Commonwealth Edison Company
1400 Opus Place
Downers Grove, IL 60515-5701

September 10, 1996

ComEd

U. S. Nuclear Regulatory Commission
Washington, D. C. 20555
Attention: Document Control Desk

Subject: Request for Relief from ASME Section III Requirements - Block Valves in Series with Overpressure Protection Devices

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

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

Pursuant to 10 CFR 50.55a (a)(3), Commonwealth Edison Company (ComEd) is hereby requesting relief for Byron Nuclear Power Station, Units 1 and 2 and Braidwood Nuclear Power Station, Units 1 and 2 from the requirements of the 1974 Edition of American Society of Mechanical Engineers (ASME) Section III, Articles NC and ND, Sections NC-7153 and ND-7153. This relief would allow ComEd to retain the installation of several block valves located in series with overpressure protection devices for the volume control tank and the regenerative heat exchanger. The block valves are part of original standard designs provided by Westinghouse, facilitate maintenance of the components, and have strict administrative controls for maintaining them in the open position during plant operation to ensure overpressure protection is not defeated. A complete description of the relief request is enclosed.

Byron and Braidwood Stations request that this relief request be approved in a timely manner.

To the best of my knowledge and belief, the statements contained in this document are true and correct. In some respects these statements are not based on my personal knowledge, but on information furnished by other ComEd employees, contractor employees, and/or consultants. Such information has been reviewed in accordance with company practice, and I believe to be reliable.

Sincerely,

Marcia T. Lesniak

Marcia T. Lesniak
Nuclear Licensing Administrator

Attachment 1: Byron Station Relief Request from ASME Section III Requirements - Manual Block Valves in Series with Overpressure Protection Devices

Attachment 2: Braidwood Station Relief Request from ASME Section III Requirements - Manual Block Valves in Series with Overpressure Protection Devices

cc: A.B. Beach, Regional Administrator - RIII
G.F. Dick, Jr., Byron Project Manager - NRR
R.R. Assa, Braidwood Project Manager - NRR
S. Burgess, Senior Resident Inspector - Byron
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Illinois Department of Nuclear Safety - IDNS

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Attachment A

Request for Relief from ASME Section III Requirements - Manual Block Valves in Series with Overpressure Protection Devices

Pursuant to 10 CFR 50.55a(a)(3), Commonwealth Edison (ComEd) is hereby requesting relief for Byron Nuclear Generating Station Units 1 and 2 for the below referenced components, from the requirements of the 1974 Edition of American Society of Mechanical Engineers (ASME) Section III, Articles NC and ND, Sections NC-7153 and ND-7153. This relief request is being submitted in conjunction with Braidwood Station and would allow ComEd to permanently retain the installation of several manual block valves located in series with overpressure protection devices for the Volume Control Tank (VCT), Regenerative Heat Exchanger (RHE), and Chemical and Volume Control System (CV). The block valves are part of the original standard design specification provided by Westinghouse for both Byron and Braidwood Stations to facilitate maintenance and or testing of the associated components. Currently, the valves have strict administrative controls to ensure overpressure protection is not defeated. A complete description of the relief request is provided in this enclosure.

I. Components for which relief is requested

a. Volume Control Tank

The components for which relief is being requested are manual block valves 0AB046, 0AB8557A, and 0AB8557B (see Figure 1). The block valves are locked open in the discharge path of relief valves 1CV8120 and 2CV8120. Relief valves 1CV8120 and 2CV8120 provide overpressure protection for the Unit 1 and 2 VCTs, respectively. The above relief valves discharge to one of two available Recycle Hold Up Tanks (RHUTs) so that any radioactive gas or liquid released will be contained within a closed system. The purpose of the block valve is to isolate individual RHUTs for personnel safety during maintenance, to allow processing of individual RHUT contents without uncontrolled discharges into the RHUT, and to allow testing of individual RHUTs without incapacitating the entire system of VCT overpressure protection.

The identified components are either part of the Chemical and Volume Control System (CV) or Boric Acid Processing Systems (AB) and are identified by their system designation. Figure 1 provides a simplified schematic of the VCT block / relief valve configuration.

b. Other Relief Valves

The components for which relief is being requested are manual block valves 0AB045, 0AB8557A, and 0AB8557B (see Figure 1 and 3). *Note that the 0AB8557A and 0AB8557B are also discussed in the previous VCT section.* The subject block valves are locked open in the discharge path of relief valves 2CV8124, 2RH8708A, 2RH8708B, 2SI8842, 2SI8851, 2SI8858, 2SI8853A, 2SI8853B, 2SI8856A, and 2SI8856B. Each relief valve provides overpressure protection from Reactor Coolant System (RCS) pressure for various Unit 2 components (i.e., Safety Injection (SI) - Residual Heat Removal (RH) - Charging (CV) Pump suction and SI-RH pump discharge) during normal operations. The above relief valves discharge to one of two available RHUTs so that any radioactive gas or liquid released will be contained within a closed system. The purpose of the block valve is to isolate the applicable header, for personnel safety, during maintenance on any of the subject relief valves without incapacitating the same Unit 1 relief valves.

c. Regenerative Heat Exchanger

The components for which relief is being requested are manual block valves 1CV8392A, 1CV8392B, and 2CV8392B for Byron Units 1 and 2, respectively. *Note that the 2CV8392A block valve has been removed and is capped in the open position.* These block valves, except for the removed 2CV8392A, are installed in identical configurations on each unit (see Figure 2). Each block valve is locked open in the discharge path of the spring-loaded thermal relief check valves 1CV8393A, 1CV8393B and 2CV8393B. Each relief valve provides overpressure protection for the associated RHE (1CV03AA, 1CV03AB and 2CV03AB, respectively) in the event of a CVCS malfunction. The relief valve discharges to the RCS if the normal charging path is isolated. The purpose of the block valve is to facilitate maintenance and testing of the RHE.

All components are part of the CVCS. Figure 2 provides a simplified schematic of the RHE block/relief valve configuration. As noted, the schematic is typical for both trains and units at Byron and Braidwood Stations.

II. Code requirement

The affected components are constructed to the requirements of ASME Section III, 1974 Edition up to and including Summer 1975 Addenda. Overpressure protection requirements are stipulated in Article NC-7000 and ND-7000 of ASME Section III. Sections NC-7153 and ND-7153, respectively, allow installation of stop valves or similar devices, but require positive "controls and interlocks". In response to a question concerning what is meant by the term "controls and interlocks", ASME Section III Code Interpretation III-80-67R, dated March 1, 1989 states that, "controls and interlocks ... are pressure sensing devices which

would assure the pressure relieving function is met at all times." Interpretation III-1-80-67R also states that administrative controls such as operating procedures governing the use and application of the system may not be construed as "controls."

III. Code requirement from which relief is requested

ComEd is requesting relief from the "control and interlock" requirement of NC-7153 and ND-7153, which states:

"No stop valve or other device shall be placed relative to a pressure relief device so that it could reduce the overpressure protection below that required by these rules, unless such stop valves are constructed and installed with positive controls and interlocks so that the relieving capacity requirements of NC-7400 (ND-7400) are met under all conditions of operation of the system and the stop valves. Means shall be provided such that the operability of controls and interlocks can be verified by test."

IV. Proposed alternative to code requirements

As an alternative to the ASME Section III requirements, ComEd proposes to maintain the current configuration as shown in the attached schematics (Figures 1 and 2), with the following administrative controls.

a. Volume Control Tank and Other Relief Valves

1. Manual block valves (0AB045, 0AB046, 0AB8557A, and 0AB8557B) are controlled via Byron Operating Procedure BOP AB-M1. This procedure verifies that the above valves are open and are physically locked in that position. Byron Administrative Procedure, BAP 340-2, outlines the steps necessary for performing mechanical lineups and states the definition of a locked valve. In addition, Byron Adminstrative Procedure, BAP 330-2, describes the administrative controls governing the use of locks on equipment under the control of the Byron Operations Department. Finally, the Byron piping and isometric drawings (P&IDs) identify the subject valves as Locked Open (L.O.).

2. Byron Operating Procedures BOP AB-100, BOP AB-192, BOP AB-101-2 provide guidance to Station operators concerning required manipulations with the Recycle Hold Up Tanks (i.e., swapping tanks, recirculation, and pumping to the Chemical Drain Tank). These procedures have been revised to include verification that a required relief flowpath to the RHUT is maintained.

3. Byron Station will install permanent valve tags on each of the valves to inform personnel that the valve is required to remain in the open position. The tags read, *"Valve must remain OPEN to meet the requirements of ASME Section III, NC-7000 (ND-7000). Shift Engineer approval is required PRIOR to repositioning this valve. Contact Site Engineering for additional information."*

Regenerative Heat Exchanger

1. Manual block valves 1CV8392A, 1CV8392B and 2CV8392B are verified open and physically locked in accordance with Byron Operating Procedures, BOP CV-M1 and BOP CV-M2. *The 2CV8392A is shown as capped open in BOP CV-M2.* Again, the Byron Administrative Procedures, BAP 330-3 and BAP 340-2, apply to the overall controls associated with locking safety related valves and the control of the keys. Also, the Byron P&IDs identify the subject block valves as Locked Open (L.O.).

2. Block valves 1CV8393A, 1CV8393B and 2CV8393B are located in their respective Containment Buildings, to which access is highly controlled by the Shift Engineer.

3. During the next forced or refuel outage, Byron Station will install permanent valve tags to inform personnel that the subject CV valves are required to remain in the open position. The tags will read, *"Valve must remain OPEN to meet the requirements of ASME Section III, NC-7000 (ND-7000). Shift Engineer approval is required PRIOR to repositioning this valve. Contact Site Engineering for additional information."*

V. Basis for relief

Compliance with 1974 Edition ASME Section III, NC-7153 and ND-7153 is impractical for the subject block valves. This relief request is justified in accordance with 10 CFR 50.55a(a)(3)(i), 50.55a(a)(3)(ii), and 50.55a(g)(6)(i).

1. Stringent administrative controls are in place to ensure that the subject block valves remain open when the associated components are operable, as discussed in Section IV of this relief request. ComEd believes that these administrative controls provide an acceptable alternative to the requirements of ASME Section III and an acceptable level of quality and safety.

2. Compliance with Code requirements would result in a hardship or unusual difficulties without compensating increase in the level of quality and safety. The block valve and relief valve configurations were part of the original

Westinghouse standard design specification. Denial of the relief request and compliance with Code requirements would result in costly backfit design modifications to install controls and interlocks for the subject block valves. Design modifications options, in part, include 1) removing the manual block valves and installing valves which have positive controls and interlocks, at a cost of approximately $693,825, or 2) removing the manual block valves and installing a section of pipe, at a cost of approximately $304,250. Both of the design modification alternatives would present a significant hardship or unusual difficulties without a compensating increase in the level of quality or safety. Also, it should be noted that the manual isolation valves have been placed in the relief path to facilitate maintenance on one of the RHUTs, while the other is in service. If the valves are removed, it would be very difficult to take the RHUT out of service for maintenance during plant operation. Likewise, the 0AB045 block valve isolates the major relief path between Unit 1 and 2. Without this valve, maintenance on either unit's major relief valves would require a dual unit shutdown. Lastly, because it may be necessary to re-perform hysdrotesting of the charging system during plant life, the thermal reliefs for the RHE have been placed in the relief path to facilitate the potential testing.

3. The current configuration provides an acceptable level of quality and safety. Mispositioning of these block valves, although not desirable or likely, would not impair the capability of plant shutdown and/or operation of the emergency core cooling system. The following failure consequences of each of the current configurations have been evaluated and it has been demonstrated that there are no adverse safety consequences.

a. VCT block valves - Failure Consequences

The VCT provides surge capacity to accommodate programmed pressurizer level changes. The VCT functions are not required for the safe shutdown of the plant. Relief valves 1CV8120 and 2CV8120 discharge to one of two RHUTs in the event of a system malfunction to preserve VCT integrity. Block valves 0AB8557A and 0AB8557B are installed between relief valve 1CV8120 and the two RHUTs (0AB01TA and 0AB01TB). Block valves 0AB046, 0AB8557A, and 0AB8557B are installed between relief valve 2CV8120 and the two RHUTs. The relief valves do not have an active safety function and are not required to actively operate during or following an accident.

Due to the administrative controls described in section IV, the possibility of concurrent inadvertent closure of block valves 0AB046, 0AB8557A and 0AB8557B, and an overpressurization event during power operation is extremely low. Nevertheless, if all block valves are postulated to be inadvertently closed at the same time during power operation, the pressure

relief function of relief valves 1CV8120 or 2CV8120 would be defeated. Without adequate relief capability, VCT overpressurization could potentially result in failure and release of RCS primary system liquid and gas to the auxiliary building.

Chapter 15, section 15.6.2, "Failure of small lines carrying primary coolant outside containment", of the Byron/Braidwood Updated Final Safety Analysis Report (UFSAR) provides analysis of the consequences of passive failure immediately upstream of CV8152 which would result in low level in the VCT. This analysis demonstrates that a complete failure of the VCT will not result in unacceptable radiological consequences. Thus, the potential consequences of VCT rupture due to inadvertent closure of the VCT block valves are bounded by the analysis provided in Chapter 15 of the Byron/Braidwood UFSAR.

b. Other Reliefs Valves - Failure Consequences

The subject relief valves are provided for the associated lines and components that might be pressurized above the design pressure by RCS pressure due to an isolation valve failure. Also, the RH suction relief valves (i.e., RH8708A, RH8708B) provide cold overpressure protection for the RCS in Modes 4, 5, and 6.

Due to the administrative controls described in Section IV of this relief request, the possibility of inadvertent closure of block valves 0AB8557A, 0AB8557B or 0AB045 during power operation is extremely low. Nevertheless, if block valves 0AB8557AB, 0AB8557B or 0AB045 were postulated to be inadvertently closed during power operation, the pressure relief function of the subject relief valves would be defeated. However, during normal power operation (i.e., Modes 1, 2, and 3) the affected piping and associated RH and SI components are not normally operated, and the valves that isolate (i.e., dual isolation) these systems from the RCS (i.e., RH8701A, RH8701B, RH8702A, RH8702B, and associated discharge check valves) are periodically leak tested in accordance with Byron Technical Specification (TS) 3/4.4.6. Therefore, leakage into the systems is strictly controlled and will not cause an overpressurization to occur. Also, the relief valve setpoints are above the associated shutoff head of the SI and RH pumps such that an inadvertent pump start will not cause an overpressurization.

In the event of an Emergency Core Cooling System (ECCS) actuation during normal operations, overpressurization of the subject lines again would not occur. Overpressurization is not credible if an initiating event and subsequent single failure is postulated. The initiating event is assumed to be any event that causes an ECCS actuation. If the subsequent single

failure is postulated to be the closed 0AB045 valve, there is no concern since the affected piping would not be overpressurized and the relief valve(s) would not be required. Likewise, if the subsequent single failure is postulated to be a system overpressurization, there is no concern since valve 0AB045 would be open. Thus, an overpressurization requiring operation of the SI or RH relief valves while at normal power operation, and the concurrent unavailability of the relief valves (due to 0AB045 closed) need not be postulated.

Lastly, in operating Modes 4, 5, and 6, TS 3.4.9.3, "Overpressure Protection Systems", requires at least two overpressure protection devices to be operable. The overpressure protection devices consists of either a RH suction relief valve (RH8708A, RH8708B) or a pressurizer Power Operated Relief Valve (PORV). TS surveillance items 4.4.9.3.1 and 4.4.9.3.2 requires either the PORV or RH suction relief valve to be demonstrated operable once per 72 hours when it is being used for cold overpressure protection. The PORV or RHR suction relief valve ensures that the RCS will be protected from pressure transients which could exceed the limits of Appendix G to 10CFR Part 50 when one or more of the RCS cold legs are less than or equal to 350°F.

Therefore, the potential consequences of a RCS line break due to overpressurization from a closed 0AB045 valve are not safety significant and are controlled (bounded) by the Byron Technical Specifications.

c. RHE Block Valves - Failure Consequences

The RHE is designed to recover heat from the letdown flow by reheating the charging flow to eliminate reactivity effects due to insertion of cold water, and to reduce thermal shock on the charging line penetrations into the RCS piping. The letdown stream flows through the shell side of the unit and the charging stream flows through the tubes. The RHE is not required for the safe shutdown of the plant. To preserve the integrity of the RHE in the event of system malfunction, reactor coolant on the charging side of the heat exchanger may be relieved to the RCS through thermal relief (spring loaded) check valves 1CV8393 A, 1CV8393B and 2CV8393B. Block valves 1CV8392A, 1CV8392B and 2CV8392B are installed upstream of their associated relief check valve. The subject relief valves do not have an active safety function and are not required to actively operate during or following an accident to perform a nuclear safety function.

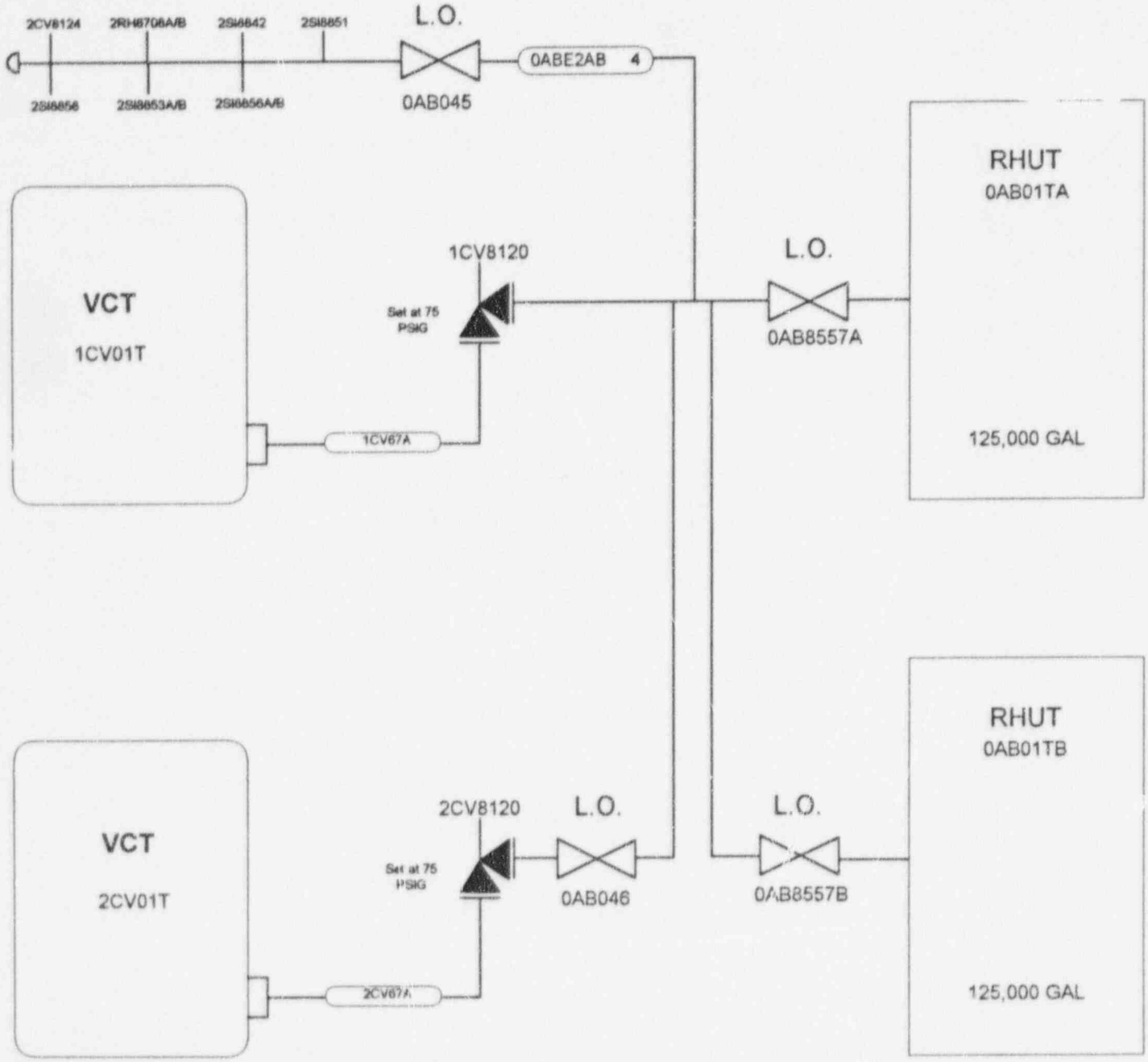
Due to the administrative controls described in Section IV of this relief request, the possibility of inadvertently closing block valves 1CV8392A, 1CV8392B and 2CV8392B and charging flow being suspended while letdown is still inservice during power operation is extremely low.

Nevertheless, if any of the block valves 1CV8392A, 1CV8392B or 2CV8392B were postulated to be inadvertently closed during power operation, the pressure relief function of spring loaded check valves 1CV8393A, 1CV8393B or 2CV8393B would be defeated. Without adequate relief capability, RHE overpressurization could potentially result in a failure and release of RCS primary system liquid and gas to the containment.

Small break loss-of-coolant accidents (SBLOCAs) are evaluated in Chapter 15 of the Byron/Braidwood UFSAR, with the limiting case being a 3 inch diameter RCS pipe break in the cold leg. Since the charging and letdown lines to and from the RHE are 3 inch in diameter and are isolable from the RCS, a postulated rupture of the RHE is bounded by the analysis in the UFSAR. Therefore, this scenario is enveloped by the SBLOCA analysis as described in Chapter 15 of the Byron/Braidwood UFSAR.

Figure 1

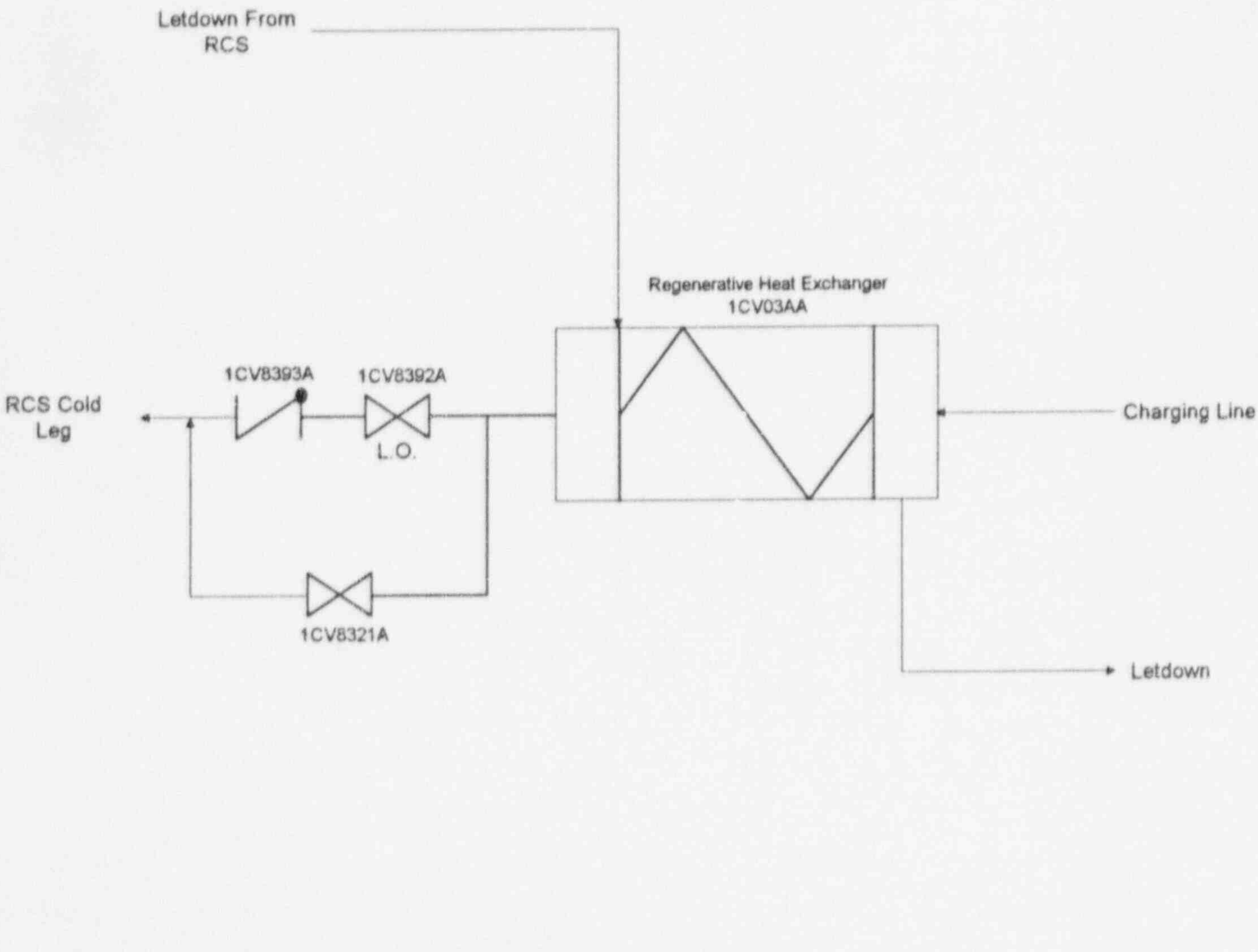
Schematic of block valve configuration for Volume Control Tanks



Byron Units 1 and 2.

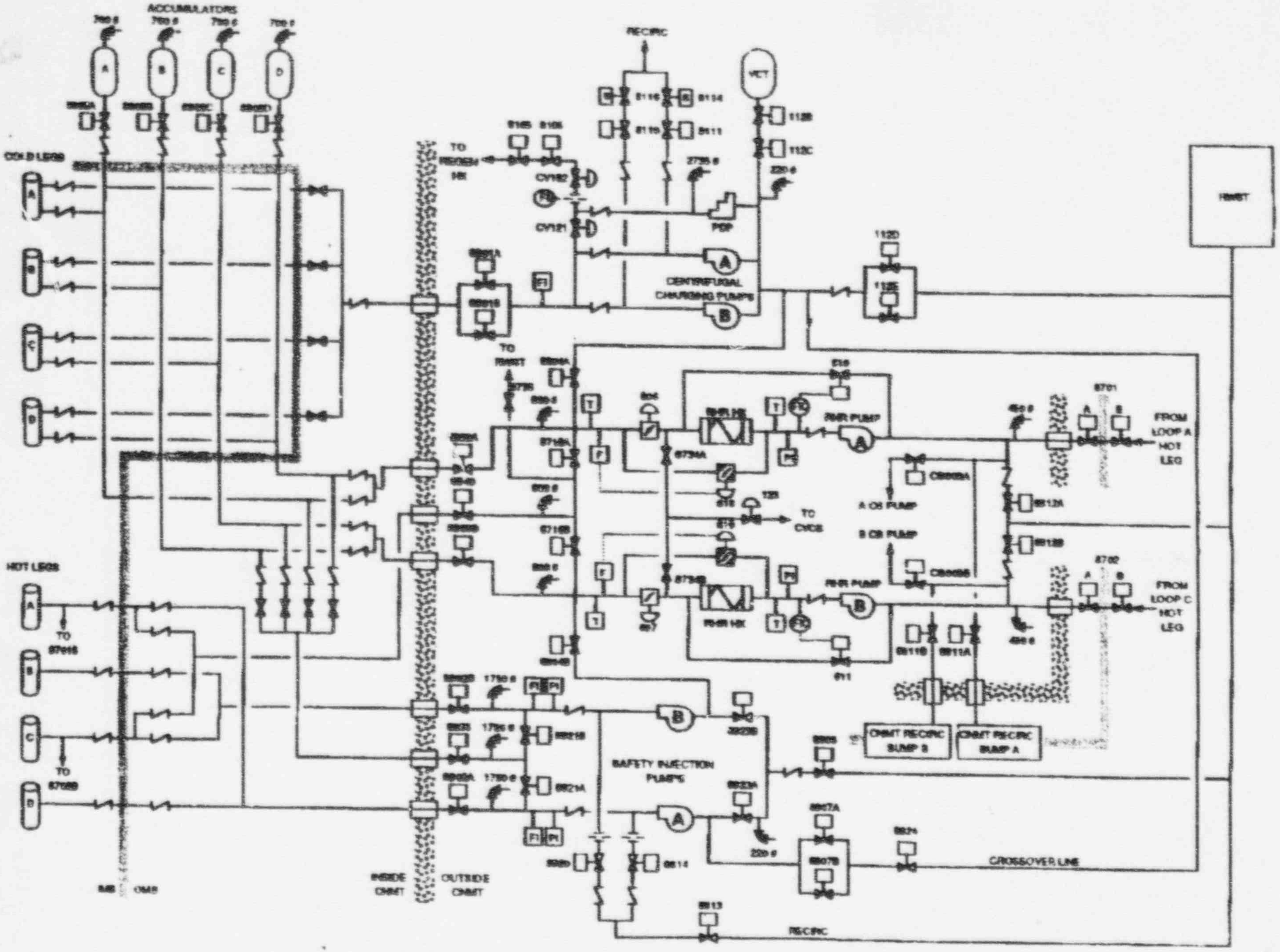
Figure 2

Schematic of block valve configuration for Regenerative Heat Exchanger



Note: This represents both trains for Byron Units 1 and 2.

Figure 3



EMERGENCY CORE COOLING SYSTEM

Attachment B

Request for Relief from ASME Section III Requirements - Manual Block Valves in Series with Overpressure Protection Devices

Pursuant to 10 CFR 50.55a(a)(3), Commonwealth Edison (ComEd) is hereby requesting relief for Braidwood Nuclear Generating Station Units 1 and 2 for the below referenced components, from the requirements of the 1974 Edition of American Society of Mechanical Engineers (ASME) Section III, Articles NC and ND, Sections NC-7153 and ND-7153. This relief request is being submitted in conjunction with Byron Station and would allow ComEd to permanently retain the installation of several manual block valves located in series with overpressure protection devices for the Volume Control Tank (VCT), Regenerative Heat Exchanger (RHE), and Chemical and Volume Control System (CV). The block valves are part of the original standard design specification provided by Westinghouse for both Byron and Braidwood Stations to facilitate maintenance and or testing of the associated components. Currently, the valves have strict administrative controls to ensure overpressure protection is not defeated. A complete description of the relief request is provided in this enclosure.

I. Components for which relief is requested

a. Volume Control Tank

The components for which relief is being requested are manual block valves 0AB046, 0AB8557A, and 0AB8557B (see Figure 1). The block valves are locked open in the discharge path of relief valves 1CV8120 and 2CV8120. Relief valves 1CV8120 and 2CV8120 provide overpressure protection for the Unit 1 and 2 VCTs, respectively. The above relief valves discharge to one of two available Recycle Hold Up Tanks (RHUTs) so that any radioactive gas or liquid released will be contained within a closed system. The purpose of the block valve is to isolate individual RHUTs for personnel safety during maintenance, to allow processing of individual RHUT contents without uncontrolled discharges into the RHUT, and to allow testing of individual RHUTs without incapacitating the entire system of VCT overpressure protection.

The identified components are either part of the Chemical and Volume Control System (CV) or Boric Acid Processing Systems (AB) and are identified by their system designation. Figure 1 provides a simplified schematic of the VCT block / relief valve configuration.

b. Other Relief Valves

The components for which relief is being requested are manual block valves 0AB045, 0AB8557A, and 0AB8557B (see Figure 1 and 3). The subject block valves are locked open in the discharge path of relief valves 2CV8124, 2RH8708A/B, 2SI8842, 2SI8851, 2SI8858, 2SI8853A/B, 2SI8856A/B. Each relief valve provides overpressure protection from Reactor Coolant System (RCS) pressure for various Unit 2 components (i.e., Safety Injection (SI) - Residual Heat Removal (RH) - Charging (CV) Pump suction and SI-RH pump discharge) during normal operations. The above relief valves discharge to one of two available RHUTs so that any radioactive gas or liquid released will be contained within a closed system. The purpose of the block valve is to isolate the applicable header, for personnel safety, during maintenance on any of the subject relief valves without incapacitating the same Unit 1 relief valves.

c. Regenerative Heat Exchanger

The components for which relief is being requested are manual block valves 1CV8392A/B and 2CV8392A/B for Units 1 and 2, respectively. These block valves, except for the removed 2CV8392A, are installed in identical configurations on each unit (see Figure 2). Each block valve is locked open in the discharge path of the spring-loaded thermal relief check valves 1CV8393A/B and 2CV8393A/B. Each relief valve provides overpressure protection for the associated RHE (1CV03AA/AB and 2CV03AA/BB, respectively) in the event of a CVCS malfunction. The relief valve discharges to the RCS if the normal charging path is isolated. The purpose of the block valve is to facilitate maintenance and testing of the RHE.

All components are part of the CVCS. Figure 2 provides a simplified schematic of the RHE block/relief valve configuration. As noted, the schematic is typical for both trains and units.

II. Code requirement

The affected components are constructed to the requirements of ASME Section III, 1974 Edition up to and including Summer 1975 Addenda. Overpressure protection requirements are stipulated in Article NC-7000 and ND-7000 of ASME Section III. Sections NC-7153 and ND-7153, respectively, allow installation of stop valves or similar devices, but require positive "controls and interlocks". In response to a question concerning what is meant by the term "controls and interlocks", ASME Section III Code Interpretation III-80-67R, dated March 1, 1989 states that, "controls and interlocks ... are pressure sensing devices which would assure the pressure relieving function is met at all times." Interpretation III-1-80-67R also states that administrative controls such as operating procedures

governing the use and application of the system may not be construed as "controls."

III. Code requirement from which relief is requested

ComEd is requesting relief from the "control and interlock" requirement of NC-7153 and ND-7153, which states:

"No stop valve or other device shall be placed relative to a pressure relief device so that it could reduce the overpressure protection below that required by these rules, unless such stop valves are constructed and installed with positive controls and interlocks so that the relieving capacity requirements of NC-7400 (ND-7400) are met under all conditions of operation of the system and the stop valves. Means shall be provided such that the operability of controls and interlocks can be verified by test."

IV. Proposed alternative to code requirements

As an alternative to the ASME Section III requirements, ComEd proposes to maintain the current configuration as shown in the attached schematics (Figures 1 and 2), with the following administrative controls.

a. Volume Control Tank and Other Relief Valves

1. Manual block valves (0AB045, 0AB046, 0AB8557A, and 0AB8557B) are controlled via Braidwood Operating Procedure BwOP AB-M2. This procedure verifies that the above valves are open and are physically locked in that position. Braidwood Administrative Procedure, BwAP 340-2, outlines the steps necessary for performing mechanical lineups and states the definition of a locked valve. In addition, Braidwood Adminstrative Procedure, BwAP 330-11, describes the administrative controls governing the use of locks on equipment under the control of the Braidwood Operations Department. Finally, the Braidwood piping and isometric drawings (P&IDs) identify the subject valves as Locked Open (L.O.).

2. Braidwood Operating Procedures BwOP AB-12, AB-13, AB-14 provide guidance to Station operators concerning required manipulations with the Recycle Hold Up Tanks (i.e., swapping tanks, recirculation, and pumping to the Chemical Drain Tank). These procedures have been revised to include verification that a required relief flowpath to the RHUT is maintained.

3. Braidwood Station will install permanent valve tags on each of the valves to inform personnel that the valve is required to remain in the open position. The tags read, *"Valve must remain OPEN to meet the*

requirements of ASME Section III, NC-7000 (ND-7000). Shift Engineer approval is required PRIOR to repositioning this valve. Contact Site Engineering for additional information."

Regenerative Heat Exchanger

1. Manual block valves 1/2CV8392A/B are verified open and physically locked in accordance with Braidwood Operating Procedures, BwOP CV-M1 and BwOP CV-M2. Again, the Braidwood Administrative Procedures, BwAP 330-11 and BwAP 340-2, apply to the overall controls associated with locking safety related valves and the control of the keys. Also, the Braidwood P&IDs identify the subject block valves as Locked Open (L.O.).

2. Block valves 1/2CV8392A/B are located in their respective Containment Buildings, to which access is highly controlled by the Shift Engineer.

3. During the next forced or refuel outage, Braidwood Station will install permanent valve tags to inform personnel that the subject CV valves are required to remain in the open position. The tags will read, *"Valve must remain OPEN to meet the requirements of ASME Section III, NC-7000 (ND-7000). Shift Engineer approval is required PRIOR to repositioning this valve. Contact Site Engineering for additional information."*

V. Basis for relief

Compliance with 1974 Edition ASME Section III, NC-7153 and ND-7153 is impractical for the subject block valves. This relief request is justified in accordance with 10 CFR 50.55a(a)(3)(i), 50.55a(a)(3)(ii), and 50.55a(g)(6)(i).

1. Stringent administrative controls are in place to ensure that the subject block valves remain open when the associated components are operable, as discussed in Section IV of this relief request. ComEd believes that these administrative controls provide an acceptable alternative to the requirements of ASME Section III and an acceptable level of quality and safety.

2. Compliance with Code requirements would result in a hardship or unusual difficulties without compensating increase in the level of quality and safety. The block valve and relief valve configurations were part of the original Westinghouse standard design specification. Denial of the relief request and compliance with Code requirements would result in costly backfit design modifications to install controls and interlocks for the subject block valves. Design modifications options, in part, include 1) removing the manual block valves and installing valves which have positive controls and

interlocks, at a cost of approximately $693,825, or 2) removing the manual block valves and installing a section of pipe, at a cost of approximately $304,250. Both of the design modification alternatives would present a significant hardship or unusual difficulties without a compensating increase in the level of quality or safety. Also, it should be noted that the manual isolation valves have been placed in the relief path to facilitate maintenance on one of the RHUTs, while the other is in service. If the valves are removed, it would be very difficult to take the RHUT out of service for maintenance during plant operation. Likewise, the 0AB045 block valve isolates the major relief path between Unit 1 and 2. Without this valve, maintenance on either unit's major relief valves would require a dual unit shutdown. Lastly, because it may be necessary to re-perform hysdrotesting of the charging system during plant life, the thermal reliefs for the RHE have been placed in the relief path to facilitate the potential testing.

3. The current configuration provides an acceptable level of quality and safety. Mispositioning of these block valves, although not desirable or likely, would not impair the capability of plant shutdown and/or operation of the emergency core cooling system. The following failure consequences of each of the current configurations have been evaluated and it has been demonstrated that there are no adverse safety consequences.

<u>a. VCT block valves - Failure Consequences</u>

The VCT provides surge capacity to accommodate programmed pressurizer level changes. The VCT functions are not required for the safe shutdown of the plant. Relief valves 1/2CV8120 discharge to one of two RHUTs in the event of a system malfunction to preserve VCT integrity. Block valves 0AB8557A/B are installed between relief valve 1CV8120 and the two RHUTs (0AB01TA and 0AB01TB). Block valves 0AB046, 0AB8557A, and 0AB8557B are installed between relief valve 2CV8120 and the two RHUTs. The relief valves do not have an active safety function and are not required to actively operate during or following an accident.

Due to the administrative controls described in section IV, the possibility of concurrent inadvertent closure of block valves 0AB046, 0AB8557A and 0AB8557B, and an overpressurization event during power operation is extremely low. Nevertheless, if all block valves are postulated to be inadvertently closed at the same time during power operation, the pressure relief function of relief valves 1/2CV8120 would be defeated. Without adequate relief capability, VCT overpressurization could potentially result in failure and release of RCS primary system liquid and gas to the auxiliary building.

Chapter 15, section 15.6.2, "Failure of small lines carrying primary coolant outside containment", of the Byron/Braidwood Updated Final Safety Analysis Report (UFSAR) provides analysis of the consequences of passive failure immediately upstream of CV8152 which would result in low level in the VCT. This analysis demonstrates that a complete failure of the VCT will not result in unacceptable radiological consequences. Thus, the potential consequences of VCT rupture due to inadvertent closure of the VCT block valves are bounded by the analysis provided in Chapter 15 of the Byron/Braidwood UFSAR.

b. Other Reliefs Valves - Failure Consequences

The subject relief valves are provided for the associated lines and components that might be pressurized above the design pressure by RCS pressure due to an isolation valve failure. Also, the RH suction relief valves (i.e., RH8708A/B)
provide cold overpressure protection for the RCS in Modes 4, 5, and 6.

Due to the administrative controls described in Section IV of this relief request, the possibility of inadvertent closure of block valves 0AB8557A/B or 0AB045 during power operation is extremely low. Nevertheless, if block valves 0AB8557A/B or 0AB045 were postulated to be inadvertently closed during power operation, the pressure relief function of the subject relief valves would be defeated. However, during normal power operation (i.e., Modes 1, 2, and 3) the affected piping and associated RH and SI components are not normally operated, and the valves that isolate (i.e., dual isolation) these systems from the RCS (i.e., RH8701A/B, RH8702A/B, and associated discharge check valves) are periodically leak tested in accordance with Byron Technical Specification (TS) 3/4.4.6. Therefore, leakage into the systems is strictly controlled and will not cause an overpressurization to occur. Also, the relief valve setpoints are above the associated shutoff head of the SI and RH pumps such that an inadvertent pump start will not cause an overpressurization.

In the event of an Emergency Core Cooling System (ECCS) actuation during normal operations, overpressurization of the subject lines again would not occur. Overpressurization is not credible if an initiating event and subsequent single failure is postulated. The initiating event is assumed to be any event that causes an ECCS actuation. If the subsequent single failure is postulated to be the closed 0AB045 valve, there is no concern since the affected piping would not be overpressurized and the relief valve(s) would not be required. Likewise, if the subsequent single failure is postulated to be a system overpressurization, there is no concern since valve 0AB045 would be open. Thus, an overpressurization requiring operation of the SI or RH relief valves while at normal power operation,

and the concurrent unavailability of the relief valves (due to 0AB045 closed) need not be postulated.

Lastly, in operating Modes 4, 5, and 6, TS 3.4.9.3, "Overpressure Protection Systems", requires at least two overpressure protection devices to be operable. The overpressure protection devices consists of either a RH suction relief valve (RH8708A/B) or a pressurizer Power Operated Relief Valve (PORV). TS surveillance items 4.4.9.3.1 and 4.4.9.3.2 requires either the PORV or RH suction relief valve to be demonstrated operable once per 72 hours when it is being used for cold overpressure protection. The PORV or RHR suction relief valve ensures that the RCS will be protected from pressure transients which could exceed the limits of Appendix G to 10CFR Part 50 when one or more of the RCS cold legs are less than or equal to 350°F

Therefore, the potential consequences of a RCS line break due to overpressurization from a closed 0AB045 valve are not safety significant and are controlled (bounded) by the Byron Technical Specifications.

c. RHE Block Valves - Failure Consequences

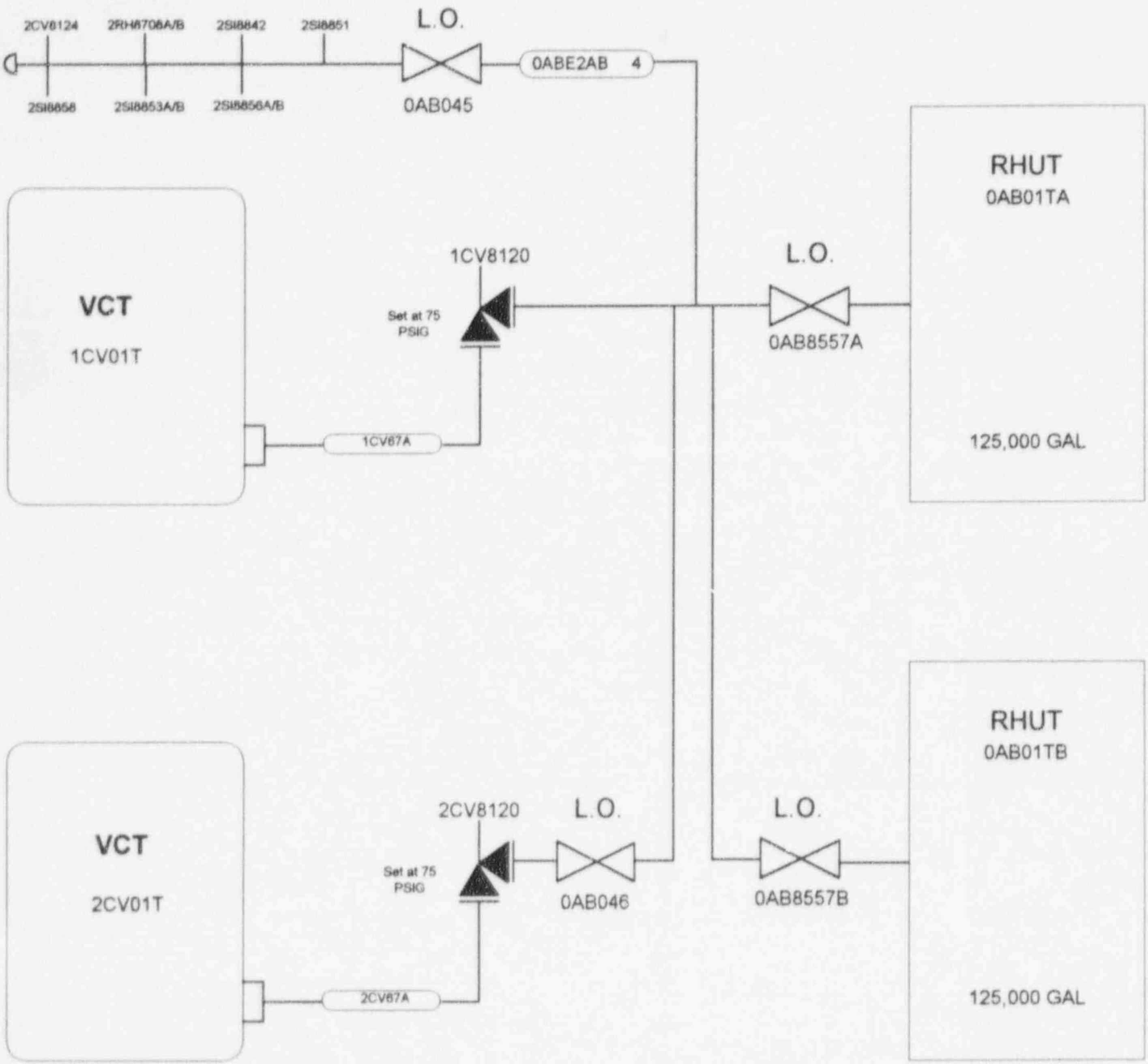
The RHE is designed to recover heat from the letdown flow by reheating the charging flow to eliminate reactivity effects due to insertion of cold water, and to reduce thermal shock on the charging line penetrations into the RCS piping. The letdown stream flows through the shell side of the unit and the charging stream flows through the tubes. The RHE is not required for the safe shutdown of the plant. To preserve the integrity of the RHE in the event of system malfunction, reactor coolant on the charging side of the heat exchanger may be relieved to the RCS through thermal relief (spring loaded) check valves 1/2CV8393A/B. Block valves 1/2CV8392A/B are installed upstream of their associated relief check valve. The subject relief valves do not have an active safety function and are not required to actively operate during or following an accident to perform a nuclear safety function.

Due to the administrative controls described in Section IV of this relief request, the possibility of inadvertently closing block valves 1/2CV8392A/B and charging flow being suspended while letdown is still inservice during power operation is extremely low. Nevertheless, if any of the block valves 1/2CV8392A/B were postulated to be inadvertently closed during power operation, the pressure relief function of spring loaded check valves 1CV8393A/B would be defeated. Without adequate relief capability, RHE overpressurization could potentially result in a failure and release of RCS primary system liquid and gas to the containment.

Small break loss-of-coolant accidents (SBLOCAs) are evaluated in Chapter 15 of the Braidwood UFSAR, with the limiting case being a 3 inch diameter RCS pipe break in the cold leg. Since the charging and letdown lines to and from the RHE are 3 inch in diameter and are isolable from the RCS, a postulated rupture of the RHE is bounded by the analysis in the UFSAR. Therefore, this scenario is enveloped by the SBLOCA analysis as described in Chapter 15 of the Braidwood UFSAR.

Figure 1

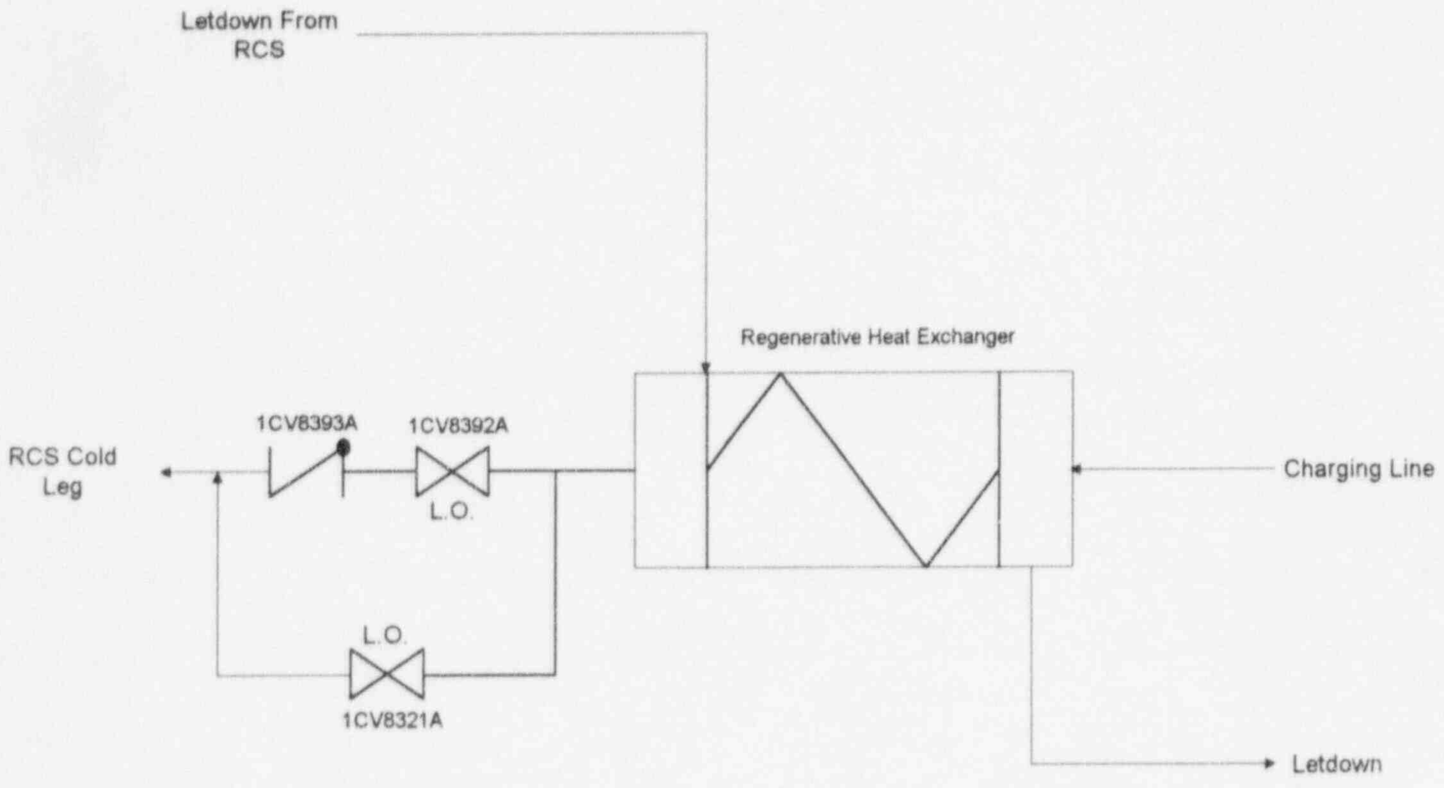
Schematic of block valve configuration for Volume Control Tanks



Braidwood Units 1 and 2.

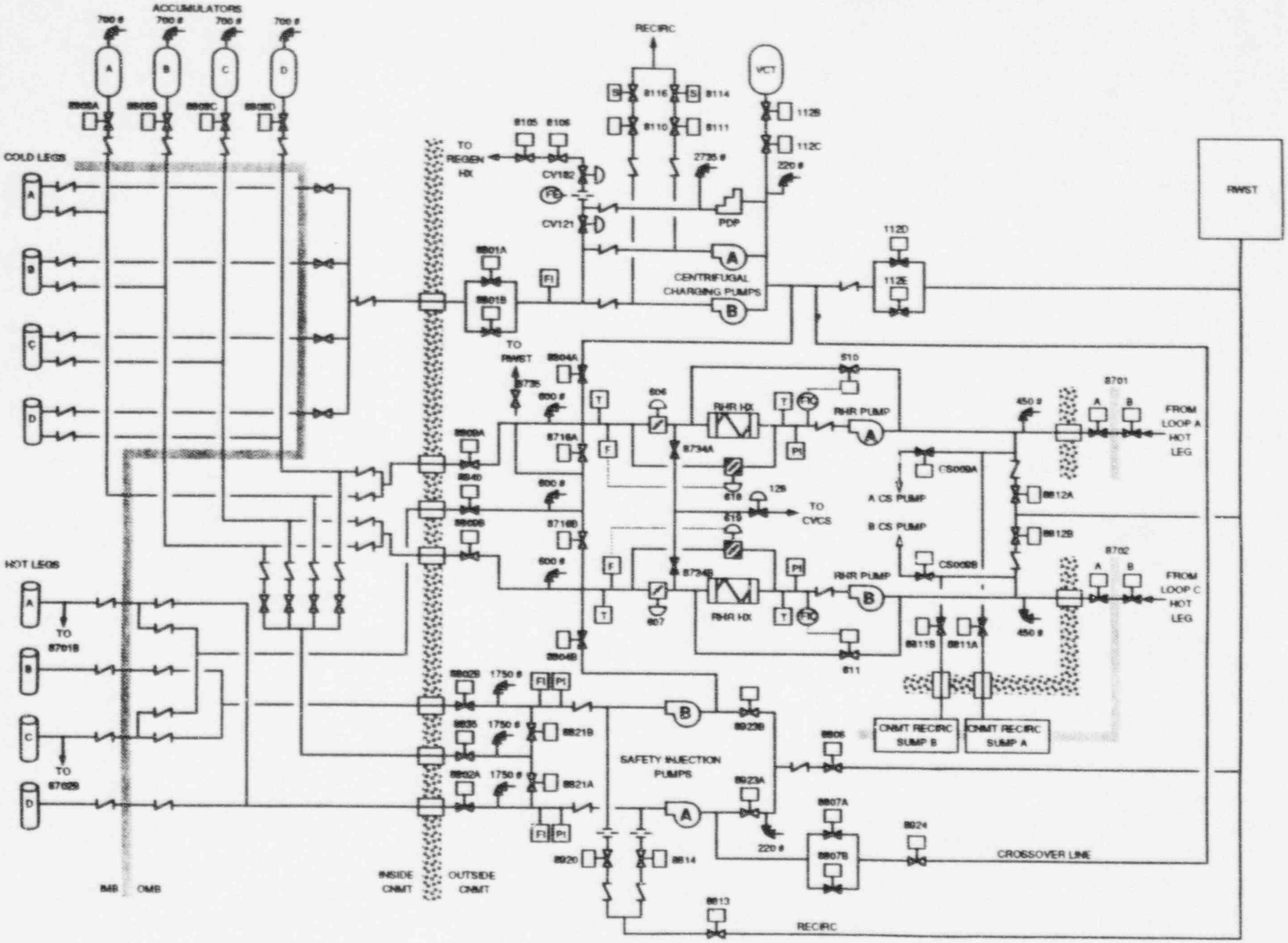
Figure 2

Schematic of block valve configuration for Regenerative Heat Exchanger



Note: This represents both trains for Braidwood Units 1 and 2.

Figure 3



EMERGENCY CORE COOLING SYSTEM