GPU NUCLEAR

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February 26, 1997
6730-97-2059

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

Dear Sir:

Subject: Oyster Creek Nuclear Generating Station (OCNGS)
Operating License No. DPR-16
Docket No. 50-219

Reference: Generic Letter No. 96-06, dated September 30, 1996
120-day Response, Updated

By letter dated January 28, 1997, GPU Nuclear, Inc. submitted the 120 day response to Generic Letter (GL) 96-06. Since that date, it has been determined that an incorrect value had been submitted. Additionally, one of the original compensatory actions has been determined to be unneccessary, and has been removed. The revised portions of the response have been indicated by vertical bars in the right hand margin.

Corrective actions, including potential modifications and procedure changes, which are required to address the postulated conditions causing certain systems to be susceptible to the phenomena described in GL 96-06 are described, to the extent feasible at this time, in the Attachment to this letter. Corrective actions involving physical modifications to the plant will be tracked by the Integrated Schedule for OCNGS, pursuant to license condition 2.c.6 of the Full Term Operating License.

In addition, GPUN Inc. (Oyster Creek representatives) has been in contact with other utilities and industry groups (e.g., NEI and BWROG committees) and intends to continue working with these groups to fully address the GL concerns. An additional submittal, containing the design details and/or procedural changes for modifications and actions required to address the conditions of GL 96-06 which appear to be beyond the scope of the original design basis for OCNGS, will be made on or before May 31, 1997.

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If you have any questions regarding this document please contact Mr. Gregory M. Gurican, Sr. Licensing Engineer, at 201-316-7972.

Very truly yours,

Michael B Roche

Michael B. Roche
Vice President and Director
Oyster Creek

Attachment
MBR\gmg

cc: OCNGS NRC Project Manager
Administrator, Region I
OCNGS NRC Sr. Resident Inspector

Sworn and Subscribed to before me this 26th day of February, 1997.

Geraldine E Levin
A Notary Public of NJ

GERALDINE E. LEVIN
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires 6-8-2000

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February 26, 1997

ATTACHMENT

OYSTER CREEK NUCLEAR GENERATING STATION

RESPONSE TO GL 96-06
"Assurance of Equipment Operability and
Containment Integrity during design basis accident conditions"

SUMMARY REPORT

Generic Letter 96-06 Requested Actions

(1) Determine the susceptibility of containment air cooling water systems to either: [a] water hammer, or [b] two-phase flow conditions, during postulated accident conditions; and,

(2) Determine the susceptibility of piping systems that penetrate containment to thermal expansion of fluid causing overpressurization of the piping.

(3) Assess the operability of systems found to be susceptible to conditions in (1) and (2) above, and take corrective actions, as appropriate.

(4) Report on: actions taken; conclusions reached relative to susceptibility (including: identification of systems affected and specific circumstances involved); the basis for continued operability of affected systems and components, as applicable; and corrective actions implemented or planned.

(5) Review the specific events described in the Generic Letter for Applicability

ACTIONS TAKEN

To address the GL 96-06 issues and action requirements, a project team approach was used to develop the requisite information and perform the necessary analyses. This team was lead by the plant's Mechanical/Structural Engineering Group of the Configuration Control department and was supported by members of the following groups/departments: Safety & Risk Analysis and Mechanical/Structural Engineering groups of the corporate Engineering Support department, and on-site Systems Engineers, as well as, the corporate Licensing & Regulatory Affairs department of the Nuclear Safety & Technical Services division.

Review Methodology:

GL 96-06 REQUESTED ACTION (1)

The Oyster Creek Drywell Cooling Units and the Reactor Building Closed Cooling Water (RBCCW) system were evaluated for susceptibility to the water hammer concern under a postulated Loss of Coolant Accident (LOCA) independently and concurrent with a Loss of Offsite Power (LOOP). Operator actions based on emergency procedures were also considered. In addition, a qualitative evaluation of the Drywell Cooling Units and the RBCCW system for susceptibility to two phase flow degradation of heat exchange capability following a LOCA or Main Steam Line Break (MSLB) independently and concurrently with the applicability of a LOOP was conducted. The results of these reviews and evaluations were documented in a Technical Data Report (TDR) which was reviewed by the project team. However, it must be noted that any calculations performed for the analyses and evaluations are preliminary and are still in the process of being design verified.

GL 96-06 REQUESTED ACTION (2)

A review was performed of the following documents: the Updated FSAR containment design description and listing of containment isolation valves; the "Containment Isolation Design Basis Document" for the OCNGS, and the station procedure for containment isolation. A matrix was then developed for all penetrations which could transport liquid through containment. Each penetration was reviewed against established criteria to determine applicability of the concerns identified in the Generic Letter and the matrix and review summaries were documented in a Technical Data Report (TDR). The TDR and matrix developed were reviewed by the project team and received an independent technical review by the Primary Containment System Engineer.

OPERABILITY ASSESSMENT (3)

An operability assessment was performed for those systems which were found to be susceptible to overpressurization. A four-hour report was made, on the basis of preliminary evaluations and assessment performed to sup[illegible] he response to GL 96-06, pursuant to 10 CFR 50.72 on January 3, 1997; and, as a result, LER 97-0[illegible] be submitted within 30 days from that date as required by the regulations. The operability assessments included consideration of the guidance found in GL 91-18 for the performance of operability determinations and was made available to the NRC staff. All systems considered susceptible are addressed in the analyses presented below and were considered at that time to be operable for the interim duration until either procedural changes and or hardware modifications can be made. The determination of corrective actions to be implemented will be submitted to the NRC on or before May 31, 1997. Any proposed hardware changes will be implemented in accordance with the Integrated Schedule.

CONCLUSIONS REACHED (4)

Analysis of Affected Systems:

1. [a] Water hammer:

The Drywell Cooling Units are air to water heat exchangers, for which cooling water is provided from the RBCCW system. The Drywell Cooling Units and RBCCW system are not required for safe plant shutdown or to maintain the plant in a safe shutdown condition following any postulated design basis accidents or to mitigate an increase in containment pressure following a LOCA or MSLB within the Drywell. The RBCCW system supply and return lines to the Drywell isolate on a containment isolation signal. However, it must be noted that the emergency operating procedures (EOPs) allow operation of the Drywell Cooling Units, if the systems and equipment are available. The operation of these units is not required, but the procedural steps are intended as a defense-in-depth to allow the operators flexibility in responding to the postulated accident conditions.

Following a LOCA the RBCCW supply and return lines will isolate on either a high Drywell pressure with low-low reactor water level or a low-low-low reactor water level signal. To ensure that a loss of power does not prevent the isolation, the motor operated isolation valves are powered from Diesel Generator supplied buses. In addition, the containment isolation signal will trip the Drywell Cooling Unit Fans. The design basis LOCA is expected to produce containment conditions that lead to voiding within the RBCCW piping. Such voiding can lead to a potential water hammer should the operators attempt to return the system to service following this DBA. Therefore, the EOPs have been revised to eliminate the potential for a water hammer following a LOCA, which could potentially be created by operator action.

Mitigation of the design basis accidents and any potential water hammer event occurring within the Containment Cooling Systems remain unaffected by the LOOP.

1. [b] Two-phase Flow:

This Generic Letter issue pertains only to containment cooling systems that are relied upon to mitigate the consequences of a design basis accidents. The Containment Cooling Systems at Oyster Creek are not nuclear safety related nor relied upon to mitigate the consequences of any design basis accident conditions. Therefore, the only consequences on the Containment Cooling Systems piping is the water hammer issue described above and the potential for overpressurization of the RBCCW piping penetration discussed below.

2. Overpressurization:

As a result of the reviews conducted, as described above under "GL 96-06 REQUESTED ACTION (2)," the following systems piping penetrations have been determined to be susceptible to potential overpressure conditions as a result of increased temperatures within containment following a shutdown event or design basis accident (LOCA or MSLB with or without LOOP), and required additional evaluation and analysis:

A. Shutdown Cooling System Supply and Return Lines;
B. RBCCW Return Line;
C. Reactor Cleanup Supply Line (while isolated);
D. Isolation Condenser(s) Condensate Return Lines (while isolated); and,
E. Recirculation Loop Sampling Line (while isolated).

A. SHUTDOWN COOLING:

The Shutdown Cooling System is not credited in the Updated FSAR for mitigation of any design basis accident conditions. As a result the only overpressure related issue is the maintenance of containment integrity with respect to the associated piping penetrations. For conservatism, evaluations were performed on both the penetration piping as well as the isolation valves.

Shutdown Cooling Lines:

The analysis performed on the Shutdown Cooling System penetrations used a computer code to model internal fluid, piping, and penetration response for an external ambient temperature increase. The model does not consider potential for leakage past the isolation valves, which were evaluated separately. Actual configuration and material properties were factored into the model. The ambient conditions used to heat the piping are consistent with a containment temperature increase following a design basis accident. The pressure increase of the entrapped fluid results in strain on the piping which allows the volume mass to expand. The postulated pressures do not exceed the ASME Section III, Appendix F criteria for piping.

Shutdown Cooling Valves:

The Return Line inboard valve (V-17-19) is a Velan Valve 900 psi class, 14" gate valve with a pressure sealed bonnet and split wedge disc. Two of the three Return Line outboard valves (V-17-1, and V-17-2) are Anchor Darling 900 psi class, 10" gate valves with pressure sealed bonnets and split discs, and, the third valve (V-17-3) is a Velan Valve 600 psi class, 10" gate valve with a bolted bonnet, and a split disc. Based on the design of V-17-3 it is expected that overpressure may reach a maximum of approximately 2175 psig before the valve bonnet or packing could begin to leak. These determinations are based on the shell hydrostatic test requirements for 600 psi classclass valves. Due to the flexible wedge design of all four valves, leakage past the seats cannot be assumed. Based on review of the design and pressure class rating, a catastrophic failure of these valves is not considered credible. However, the rated pressures of these valves are below the maximum postulated overpressure predicted in the analysis. As a result, it has been concluded that this Shutdown Cooling Supply Line penetration does not meet design requirements as stipulated by the NRC in GL 96-06; when both the inboard and outboard valves are closed.

The Supply Line inboard valve (V-17-54) is a Velan Valve 900 psi class, 14" gate valve with a pressure sealed bonnet and split disc. The Supply Line outboard valves (V-17-55, 56, and 57) are Anchor Darling 600 psi class, 8" globe valves with a bolted bonnet. Based on the design of the outboard valves (V-17-55, 56, and 57) it is expected that overpressure may reach a maximum of approximately 2175 psig before the bonnet or packing could begin to leak. These determinations are based on the shell hydrostatic test requirements for 600 psi class valves. Due to the flexible wedge design of V-17-54 leakage past its seat cannot be assumed. Also, since the three Supply Line outboard valves are globe valves and the overpressure is on the downstream side of the disc, leakage past the seat cannot be assumed. Based on review of the design and pressure class rating, a catastrophic failure of these valves is not considered credible. However, as in the case of the Return Line, the rated pressure of these valves are below the maximum postulated overpressure predicted in the analysis. As a result, it has been concluded that this Shutdown Cooling Supply Line penetration does not meet design requirements as stipulated by the NRC in GL 96-06, when both the inboard and outboard isolation valves are closed.

B. RBCCW

A LOCA or MSLB will isolate the RBCCW supply and return lines by closing valves on these lines. This isolates this system in three locations two of which involve the RBCCW supply line which is not impacted by susceptibility to overpressurization based on our analyses as documented in the TDR referenced above. However, the RBCCW return line penetration is susceptible to the overpressurization concern raised in the Generic Letter. While the RBCCW system is not credited in the Updated FSAR accident analyses for mitigation of DBA conditions, containment integrity following a DBA is a valid concern in an overpressurization occurrence and therefore further evaluation and analysis follows.

RBCCW Return Line Piping:

An analysis was performed on the return line penetration using a computer code to model internal fluid, piping and penetration response for an external ambient temperature increase. The model does not consider leakage past the isolation valves which were evaluated separately. The actual configuration and material properties were factored into the model. The ambient conditions used to heat the piping are consistent with a containment temperature increase following a design basis accident. The pressure increase of the entrapped fluid results in a strain on the piping which allows the volume to increase and the fluid mass to expand. The postulated pressure does not exceed the ASME Section III, Appendix F criteria. Therefore, continued functionality of the penetration is assured.

RBCCW Return Line Isolation Valves:

The inboard and outboard isolation valves (V-5-166 and 167) are 6" gate valves manufactured by Pacific Valves Inc. The valves have bolted bonnets with solid discs. They were shop tested to a shell test pressure of 425 psig and a leak test pressure of 300 psig. Correspondence and discussions with the valve manufacturer indicate that based on testing experience these valves tend to leak at their seats when overpressurized on the upstream side. Significant overpressure upstream of the valve pressurizes the valve bonnet. Overpressure in the valve bonnet tends to force the flat body neck into a circular shape. This forces the body seat out of plane and allows the valve to leak by. Once pressure is reduced, the forces on the valve neck and seat would be eliminated and the valves would reseat. After the valves reseat the pressure in the penetration will be greater than the maximum Drywell pressure postulated to occur following a DBA; therefore, the integrity of the containment isolation is assured.

Postulated pressures exceed the rated pressures of the isolation valves. As a result, it has been concluded that the existing RBCCW Return line penetration does not meet design requirements as stipulated by the NRC in GL 96-06.

C. REACTOR CLEANUP SUPPLY LINE (when isolated):

The Reactor Cleanup Supply line is a 6" line which comes off the "B" recirculation loop. The motor operated inboard valve (V-16-1) and one of the two motor operated outboard valves (V-16-2 or 14) are normally open. When the system is in operation the temperature of the fluid is well above the peak temperature of the Drywell following an accident. Therefore, following an accident and the isolation of the system, pressurization as a result of heat transfer from the containment atmosphere is not physically possible. However, the system can be taken out of service for maintenance. This isolates the piping between the inboard valve and the two outboard valves. While isolated, the entrapped fluid in the piping may cool to temperatures below the those corresponding to peak accident temperatures. It is an undesirable operational condition to have this system out of service for extended periods of time. Experience indicates that the maximum out-of-service duration for this system is 2 to 4 days. This is based on reactor chemistry requirements. The Oyster Creek integrated schedule allows 2 outages during a 1 year period.

It is predicted by preliminary calculations that the entrapped fluid will cool to below accident temperatures within approximately 2 days of its removal from service. An accident before this time will not pressurize the system since its temperature will likely be greater than the post accident atmosphere temperature. However, despite this, the system was evaluated for the impact of pressurization due to DBA conditions.

Reactor Cleanup Supply Line Piping:

An analysis was performed on the Supply Line penetration using a computer code to model internal fluid, piping and penetration response for an external ambient temperature increase. The model does not consider leakage past the isolation valves which were evaluated separately. The actual configuration and material properties were factored into the model. The ambient conditions used to heat the piping are consistent with a containment temperature increase following a design basis accident. The pressure increase of the entrapped fluid results in a strain on the piping which allows the volume to increase and the fluid mass to expand. The postulated pressure does not exceed the ASME Section III, Appendix F criteria. Therefore, continued functionality of the penetration is assured.

Reactor Cleanup Supply Line Valves:

Inboard and outboard valves (V-16-1 and V-16-14) are Anchor Darling 600 psi class, 6" gate valves with a pressure sealed bonnets and split wedge discs. Outboard valve (V-16-2) is a Hirata 900 psi class, 6" gate valves with a bolted bonnet, and a solid wedge disc.

Based on the design of V-16-1 or 14 it is expected that overpressure may reach maximum of approximately 2175 psig before a valve bonnet or packing may begin to leak. These approximations are based on the shell hydrostatic test requirements for 600 psi classclass valves. This mechanism may relieve overpressure in the piping between the isolation valves.

Following this, the resulting pressure in the penetration between the isolation valves would be greater than maximum postulated Drywell pressure resulting from the accident conditions. Based on a review of the design and class rating, a catastrophic failure of these valves is not considered credible.

However, the rated pressures of these valves are below the maximum postulated overpressure predicted in the analysis. As a result, it has been concluded that the Reactor Cleanup Supply line penetration does not meet design requirements as stipulated by the NRC in Generic Letter 96-06, when the system is taken out-of-service for more than two days by closing both the inboard and outboard isolation valves.

D. ISOLATION CONDENSER(S) CONDENSATE RETURN LINES (when isolated):

The Isolation Condenser Systems are normally in standby, and in this configuration the system is not isolated and therefore is not susceptible to the GL 96-06 overpressure conditions. However, when the Isolation Condensers are taken out-of-service, the inboard isolation valves are closed and the Isolation Condenser actuation logic is bypassed. This places the condensate return line from the inboard isolation valves (V-14-36 or 37) to the outboard isolation valves (V-14-34 or 35) in an isolated configuration. While isolated, the entrapped fluid in the piping may cool to temperatures below the those corresponding to peak accident temperatures.

It is an undesirable operational condition to have this system out of service for extended periods of time. For example, the plant has a Technical Specification Limiting Condition for Operation (LCO) which requires a plant shutdown should an Isolation Condenser be inoperable for 7 days. Despite this, the system [illegible]aluated for the impact of pressurization due to DBA conditions.

It is predicted by preliminary calculations that the entrapped fluid will cool to below accident temperatures within approximately 1 day of its removal from service. An accident before this time will not pressurize the system since its temperature will likely be greater than the post accident atmosphere temperature.

Isolation Condenser(s) Condensate Return Lines:

An analysis was performed on the return line penetrations using a computer code to model internal fluid, piping and penetration response for an external ambient temperature increase. The model does not consider leakage past the isolation valves which were evaluated separately. The actual configuration and material properties were factored into the model. The ambient conditions used to heat the piping are consistent with a containment temperature increase following a design basis accident. The pressure increase of the entrapped fluid results in a strain on the piping which allows the volume to increase and the fluid mass to expand. The postulated pressure does not exceed the ASME Section III, Appendix F criteria. Therefore, continued functionality of the penetrations is assured.

Isolation Condenser(s) Condensate Return Line Valves:

Outboard valves (V-14-34 and 35) are Anchor Darling 900 psi class, 10" gate valves with a pressure sealed bonnets and split wedge discs. Inboard valves (V-14-36 and 37) are Anchor Darling 600 psi class, 10" gate valves with pressure sealed bonnets and split wedge disks.

Based on the design of V-14-36 and 37, it is expected that the overpressure may reach approximately 2175 psig before valve packing develops a leak. This approximation is based on the shell hydrostatic test pressure for 600 psi class valves. As the overpressure created in the isolated piping section is greater than pressures in piping upstream or downstream of the isolation valves, makeup to the isolated piping via leakage past the isolation valve seats cannot occur. Therefore, a continuous leak out of containment cannot occur. As the amount of liquid which may initially leak through the packing is small, only minor packing damage is expected. Therefore, the packing is expected to prevent significant leakage at lower pressures. Resulting pressures inside the isolated piping would still be greater than the drywell peak accident pressure. Due to the flex wedge design of the valve seats, leakage past the valve seats cannot be assumed.

The maximum postulated pressure based on piping models exceeds the shell hydrostatic test pressure by approximately 30%. This is considered a negligible difference when considering typical factors of safety used in the design and fabrication of 600 psi class valves. Also, a packing leak would most likely terminate the pressure increase at approximately 2175 psig. Based on a review of the design and class rating, a catastrophic failure of these valves is not considered credible.

However, the maximum postulated pressure is greater than the design pressure for the valves. As a result, it has been concluded that the Isolation Condenser(s) Condensate Return Line penetrations do not meet design requirements as stipulated by the NRC in GL 96-06, when the systems are taken out-of-service for greater than one day by closing both inboard and outboard isolation valves on these lines.

E. RECIRCULATION LOOP SAMPLING LINE (when isolated):

The 3/4" Recirculation Sampling line comes off the A recirculation loop and penetrates the Drywell. There is a normally open, air operated valve (V-24-29) inside the Drywell and a normally open, air operated valve (V-24-30) outside the Drywell. Review of the operating procedure for this sample line indicates that this line has flow continuously, to provide flow to a continuous conductivity cell and dissolved oxygen meter.

However, this line may be isolated outboard of the Drywell isolation valves in order to perform maintenance. This results in some fluid being trapped in the portion of the 3/4" line within the Drywell. While isolated the entrapped fluid in the piping may cool to temperatures below the those corresponding to peak accident temperatures. Under accident conditions the containment isolation valve would close and an overpressure condition could occur.

It is an undesirable operational condition to have this system out of service for extended periods of time. However, despite this the system was evaluated for the impact of pressurization due to DBA conditions. It is predicted by preliminary calculations that the entrapped fluid will cool to below accident temperatures within approximately an hour after it is removed from service.

Recirculation Sample Line Piping:

An analysis was performed on the sample line penetration using a computer code to model internal fluid, piping and penetration response for an external ambient temperature increase. The model does not consider leakage past the isolation valves which were evaluated separately. The actual configuration and material properties were factored into the model. The ambient conditions used to heat the piping are consistent with a containment temperature increase following a design basis accident. The pressure increase of the entrapped fluid results in a strain on the piping which allows the volume to increase and the fluid mass to expand. The postulated pressure does not exceed the ASME Section III, Appendix F criteria. Therefore, continued functionality of the penetration is assured.

Recirculation Sample Line Valves:

Recirculation Sample Line Valves (V-24-29 and 30) are 3/4" Uniform Flow Corporation air globe operated valves. Based on review of the valve design no conclusion can be drawn as to whether the valve will leak by their seats, bonnets, or packings. Based on a review of the design and class rating, a catastrophic failure of these valves is not considered credible.

However, the maximum postulated pressure is greater than the design pressure for the valves. As a result, it has been concluded that the 3/4" Recirculation Sampling line penetration does not meet design requirements as stipulated by the NRC in GL 96-06; when the line is taken out of service.

<u>Basis for Continued Operability of Affected Systems and Components:</u>

Drywell Cooling Unit Operability (Re: Water hammer)

Emergency Operating Procedures (EOPs) provide guidance to reestablish RBCCW flow following an accident, if Drywell Cooling Units and RBCCW are available. This guidance introduces the potential for water hammer in the RBCCW system when flow is reestablished. Therefore, the EOPs have been revised to eliminate the potential for a water hammer following a LOCA, which could potentially be created by operator action.

Shutdown Cooling System

The Shutdown Cooling system is only required to remain structurally sound following a design basis loss of coolant accident to ensure containment integrity. Analysis indicates that the Shutdown Cooling System Supply and Return lines penetrations (with the outboard valves closed) do not meet design requirements as stipulated by the NRC in generic letter 96-06.

NEI and ASME have disagreed with the NRC's code interpretation and have expressed the opinion that the stresses resulting from the scenario are not required to be considered as part of the design.

Results of the penetration modeling which assumes no leakage past isolation valves (a conservative assumption,) shows that pressure increases to a maximum which does not exceed Section III, Appendix F criteria for piping. Based on a review of the design, a catastrophic failure of the isolation valves is not credible. Therefore, the penetration and isolation valves are considered operable and containment integrity is assured.

RBCCW Return Line Penetration

The RBCCW System is not credited to mitigate design basis accidents. Therefore, the only concern is with respect to containment integrity at the return line penetration.

A model has been developed for the RBCCW return line penetration. The model does not include leakage past the isolation valves. Actual configuration and material properties are factored into the model. The overpressure results in strain on the piping which allows for a volume increase. This volume increase allows the water to expand which terminates the pressure increase. Results of the simulation (assuming no leakage past valve) shows that pressures increases to a maximum which does not exceed Section III, Appendix F criteria for piping.

The inboard and outboard isolation valves (V-5-166 and 167) are 6" gate valves manufactured by Pacific Valves Inc. The valves have bolted bonnets with a solid discs, and were shop tested to a shell test pressure of 425 psig and a leak test pressure of 300 psig. Discussions and correspondence with the valve manufacturer indicated that based on their seat testing experience these valves tend to leak at their seats when overpressurized on the upstream side. Significant overpressure upstream of the valve pressurizes the valve bonnet. Overpressure in the valve bonnet tends to force the flat body neck to a circular shape. This forces the body seat out of plane with the solid disc and allows the valve to leak by. Once pressure is reduced by water which leaks by the valve seat, the forces on the valve neck and seat are eliminated and the valve reseats. Following this, pressure in the penetration (between the isolation valves) would be greater than the maximum postulated Drywell Pressure for DBA conditions. The isolation valves will leak at the overpressure conditions and then reseat. Once the pressure is reduced, the penetration is considered operable since the piping does not fail once the valves reseat. In addition, the postulated pressures do not exceed the ASME, Section III, Appendix F criteria for piping. Therefore, containment integrity is assured.

Reactor Cleanup Supply Line While Isolated

The Reactor Cleanup Supply line comes off the "B" recirculation loop. The motor operated inboard valve (V-16-1) and one of the two motor operated outboard valves (V-16-2 or 14) are normally open. This line is at reactor temperature (greater than 315 °F). When the LOCA or MSLB occurs the line will stay at reactor temperature until V-16-1, 2, and 14 close, at which point temperature inside the line will be greater then the peak Drywell accident temperature (315 °F).

The line will not be overpressurized if it is in service at the time of the LOCA or MSLB; and, therefore, the penetration is considered operable at all times while the line remains unisolated.

However, the system can be taken out-of-service for maintenance by closing valves (V-16-1, 2 and 14). This isolates the piping between the inboard valve and the two outboard valves. As a result, it has been concluded that the Reactor Cleanup Supply line penetration does not meet design requirements as stipulated by the NRC in GL 96-06. However, even with no isolation valve leakage (a very conservative assumption) the postulated pressures do not exceed the ASME, Section III, Appendix F criteria for piping. Based on a review of the design, a catastrophic failure of these valves is not considered credible. Therefore, the piping and penetration is considered operable and containment integrity is assured.

Isolation Condenser(s) Condensate Return Lines While Isolated

The Isolation Condensers Condensate lines are rated to 1250 psig and 575 °F. The system is considered part of primary containment unless there is a line break in the system or tube rupture in one of the Isolation Condensers. The inboard valves (V-14-36, and 37) and the outboard valves (V-14-34, and 35) are not interlocked with the containment isolation system and will not close on a containment isolation signal. Therefore, these lines cannot be pressure locked by energy released by the LOCA or MSLB if the inboard valves (V-14-36 and 37) are open at the time of the accident; and therefore, the penetrations on these lines are considered operable at all times when the Isolation Condensers are in service.

However, the Isolation Condenser(s) may be taken out-of-service for maintenance by closing the inboard valves (V-14-36 and 37), and bypassing its isolation actuation logic. This places the condensate return line, from the inboard isolation valve to the outboard isolation valve, in a isolated configuration.

If taken out-of-service (and isolated), the condensate piping may cool to below its original operating temperature (315 °F). As a result, it has been concluded that the Isolation Condenser(s) Condensate Return line penetrations do not meet design requirements as stipulated by the NRC in GL 96-06. However, even with no isolation valve leakage (a conservative assumption) the postulated pressures do not exceed the ASME, Section III, Appendix F criteria for piping. Based on a review of the design, a catastrophic failure of these valves is not considered credible. Therefore, the piping and penetration is considered to be operable and containment integrity is assured.

Recirculation Loop Sample Line

The 3/4" Recirculation Sampling line comes off the "A" recirculation loop and penetrates the Drywell. There is a normally open, air operated valve (V-24-29) inside the Drywell and a normally open, air operated valve (V-24-30) outside the Drywell. Following a LOCA or MSLB the inboard and outboard isolation valves will close isolating the piping between the inboard isolation valve and the outboard valve.

This sample line has flow continuously. This is necessary to provide flow to a continuous conductivity cell (AE-551-0004) and continuous dissolved oxygen meter (AE-551-0001). Therefore, this penetration is considered operable while the line continues to have flow.

However, on infrequent occasions this line is isolated outboard of the Drywell isolation valves. This results in stagnant conditions in the portion of the 3/4" line in the Drywell. Should an accident occur during this time, the containment isolation valve would close and an overpressure condition could occur. As a result, it has been concluded that the Recirculation Loop Sample Line penetration does not meet design requirements as stipulated by the NRC in GL 96-06. However, even with no isolation valve leakage (a very conservative assumption) the postulated pressures do not exceed the ASME, Section III, Appendix F criteria for piping. Based on a review of the design, a catastrophic failure of these valves is not considered credible. Therefore, the piping and penetration is considered to be operable and containment integrity is assured.

Corrective Actions Implemented or Planned:

A. Shutdown Cooling System Supply and Return Lines

Any proposed corrective actions to eliminate the overpressurization concern will be described in a separate submittal to be made in the near term and implemented in accordance with the Integrated Schedule

B. RBCCW Return Line

The valve overpressurization concern will be addressed by corrective action(s) which will be described in a separate submittal to be made in the near term and implemented in accordance with the Integrated Schedule.

C. Reactor Cleanup Supply Line

Any proposed corrective actions to eliminate the overpressurization concern while the system is out-of-service will be described in a separate submittal to be made in the near term and implemented in accordance with the Integrated Schedule.

D. Isolation Condenser(s) Condensate Return Lines

Any proposed corrective actions to eliminate the overpressurization concern while the system is out-of-service will be described in a separate submittal to be made in the near term and implemented in accordance with the Integrated Schedule.

E. Recirculation Loop Sampling Line

Any proposed corrective actions to eliminate the overpressurization concern while the system is out-of-service will be described in a separate submittal to be made in the near term and implemented in accordance with the Integrated Schedule.

F. Drywell Cooling Units

GPUN has revised the EOPs to eliminate the potential for water hammer following a DBA, which may have been created by potential operator actions.

GENERIC LETTER EVENT APPLICABILITY (5)

A review of the events that were described in the Generic Letter for applicability to the OCNGS was conducted and documented in the TDR described above. None of the events were determined to be applicable to Oyster Creek or are addressed by evaluations of potential situations described in this response submittal.