS tube to where the drain line is embedded into the wall. The remainder of the line is evaluated in Reference 10 and includes the drain line isolation valves 1F42-F003 and 1F42-F301.

Review of these analyses shows there is substantial margin between the calculated and allowable stresses for the portion of piping of interest. In addition, these analyses are based on allowable stresses and material yield strength requirements. There is margin between the minimum yield strength and ultimate strength requirements. In addition, there is generally margin between minimum material requirements and the actual material strength. Based on this discussion it is concluded that the drain piping will maintain its pressure retention capability if the SME is applied.

6) **1F42-F003**
Drain line isolation valve 1F42-F003 is a Hills-McCanna 4-inch ball valve and is compact and seismically rugged. It has an ANSI Class rating of 150# (References 6 and 7). Reference 10 shows that the resultant seismic accelerations based on the standard seismic response spectra for this valve are small (< 1.0 g). Based on the valve type design and the low seismic accelerations using the standard response

spectra, it is concluded that this valve will maintain its pressure retaining capability if the SME is applied.

7) **1F42-F301**
Drain line isolation valve 1F42-F301 is a manually operated plug valve (Reference 8) and is compact and seismically rugged. The valve is an ANSI Class 150# valve. Reference 10 shows that the resultant seismic accelerations at this valve, based on the standard seismic response spectra are small (< 1.0 g). Based on the valve type design and the low seismic accelerations using the standard response spectra, it is concluded that this valve will maintain its pressure retaining capability if the SME is applied.

Based on the above discussions, it is concluded that the IFTS tube, drain line piping and valves have adequate capacity to withstand inertial seismic loads.

A review of the IFTS tube and attached drain piping determined that although the system is adequately supported, sufficient flexibility exists to accommodate seismic motions of the IFTS tube and drain lines. This is accomplished though the use of bellows and piping runs with bends in it.

Based on the above, it can be concluded that the containment's seismic capacity with the IFTS blind flange open is adequate to accommodate the SME of 0.3 g peak ground acceleration.

Manual Actions to Isolate the IFTS Transfer Tube

In Reference 11, AmerGen provided a description of the manual actions required to remove and replace the blind flange during a Loss of Coolant Accident (LOCA). In the event of a LOCA, reinstallation of the blind flange would require a number of manual actions. Most of these actions require access to the containment. As documented in the response to Question 1 in Reference 11, a LOCA would result in elevated temperatures and pressures in the containment. For example, during a small break LOCA with bypass of the suppression pool, the area of the containment where the IFTS blind flange is located would become inaccessible for a period of time. As a result, rotating the flange during these conditions would not be feasible. The high level of water above the lower end of the IFTS tube effectively seals the tube and precludes it from becoming a leak path up to the 9 psig pressure associated with the large break LOCA. As described in Reference 11, if the IFTS tube bottom valve is open at the initiation of a LOCA, the IFTS operator will take action in accordance with CPS procedure 3702.01, "Inclined Fuel Transfer System (IFTS)," to isolate the bottom valve using the hydraulic actuator. This will ensure isolation of the IFTS tube.

Reference 11 also states that if the fuel transfer carriage or cables are part way through the open valve, the operator will raise the carriage to a point above the fill/drain position and then close the valve. In a LOCA with offsite power available all these actions can be performed from the IFTS control panel in the Fuel Building. However, in the event of a loss of offsite power (LOOP) the power to the IFTS control panel is lost. Therefore, contingency actions will be provided in approved station procedures to enable the manual closure of IFTS bottom gate valve. These actions are taken from the containment and the fuel building.

CPS procedure 4100.01, "Reactor Scram," has an immediate operator action that requires evacuation of the containment for any scram. If a LOOP were to occur without a scram, a containment evacuation may not be required. However, if a scram does occur then the containment would be evacuated. This will make performance of any manual actions in the containment impractical. The reactor scram procedure states that controlled re-entry into the containment will be allowed with Radiation Protection (RP) concurrence. RP will be directed to give priority to a team of persons to work on restoring the IFTS penetration and will support re-entry into the containment as soon as containment conditions allow. All of these actions will ensure that the IFTS tube is isolated as quickly as possible following a LOCA.

IFTS Blind Flange Unbolted Configuration

The manual actions required to remove the blind flange and replace the flange with a gasketed ring assembly are described in Reference 11. The actions required to reinstall the blind flange are also described in Reference 11. The actions required for removing or reinstalling the blind flange are similar. These actions include loosening all the spool bolts, removing 11 of the spool bolts and the associated locking plates, and then using a hydraulic hand pump to compress the pipe reducing spool allowing the flange to be rotated. Once the flange is rotated, the spool bolts and locking plates are replaced and all the spool bolts are tightened. This is a temporary condition in which the unbolted configuration is not formally analyzed for all accident scenarios. The risk is to the bellows assembly, as exact seismic displacements are not quantified when the blind flange bolts are removed. While damage to the bellows may result from a seismic event the containment integrity will not be affected. Failure of the bellows assembly would result in a potential bypass of the containment. The containment isolation function will be achieved by taking credit for the fact that the IFTS transfer tube terminates deep in the fuel building transfer pool. In addition, when the blind flange is rotated the bottom gate valve and drain valves are closed providing containment isolation. The pressure-retaining boundary for the containment will be the IFTS tube, drain line piping and valves during this period just as they are during the period when the blind flange has been removed.

As a result of the seismically indeterminate condition of the IFTS while the blind flange is unbolted, it has been determined that the time the system is in this condition will be limited. This condition is expected to exist for no more than a cumulative total of 12 hours per cycle during Modes 1, 2, or 3. Based on the above, it has been determined that the containment must be considered to be inoperable in this configuration until the flange bolts are properly tensioned. Therefore, this configuration would require entry into the Actions of Limiting Condition for Operation (LCO) 3.6.1.1, "Primary Containment." To address this issue, a new note is proposed for inclusion into the

Actions for LCO 3.6.1.1. The new note states that the "Applicable Conditions and Required Actions are not required to be entered for the Inclined Fuel Transfer System (IFTS) penetration for up to 12 hours per cycle when the IFTS blind flange is unbolted." This note provides a 12 hour delay during removal and reinstallation of the blind flange before the TS Actions are required to be entered when the IFTS blind flange is unbolted in Modes 1, 2, or 3. This is required to conservatively limit the seismic risk associated with the unbolted IFTS flange, yet provides adequate time to complete flange rotation. The cumulative time the IFTS is in the unbolted condition in Modes 1, 2, or 3 will be tracked by procedure and the TS Bases will be revised to note that this condition will be tracked.

Attachment 3 provides a markup of TS Section 3.6.1.1 to reflect the proposed changes as described above. A marked-up copy of the affected pages from the current TS Bases is also provided in Attachment 3 for information only. Following NRC approval of this request, the CPS TS Bases, in accordance with the TS Bases Control Program of TS Section 5.5.11, will be revised to incorporate the changes described above. The proposed changes provided in Attachment 3 are in addition to those changes that were previously provided in Reference 12. As a result of the additional changes to the CPS TS proposed in this submittal, the original No Significant Hazards Consideration provided in Reference 12 has been revised. The revised No Significant Hazards Consideration is included in Attachment 4. The proposed changes do not impact the environmental consideration provided in Reference 12.

References

1. Seismic Qualification Binder SQ-CL705, "Dynamic Qualification of Inclined Fuel Transfer Tube Tag No. 1F42-D001"

2. Pathway Bellows Drawing A1-20-003, Revision A

3. Pathway Bellows Expansion Joint Design Manual, Manual 177G, Copyright January, 1977

4. GE Purchase Specifications 21A3512, "Gate Valve and Operator," Revision 2 and 21A2080, "Valve, Gate, (Manual)," Revision 2

5. Anchor Darling Drawing Numbers 93-14388, Revision F and 93-14389, Revision E

6. GE Purchase Specification 21A3516, "Valve, Drain (Motor Operated)," Revision 1

7. VTIP Binder K2801-0067, Revision 5

8. Drawing NP3861-C, Vendor Code T340

9. Clinton Power Station Calculation IP-M-602, "Piping Stress Report for Subsystem 1FH-01," Revision 0

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10. Calculation 025246, "Piping Stress Report for Subsystem 1FH02"

11. Letter from T. W. Simpkin to U. S. NRC, "Additional Information Supporting the License Amendment Request to Permit Inclined Fuel Transfer System Blind Flange removal during Power Operations," dated August 23, 2002

12. Letter from J. M. Heffley to U. S. NRC, "Request for Amendment to Technical Specifications to Permit Inclined Fuel Transfer System Blind Flange Removal During Power Operations," dated April 2, 2001

<u>ATTACHMENT 3</u>

MARKUP OF PROPOSED
TECHNICAL SPECIFICATION CHANGES
AND
BASES CHANGES (FOR INFORMATION ONLY)

<u>Revised TS Page</u>

3.6-1

<u>Revised Bases Page (For Information Only)</u>

B 3.6-3

3.6 CONTAINMENT SYSTEMS

3.6.1.1 Primary Containment

LCO 3.6.1.1 Primary containment shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary containment inoperable.	A.1 Restore primary containment to OPERABLE status.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

NOTE

Applicable Conditions and Required Actions are not required to be entered for the Inclined Fuel Transfer System (IFTS) penetration for up to 12 hours per cycle when the IFTS blind flange is unbolted.

BASES (continued)

LCO

Primary containment OPERABILITY is maintained by limiting leakage to $\leq 1.0\ L_a$, except prior to the first startup after performing a required Primary Containment Leakage Rate Testing Program leakage test. At this time, applicable leakage limits must be met. Compliance with this LCO will ensure a primary containment configuration, including equipment hatches, that is structurally sound and that will limit leakage to those leakage rates assumed in the safety analysis. Individual leakage rates specified for the primary containment air locks are addressed in LCO 3.6.1.2.

APPLICABILITY

In MODES 1, 2, and 3, a DBA could cause a release of radioactive material to primary containment. In other operational conditions, events which could cause a release of radioactive material to primary containment are mitigated by secondary containment. In MODES 4 and 5, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, primary containment is not required to be OPERABLE in MODES 4 and 5 to prevent leakage of radioactive material from primary containment.

ACTIONS

Insert

A.1

In the event that primary containment is inoperable, primary containment must be restored to OPERABLE status within 1 hour. The 1 hour Completion Time provides a period of time to correct the problem that is commensurate with the importance of maintaining primary containment OPERABILITY during MODES 1, 2, and 3. This time period also ensures that the probability of an accident (requiring primary containment OPERABILITY) occurring during periods where primary containment is inoperable is minimal.

ACTIONS

B.1 and B.2

If primary containment cannot be restored to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least

(continued)

Insert (Page B 3.6-3):

A Note has been provided to indicate that when the Inclined Fuel Transfer System (IFTS) blind flange is unbolted for removal or reinstallation, entry into the associated Conditions and Required Actions may be delayed for up to 12 hours per operating cycle. This note applies to the IFTS penetration and not to any other Primary Containment penetration. During removal and reinstallation of the blind flange, a temporary condition will exist where the bolting will be loosened, hydraulic jacks will spread the flange faces, and normally about one half of the bolts will be removed while the blind is rotated. This configuration is expected to exist for no more than a cumulative total of 12 hours. Upon expiration of the 12 hour allowance for this maintenance activity, if the IFTS blind flange has not yet been re-bolted, the applicable Condition must be entered and the required Actions taken. With the bolts removed, the seismic restraint for the IFTS penetration is potentially challenged. The risk is to the bellows assembly, as exact displacements are not quantified. Failure of the ASME Class 2 bellows could result in a potential bypass of containment. Therefore, the total number of hours that the blind flange is unbolted per operating cycle shall be tracked to ensure that the 12-hour limitation is maintained. The cumulative 12-hour duration conservatively limits the seismic risk associated with the unbolted IFTS flange, yet provides adequate time to complete flange rotation.

ATTACHMENT 4

INFORMATION SUPPORTING A FINDING OF 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 of occurrence or consequences of an accident previously evaluated; or,

(2) Create the possibility of a new or different kind of accident from any previously analyzed; or,

(3) Involve a significant reduction in a margin of safety.

AmerGen Energy Company, LLC (i.e., AmerGen), proposes changes to Appendix A, Technical Specifications (TS), of Facility Operating License No. NPF-62. Specifically, we propose to add a conditional Note to the Actions associated with TS Section 3.6.1.3, "Primary Containment Isolation Valves (PCIVs)," which will provide the required conditions to be met when removing the Inclined Fuel Transfer System (IFTS) blind flange during Modes 1, "Power Operation," 2, "Startup," or 3, "Hot Shutdown." The proposed changes also delete conditional Note 3 to TS Section 3.6.1.3 Surveillance Requirement (SR) 3.6.1.3.3 added in Amendment 107. In addition to the above, the proposed changes also include the addition of a conditional note to TS Section 3.6.1.1 to provide a 12 hour delay during removal and reinstallation of the blind flange before the TS Actions are required to be entered when the IFTS blind flange is unbolted in Modes 1, 2, or 3.

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

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

The proposed changes allow operation of the IFTS while primary containment operability is required. The proposed changes result in a change to the primary containment boundary. A loss of primary containment integrity is not an accident initiator. The proposed changes do not involve any modifications to plant systems or design parameters or conditions that contribute to the initiation of any accidents previously evaluated. Therefore, the proposed changes do not increase the probability of any accident previously evaluated.

The proposed changes potentially affect the allowable leakage of the containment structure which is designed to mitigate the consequences of a loss-of-coolant accident (LOCA). The function of the primary containment is to maintain functional integrity during and following the peak transient pressures and temperatures that result from any LOCA. The primary containment is designed to limit fission product leakage following the design basis LOCA. Because the proposed changes do not alter the plant design, only the extent of the boundaries that provide primary containment isolation for the IFTS penetration, the proposed changes do not result in an increase in primary containment leakage. In addition, a time limit for IFTS blind flange removal of 40 days per cycle and a 12 hour limit for the unbolted configuration of the IFTS flange have been established as conservative measures to limit the associated risk to the containment boundary for all accident conditions. Once the blind flange is removed the IFTS transfer tube and its appurtenances become part of the primary containment boundary. As part of the primary containment boundary these subject components would be exposed to LOCA pressures. While these components have not been fabricated or installed to meet the acceptance criteria for a containment penetration, they have been built to withstand the rigors of a commercial nuclear application. This includes, but is not limited to, consideration of adequate seismic support, inertial forces imparted to the fuel, appropriate cooling and shielding for the spent nuclear fuel, integrity of the fluid system pressure boundary, and a safety analysis, including a failure modes and effects evaluation which assumes that credible events and credible combinations of events have been considered and mitigated against by either a fail safe design or redundancy. They are judged to be an acceptable barrier to prevent the uncontrolled release of post-accident fission products for the purposes of this amendment request.

Further, it has been shown that the largest potential leakage pathway, the IFTS transfer tube itself, would remain sealed by the depth of water required by the proposed TS change to be maintained in the fuel building fuel transfer pool. The transfer tube drain line constitutes the other possible leakage pathway, and will be required to be capable of being isolated via administrative control of the manual isolation valve in the drain line. Additionally, due to the physical relationships of the buildings and components involved, any leakage from either of these pathways is fully contained within the boundaries of the secondary containment and would be filtered by the Standby Gas Treatment System prior to release to the environment.

Leakage from the containment upper pool through the open IFTS transfer tube could potentially result in the excessive loss of water from the volume intended to provide post-LOCA makeup water to the suppression pool. The upper pool dump volume is maintained by requiring the installation of the steam dryer pool to reactor cavity pool gate with the seal inflated and a backup air supply provided. Maintaining the upper pool dump volume ensures proper suppression pool level can be achieved following a LOCA which provides for long-term steam condensation.

Based on the above, the proposed changes do not increase the consequences of an accident previously evaluated.

In summary, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

INFORMATION SUPPORTING A FINDING OF NO SIGNIFICANT HAZARDS CONSIDERATION

Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed changes do not involve a change to the plant design or operation except for when IFTS is operated. As a result, the proposed changes do not affect any of the parameters or conditions that could contribute to the initiation of any accidents. No new accident modes or equipment failure modes are created by these changes. Extending the primary containment boundary to include portions of the IFTS has no influence on, nor does it contribute to the possibility of a new or different kind of accident or malfunction from those previously evaluated. Furthermore, operation of IFTS is unrelated to the operation of the reactor. There is no mishap in the process that can lead or contribute to the possibility of losing any coolant in the reactor or introducing the chance for positive or negative reactivity or other accidents different from and not bounded by those previously evaluated. Therefore, these proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

The proposed changes only affect the extent of a portion of the primary containment boundary. The time that the IFTS is in the seismically indeterminate configuration with the flange unbolted will be limited to 12 hours per operating cycle. The time the IFTS blind flange will be removed will be limited to 40 days per operating cycle. These restrictions will limit the risk from the potential leakage through the primary containment boundary. Having IFTS in operation does not affect the reliability of equipment used for core cooling. In addition, precautions will be taken to administratively control the IFTS transfer tube drain path so that the proposed change will not increase the probability that an increase in leakage from the primary containment to the secondary containment could occur. Precautions will also be taken to ensure that the steam dryer pool to reactor cavity pool gate is installed prior to removing the IFTS flange when primary containment is required to be operable. Installation of this gate will ensure that an adequate containment upper pool dump volume is maintained to support post-LOCA suppression pool makeup water volume requirements.

The margin of safety that has the potential of being impacted by the proposed changes involve the offsite dose consequences of postulated accidents which are directly related to containment leakage rate. The containment isolation system is designed to limit leakage to L_a which is defined by the CPS TS to be 0.65% of primary containment air weight per day at the design basis LOCA maximum peak containment pressure (i.e., P_a). The limitation on containment leakage rate is designed to ensure that total leakage volume will not exceed the volume assumed in the accident analyses at P_a. The margin of safety for the offsite dose consequences of postulated accidents directly related to the containment leakage rate is maintained by meeting the L_a acceptance criteria during operation. The L_a value is not being modified by this proposed TS change. The IFTS will continue to provide an acceptable barrier to prevent unacceptable containment leakage during a LOCA, and therefore these changes will not create a situation causing the containment leakage rate acceptance criteria to be violated.

Therefore, the proposed changes do not involve a significant reduction in the margin of safety.

Based on the above evaluation, we have concluded that the proposed changes do not involve a significant hazards consideration.