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ComEd

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U.S. Nuclear Regulatory Commission
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Dresden Nuclear Power Station, Units 2 and 3
Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-237 and 50-249

Subject: Supplemental Information to the Application for an Amendment to the Technical Specifications

Reference: Letter from J.M. Heffley (ComEd) to USNRC "Application for Amendment to Appendix A, Technical Specifications (TS), 3/4.8 "Containment Cooling Service Water" and Technical Specification 3.5.C. "Suppression Chamber" dated May 20, 1999

In the reference letter, Commonwealth Edison (ComEd) Company proposed to amend Appendix A, Dresden Nuclear Power Station (Dresden) Technical Specification of Facility Operating Licenses DPR-19 and DPR-25. Specifically, one of the changes ComEd proposed was to clarify the minimum Containment Cooling Service Water (CCSW) equipment required to support operation of the Control Room Emergency Ventilation System (CREVS) as required by Technical Specification Section 3/4.8.D.

During telephone calls conducted on August 30 and September 2, 1999, the NRC asked a number of questions concerning the amendment request. The attachment to this letter provides our response to those questions. Attachment A contains a description of the CREVS system with support system interrelationships, our response to each question the NRC posed, and a description on how the Improved Standard Technical Specifications would address the CREVS/CCSW relationship. Figure A provides a one line diagram of the Main Control Room Ventilation Systems and Figure B provides a one line diagram of the one division of Unit 2 CCSW. ComEd believes that the information provided supports our original conclusion that the definition of a CCSW subsystem as it applies to CREVS operation can be defined as one CCSW pump. This is also supported by our review of NUREG 1433, Revision 1, "Standard Technical Specifications – General Electric Plants, BWR/4." Additionally, as stated in the Reference, this proposed amendment does not create a change to the significant hazards analysis.

A001

As stated in the reference, this amendment request is required by October 1, 1999 in order to support our upcoming refuel outage on Unit 2 (D2R16).

Should you have any questions concerning this letter, please contact Mr. D.F. Ambler at (815) 942-2920, extension 3800.

Respectfully,

Preston Swafford

P. Swafford
Station Manager
Dresden Nuclear Power Station

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Dresden Nuclear Power Station

Attachments: System Descriptions and Response to Questions

ATTACHMENT

SYSTEM DESCRIPTION AND RESPONSE TO QUESTIONS

Control Room Ventilation System Description

The Control Room HVAC System is comprised of two trains. Figure A provides a one line diagram of the Main Control Room Ventilation Systems and Figure B provides a one line diagram of the one division of Unit 2 CCSW.

Non-safety related Train A normally provides HVAC for the Control Room Emergency Zone. Train A consists of an Air Handling Unit (AHU) and two 50% capacity 45-ton chilled water compressors. Plant Service Water cools these compressors. The electrical power is provided by non-safety related 480v Motor Control Center (MCC) 26-4. In accordance with station procedures, Train A can be manually loaded to Emergency Diesel Generators or the Station Blackout (SBO) Diesel Generators to provide cooling to the Control Room Emergency Zone.

Train B is the standby safety-related portion of the Control Room HVAC System, which is comprised, of one AHU, one 90- ton Refrigeration Condensing Unit (RCU), and the Charcoal Air Filtration Unit (AFU). Train B, the CREVS System, is a single train system with no designed redundancies. This Train was installed to meet the intent of NUREG 0737 Item III.D.3.4, "Control Room Habitability," and accepted by the NRC. The Plant Service Water from both Unit 2 and Unit 3 supplies the normal cooling water. The Containment Cooling Service Water System (CCSW) serves as the standby cooling water source for the RCU, with four pumps normally available to support the containment cooling requirements in Modes 1,2, and 3. Train B is powered by the safety related 480v MCC Bus 29-8 and receives emergency power from the Unit 2 Emergency Diesel Generator (EDG). MCC 29-8 can also receive power from the SBO diesels and the Unit 3 EDG via the Unit 2 and 3 4kv cross-tie.

Both HVAC Trains A and B provide airflow distribution through a common duct system. This design allows either the Train B AHU or Train A AHU (manual power backfeed is required) to support operation of the AFU.

The Control Room Emergency Zone has been reduced by modifications in 1997 that resulted in allowing the removal of the Auxiliary Computer Room from the Control Room Emergency Zone, therefore, removing a large heat load. One CCSW pump can provide sufficient cooling to maintain the Control Room within design temperature requirements of 70 to 80 degrees F. This was confirmed during post-modification testing after removal of the Auxiliary Computer Room from the Control Room Emergency Zone. The test also demonstrated that, with both Control Room HVAC trains shutdown (e.g. no cooling provided), the Control Room temperatures only rose to 80 degrees F after 4 hours.

By design, the Control Room HVAC System will have sufficient cooling water even if Units 2 and 3 experience a Loss of Offsite Power (LOOP), one unit (Unit 2 or 3) experiences a Design Basis Accident (DBA) and Unit 2 was in a Refueling Outage. Train B is designed to receive cooling water and power by Emergency Diesels or the SBO Diesel while experiencing this type of scenario. The probability of the type of scenario occurring is extremely low.

NRC Questions and Responses

Question 1

Attachment A, Safety Analysis of the Proposed Change," first paragraph states that, in Modes 1, 2, and 3, two trains of CCSW are required to be operable for containment cooling, and will therefore continue to be operable to support the CREVS. Wouldn't this only be true if Unit 2 is In Modes 1, 2, or 3 and not cover the conditions where Unit 2 is in an outage? The No Significant Hazards states that the proposed change "does not reduce the availability of systems required to mitigate accident conditions..." despite this, there appears to be a significant reduction in the availability of redundant support systems for Train B CREVS when Unit 2 is in an outage.

Response:

The statement in the 1st paragraph of the license amendment request is only applicable while in Modes 1, 2, and 3. Only one CCSW pump is required to provide backup cooling water support for the CREVS. The purpose of the statement was to reinforce that more than the required number of CCSW pumps for CREVS support are required in those Modes.

With respect to the second question, there is not a significant reduction in the availability of support systems, CCSW is still available and therefore the number of support systems remains unchanged. CREVS is a single train system that was never designed with redundant safety-related support systems. For example, its primary cooling water supply is provided via the plant service water system. This primary water supply can be from either Unit 2 or Unit 3. Unless offsite power is lost to both Unit 2 and Unit 3, plant service water will be available to supply the CREVS RCU. Also only one CCSW pump is required to support this system. Therefore, as stated within the No Significant Hazards Consideration, there is no significant reduction in the <u>required</u> equipment necessary to mitigate the consequences of an accident.

SYSTEM DESCRIPTION AND RESPONSE TO QUESTIONS

Question 2

Please describe the HVAC support system redundancy (including onsite power) that will be maintained when Unit 3 is in Modes 1, 2 or 3 and Unit 2 is in an outage.

Response:

The normal HVAC system for the control room AC (Train A) is provided by two 50% capacity 45-ton chilled water compressors which are non-safety related and not normally aligned to receive power from an EDG. Train B, the CREVS system, is a single train system with no designed redundancies (i.e. there is only a single RCU unit and a single filtration unit). Support systems include non-safety related cooling water to the RCU, which is normally provided from either Unit 2 or Unit 3 plant service water systems. CCSW from Unit 2 provides a safety–related cooling water supply. Electrical power is provided via a safety-related bus, normally fed by the Unit 2 EDG upon loss of power.

Question 3

Describe any additional operator actions or system realignments that are required to activate Train B CREVS with the reduced number of available support systems described above. How much time is available to the operator to align Train B CREVS after an accident.

Response:

No additional operator actions are required or system realignments necessary. Only one CCSW pump is necessary to supply cooling water if neither Unit 2 or Unit 3's service water system is available. The CCSW supply to CREVS is located just outside of the control room. Operations is required, in accordance with approved station procedures, to manipulate the CCSW supply to CREVS within 40 minutes.

Question 4

What is the importance of CREVS in the IPE (e.g., what is the impact of an extended loss CR cooling) What assumptions were made in the IPE with regard to the availability of the CCSW pumps to support CREVS, and how would the proposed reduction In redundancy affect these assumptions? How would this change CDF and LERF?

Response:

The CREVS is not modeled in the IPE as it is not a core damage mitigation system. However, the probability of a dual unit LOOP and LOCA while Unit 2 is in a refueling outage coupled with a CCSW pump failure to start is so low that it can be concluded that the lack of a second CCSW pump would have insignificant impact on either CDF or LERF.

Question 5:

Attachment A, "Bases for the proposed change," first paragraph, states the TS should specify "operable pump" instead of "operable subsystem" because flow from CCSW to CREVS does not flow through the LPCI/CCSW heat exchanger. Describe the CCSW lineup/operation if the rest of the CCSW subsystem is inoperable. Specifically, if there is no flow through the LPCI/CCSW heat exchanger, can the CCSW pump (which is rated for 3500 gpm) operate long term providing just 121 gpm to CREVS? Should the TS specify "operable flow path?"

Response:

A minimum flow path of 350 gpm is established and maintained when the flowpath through the LPCI/CCSW heat exchangers is not available. A CCSW pump would run on the minimum flow path until such time that offsite power would be restored and service water could be re-established. It should be noted that the CCSW system would only be needed to support the CREVS RCU if a LOOP occurred on BOTH units with a LOCA on Unit 2. ComEd believes that the words "...and an operable flow path..." are redundant to the TS definition of OPERABLE/OPERABILITY in that no pump can perform its intended function without an operable flow path.

Question 6:

Describe the CREVS response to a fuel handling accident. How long is CREVS Train B required to operate after FHA?

Response:

The CREVS system filtration unit will perform its intended function independent of whether the RCU or RCU support systems (such as CCSW) are operable. The RCU is required to maintain design temperatures in the control room and, as such, is not considered in the mitigation of the FHA.

Improved Standard Technical Specifications (ITS)

ITS perspective of Control Room AC System Operability with regard to the CCSW System can be found through reference to Section 3.7.1, "Containment Cooling Service Water," and the Basis for Section 3.7.5, "Control Room Emergency Ventilation Air Conditioning System."

In ITS, no Limiting Conditions of Operation or Action Statements with regards to the proposed CCSW Operability during MODE * would be required. In that MODE, CCSW is a support system for system(s) that have separate Technical Specification(s). Therefore, in order for the supported systems to meet the definition of OPERABILITY, its supporting system and/or components would have to be OPERABLE. The specific requirement for the support function of CCSW to the Control Room AC system will be placed in a Technical Requirement Manual (TRM).

The specific requirement for CCSW regarding the OPERABILITY of the Control Room AC system is the ability of CCSW to supply the appropriate amount of cooling water flow to the system. This is accomplished by one CCSW pump. Therefore only one CCSW pump would be identified in the TRM.

Conclusion:

Train B, the CREVS System, is a single train system, installed to meet the intent of TMI Action Item III.D.3.4. This train has no design redundancies (e.g. there is only a single RCU unit and a single filtration unit). It was never the intent of ComEd, as required by the NRC, to provide multiple pumps to perform a backup cooling water function for the CREVS System. As such, this level of redundancy is not required to support this single train system.

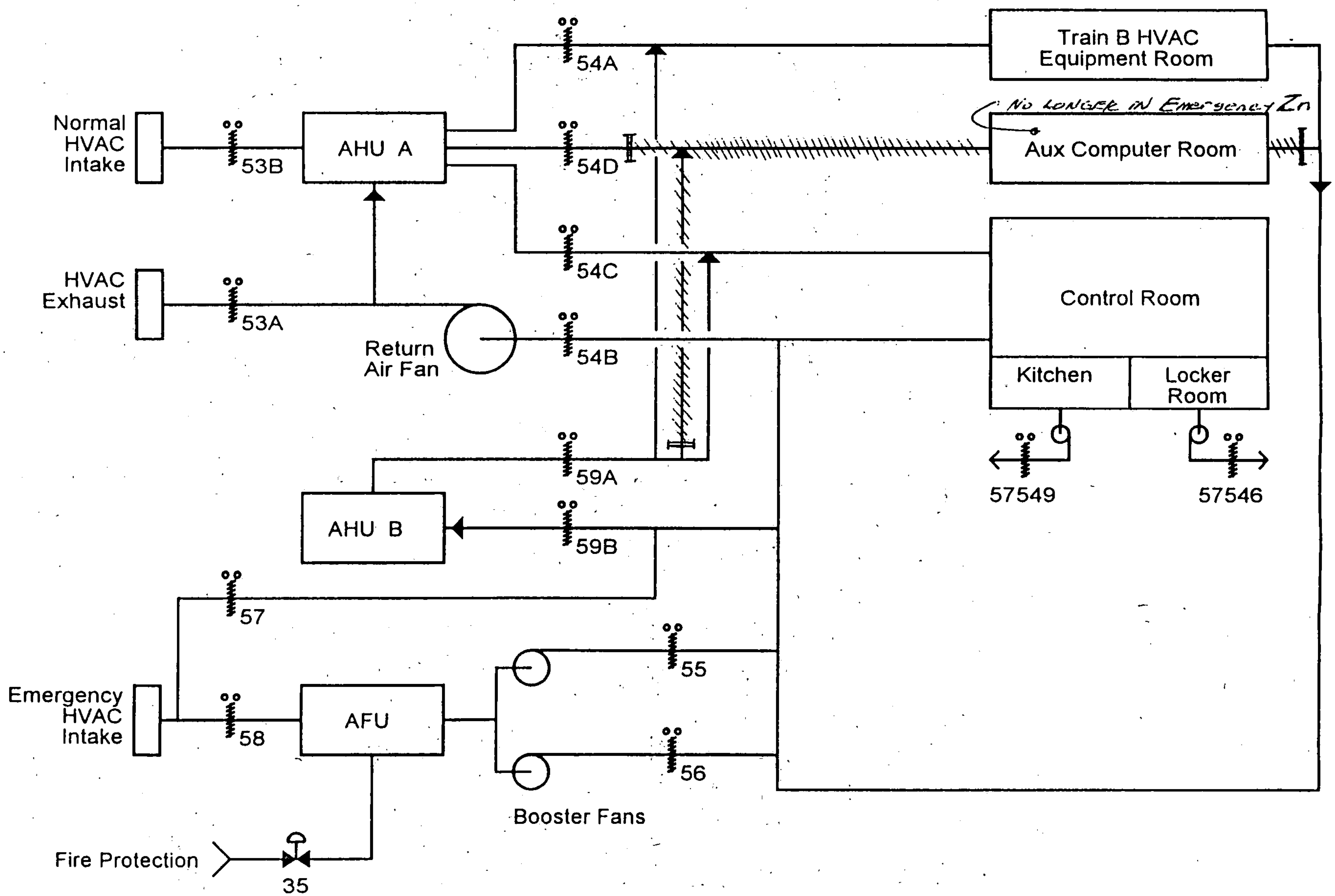
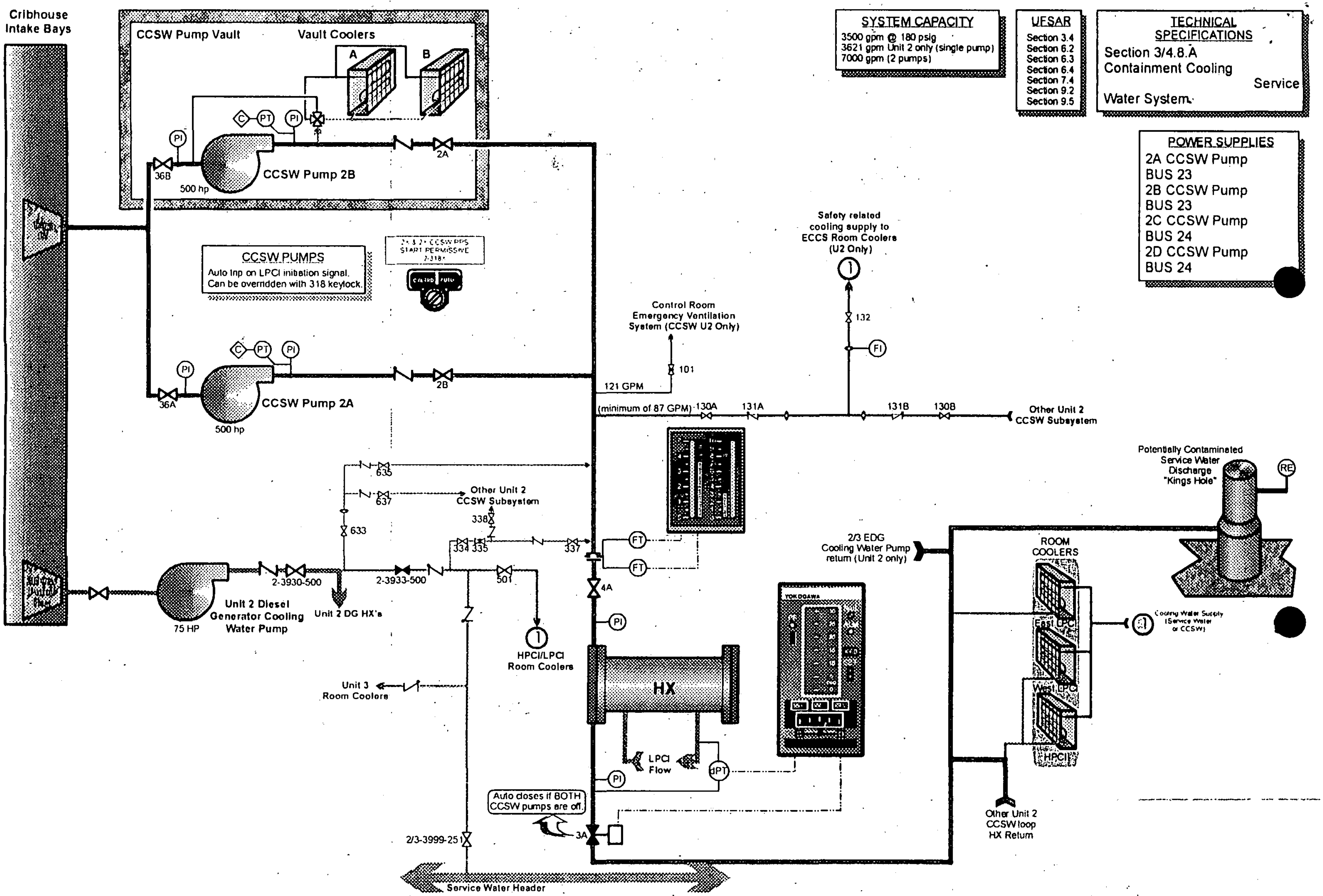


FIGURE 1 CONTROL ROOM HVAC



Cribhouse Intake Bays
CCSW Pump Vault
Vault Coolers
A
B
C
PT
PI
36B
500 hp
CCSW Pump 2B
2A
SYSTEM CAPACITY
3500 gpm @ 180 psig
3621 gpm Unit 2 only (single pump)
7000 gpm (2 pumps)
UFSAR
Section 3.4
Section 6.2
Section 6.3
Section 6.4
Section 7.4
Section 9.2
Section 9.5
TECHNICAL SPECIFICATIONS
Section 3/4.8.A
Containment Cooling Service Water System
POWER SUPPLIES
2A CCSW Pump
BUS 23
2B CCSW Pump
BUS 23
2C CCSW Pump
BUS 24
2D CCSW Pump
BUS 24
CCSW PUMPS
Auto trip on LPCI initiation signal.
Can be overridden with 318 keylock.
Safety related cooling supply to ECCS Room Coolers (U2 Only)
132
FI
Control Room Emergency Ventilation System (CCSW U2 Only)
101
121 GPM
36A
CCSW Pump 2A
500 hp
2B
(minimum of 87 GPM)
130A
131A
131B
130B
Other Unit 2 CCSW Subsystem
Potentially Contaminated Service Water Discharge "Kings Hole"
RE
635
637
Other Unit 2 CCSW Subsystem
633
338
334
335
337
FT
FT
2/3 EDG Cooling Water Pump return (Unit 2 only)
ROOM COOLERS
2-3930-500
2-3933-500
501
4A
75 HP
Unit 2 Diesel Generator Cooling Water Pump
Unit 2 DG HX's
PI
HPCI/LPCI Room Coolers
HX
East LPCI
West LPCI
HPCI
Unit 3 Room Coolers
LPCI Flow
dPT
PI
Auto closes if BOTH CCSW pumps are off.
3A
Other Unit 2 CCSW loop HX Return
2/3-3999-251
Service Water Header