Eugene S. Grecheck
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Dominion®

July 8, 2009

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

Serial No. NA3-09-017R
Docket No. 52-017
COL/MWH

DOMINION VIRGINIA POWER
NORTH ANNA UNIT 3 COMBINED LICENSE APPLICATION
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION LETTER 036 (FSAR CHAPTER 09)

On May 6, 2009, the NRC requested additional information to support the review of certain portions of the North Anna Unit 3 Combined License Application (COLA). The response to the following three RAIs is provided in Enclosures 1 through 3:

- RAI Question 09.02.01-8 PSWS Heat Removal ITAAC Acceptance Criteria
- RAI Question 09.02.01-9 Provide PSWS Material Properties Information
- RAI Question 09.02.01-11 Revise FSAR to Clarify NAPS CDI

Responses to the remaining ten RAIs (09.02.01-10, -12, -13, 09.05.04-7, -8, 13.03-4, -5, -6, -7, and -8) will be provided no later than August 4, 2009 in accordance with the schedule specified in the May 6, 2009 letter.

Please contact Regina Borsh at (804) 273-2247 (regina.borsh@dom.com) if you have questions.

Very truly yours,

Eugene S. Grecheck

D089
NRO

COMMONWEALTH OF VIRGINIA

COUNTY OF HENRICO

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Eugene S. Grecheck, who is Vice President-Nuclear Development of Virginia Electric and Power Company (Dominion Virginia Power). He has affirmed before me that he is duly authorized to execute and file the foregoing document on behalf of the Company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 8th day of July, 2009
My registration number is 7173057 and my
Commission expires: August 31, 2012

Wanda S. Marshall
Notary Public

WANDA S. MARSHALL
Notary Public
Commonwealth of Virginia
7173057
My Commission Expires Aug 31, 2012

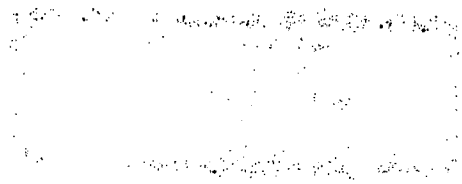
Enclosures:

1. Response to RAI Letter Number 036, RAI Question 09.02.01-8
2. Response to RAI Letter Number 036, RAI Question 09.02.01-9
3. Response to RAI Letter Number 036, RAI Question 09.02.01-11

Commitments made by this letter:

1. The information provided in the RAI responses will be incorporated into a future submission of the North Anna Unit 3 COLA, as described in the Enclosures.

cc: U. S. Nuclear Regulatory Commission, Region II
T. A. Kevern, NRC
J. T. Reece, NRC
J. J. Debiec, ODEC
R. Kingston, GEH
P. Smith, DTE



ENCLOSURE 1

Response to NRC RAI Letter 036

RAI Question 09.02.01-8

NRC RAI 09.02.01-8

Reference RAI 9.2.1-01 (ID 363/1172) and Dominion response dated August 28, 2008. Tier 1 of the DCD, Section 4.1, specifies as a COL interface requirement that the plant-specific plant service water system (PSWS) be capable of removing $2.02x10^7$ MJ ($1.92x10^{10}$ BTU) over a period of seven days without active makeup. The proposed North Anna 3 COL Inspections, Tests, Analysis and Acceptance Criteria (ITAAC) as described in Part 10, Tier 1/ITAAC Table 2.4.2-1, "ITAAC for Plant Service Water Reserve Storage Capacity," specifies a cooling tower basin water inventory of 2.6 million gallons requirement as a way of demonstrating that the heat removal capability specified by the DCD has been satisfied. The staff determined that water inventory alone does not demonstrate that the cooling towers are capable of dissipating the specified heat load.

Please describe in the NAPS application in Part 10, Tier 1/ITAAC Table 2.4.2-1 additional acceptance criteria, such as a report exists that confirms BTU capability of the PSWS in removing $2.02x10^7$ MJ ($1.92x10^{10}$ BTU) over a period of seven days without active makeup or provide similar ITAAC that will demonstrate the interface requirement has been satisfied.

Dominion Response

Dominion agrees with the staff. COLA ITAAC 2.4.2 will be revised to include the following:

1. A revised design commitment and acceptance criteria that confirms the volume of water in the PSWS heat sink is sufficient to remove $2.02x10^7$ MJ ($1.92x10^{10}$ BTU) over a period of seven days without active makeup.
2. A new design commitment and acceptance criteria that confirms there is sufficient available net positive suction head at the PSWS pump suction location for the lowest probable water level of the heat sink.

Additionally, COLA ITAAC 2.4.2 will be revised to reflect the latest proposed text in DCD Tier 1, Interface Requirement 4.1, *Plant Service Water System*, as provided in the General Electric-Hitachi (GEH) response to DCD RAI 9.2-24 [submitted in a letter from GEH to NRC (MFN 09-289) dated April 30, 2009 (ML 091560116)].

Proposed COLA Revision

COLA Part 10, *Tier 1/ITAAC*, Section 2.4.2 will be revised as shown in the attached markup.

Markup of North Anna COLA

The attached markup represents Dominion's good faith effort to show how the COLA will be revised in a future COLA submittal in response to the subject RAI. However, the same COLA content may be impacted by revisions to the ESBWR DCD, responses to other COLA RAIs, other COLA changes, plant design changes, editorial or typographical corrections, etc. As a result, the final COLA content that appears in a future submittal may be somewhat different than as presented herein.

2.4.2 ITAAC FOR Plant Service Water System (portion outside the scope of the certified design)

Design Description

The Plant Service Water System (PSWS) is the heat sink for the Reactor Component Cooling Water System. The PSWS does not perform any safety-related function. There is no interface with any safety-related component.

The PSWS cooling towers and basins are not within the scope of the certified design. A specific design for this portion of the PSWS is described in FSAR Section 9.2.1. Interface requirements are necessary for supporting the post-72-hour cooling function of the PSWS. The plant-specific portion of the PSWS shall meet the following interface requirement:

The ~~PSWS is required~~ volume of water shall be sufficient such that no active makeup shall be necessary to remove 2.02×10^7 MJ (1.92×10^{10} BTU) over a period of ~~7~~ seven days ~~without active makeup~~. Additionally, the PSWS pumps must have sufficient available net positive suction head at the pump suction location for the lowest probable water level of the heat sink.

Inspections, Test, Analyses and Acceptance Criteria

Table 2.4.2-1 provides a definition of the inspections, tests, and/or analyses, together with associated acceptance criteria for the PSWS.

Table 2.4.2-1 ITAAC For Plant Service Water Reserve Storage Capacity

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
~~1. The PSWS contains an inventory of cooling water sufficient for RCCWS cooling from hour zero (0) through day 7 (2.02×10^7 MJ (1.92×10^{10} BTU)) without active makeup.~~	~~Inspection of the as-built PSWS cooling tower basin and pump forebay will be conducted.~~	~~Report(s) document that the usable water volume in the cooling tower basins (Trains A and B) and associated pump forebay, defined as the volume above the pump minimum submergence water level and below the minimum normal operating level, is a minimum of 2.6 million gallons.~~
1. The volume of water in the PSWS basin shall be sufficient such that:		
a. No active makeup shall be necessary to remove 2.02×10^7 MJ (1.92×10^{10} BTU) over a period of seven days.	Inspections and analysis will be performed of the PSWS basin and cooling towers.	A report exists and concludes that the volume of water in the PSWS basin is sufficient such that no active makeup is necessary to remove 2.02×10^7 MJ (1.92×10^{10} BTU) over a period of seven days.
b. The PSWS pumps must have sufficient available net positive suction head at the pump suction location for the lowest probable water level of the heat sink.	Inspections and analysis will be performed of the PSWS basin.	A report exists and concludes that the PSWS pumps have sufficient available net positive suction head at the pump suction location for the lowest probable water level of the heat sink.

ENCLOSURE 2

Response to NRC RAI Letter 036

RAI Question 09.02.01-9

NRC RAI 09.02.01-9

Reference RAI 9.2.1-03 (ID 363/1174) and Dominion response dated August 28, 2008. COL Item 9.2.1-1-A, "Material Selection," indicates that the applicant needs to specify plant-specific PSWS material selection based on water quality analysis in order to preclude long-term corrosion and fouling. The response to this COL Item (NAPS COL 9.2.1-1A) only addressed material selection based on PSWS water treatment regime.

Please describe in the FSAR Section 9.2.1 the specific composition or properties of those materials to be used in the PSWS.

Dominion Response

Water used for the PSWS system is from Lake Anna. The water quality of Lake Anna has been evaluated and results are provided in COLA Part 3, Environmental Report (ER), Subsection 2.3.3. Based on these evaluations, the water treatment system and associated chemical additives for the PSWS are described in ER, Subsection 3.3.2.1.

PSWS basin water is treated for biofouling, scaling, and suspended matter with biocides, phosphate based anti-scalants, and phosphate based dispersants, respectively. In addition, the anti-scalants and/or dispersants contain corrosion inhibitors, as appropriate. These chemicals are injected directly into the cooling tower basin. This water treatment regime mitigates the long-term effects of fouling and corrosion within the PSWS.

Carbon steel that meets ASTM standards is used as the pipe material for above-grade portions of the PSWS. Based on the selected water treatment regime, more corrosion resistant materials are not needed.

Fiberglass pressure pipe that meets ASTM and AWWA standards, as allowed by Appendix III of the ASME B31.1 code, is used as the pipe material for the below grade piping. Fiberglass pressure pipe is not susceptible to internal corrosion from the chemically treated water or to external corrosion from ground contact.

Proposed COLA Revision

The response to COL Item 9.2.1-1-A in FSAR Section 9.2.1 will be revised as indicated in the attached markup.

Markup of North Anna COLA

The attached markup represents Dominion's good faith effort to show how the COLA will be revised in a future COLA submittal in response to the subject RAI. However, the same COLA content may be impacted by revisions to the ESBWR DCD, responses to other COLA RAIs, other COLA changes, plant design changes, editorial or typographical corrections, etc. As a result, the final COLA content that appears in a future submittal may be somewhat different than as presented herein.

9.2.1.2 **System Description**

~~Replace the Summary Description, Detailed System Description, and Operation portions of this section with the following.~~

~~NAPS CDI~~

Summary Description

~~The PSWS rejects heat from nonsafety related RCCWS and TCCWS heat exchangers to the environment. The source of cooling water to the PSWS is from the auxiliary heat sink (AHS), while the heat removed is rejected to the AHS. Unit 3 utilizes mechanical draft plume abated cooling towers for the AHS.~~

~~A simplified diagram of the PSWS is shown in Figure 9.2-201.~~

Replace the second, third, and fourth sentences of the first paragraph with the following.

NAPS CDI

The source of cooling water to the PSWS is from the auxiliary heat sink (AHS), while the heat removed is rejected to the AHS. The AHS utilizes mechanical draft plume abated cooling towers.

Replace the second paragraph with the following.

NAPS CDI

A simplified diagram of the PSWS is shown in Figure 9.2-1R.

Delete the third paragraph.

Detailed System Description

Replace the fourth and fifth sentences of the second paragraph with the following.

~~The PSWS consists of two independent and 100 percent redundant trains that continuously circulate water through the RCCWS and TCCWS heat exchangers.~~

~~Each PSWS train consists of two 50 percent capacity vertical pumps taking suction in parallel from the plant service water basin. Discharge is through a check valve, a self cleaning strainer, and a motor operated discharge valve at each pump to a common header. Each common header supplies plant service water to each RCCWS and TCCWS heat exchanger train arranged in parallel. The plant service water is returned via a common header to the mechanical draft plume abated cooling tower (AHS) in each train. Remote operated isolation valves and a cross tie line permit routing of the plant service water to either cooling tower. The~~

~~RCCWS and TCCWS heat exchangers are provided with remotely operated isolation valves. Flow control valves are provided at each heat exchanger outlet.~~

~~The PSWS pumps are located at the plant service water basin. Each pump is sized for 50 percent of the train flow requirement for normal operation. The pumps are low-speed, vertical wet-pit designs with allowance for increase in system friction loss and impeller wear. The design of the heat rejection facilities and PSWS pumps have sufficient available net positive suction head (NPSH) under worst case conditions. Basin water level is monitored to ensure sufficient NPSH at design flow is provided to the PSWS pumps.~~

~~The pumps in each train are powered from redundant electrical buses. During a LOPP, the pumps are powered from the two nonsafety-related standby diesel generators.~~

~~Where needed, valves are provided with hard seats to withstand erosion. The valves are arranged for ease of maintenance, repair, and in-service inspection. During a LOPP, the motor-operated valves are powered from the two nonsafety-related standby diesel generators.~~

~~The AHS provided for each PSWS train is a separate, multi-celled, 100 percent capacity mechanical draft plume abated cooling tower, with the fans in the tower from each train supplied by one of the two redundant electrical buses. During a LOPP, the fans are powered from the two nonsafety-related standby diesel generators. Each tower cell has an adjustable-speed, reversible motor fan unit that can be controlled for cold weather conditions to prevent freezing in the basin. A full flow bypass is provided to return water directly to the PSWS basin to allow ease of cold weather startup. Mechanical and electrical isolation allows maintenance on one tower, including complete disassembly, during full power operation. The Station Water System (SWS) provides makeup for blowdown, drift, and evaporation losses from the basin. Refer to Section 9.2.10 for the SWS discussion. Fiberglass reinforced polyester pipe is used for buried PSWS piping to preclude long term corrosion.~~

NAPS CDI

The plant service water is returned via a common header to the mechanical draft plume abated cooling tower (AHS) in each train. Remote operated isolation valves and a crosstie line permit routing of the plant service water to either cooling tower.

Replace the first sentence of the sixth paragraph with the following.

NAPS CDI

The AHS provided for each PSWS train is a separate multi-celled, 100 percent capacity mechanical draft plume abated cooling tower, with the fans in the tower from each train supplied by one of the two redundant electrical buses.

Replace the eighth sentence ~~in~~ of the sixth paragraph with the following.

NAPS COL 9.2.1-1-A

~~Fiberglass reinforced polyester pipe is used for buried PSWS piping to preclude long-term corrosion. Appropriate chemical treatment is added to the PSWS basin to preclude long-term corrosion and fouling of the PSWS components based on site water quality analysis. PSWS materials are compatible with the PSWS water treatment regime.~~

PSWS basin water is treated for biofouling, scaling, and suspended matter with biocides, phosphate based anti-scalants, and phosphate based dispersants, respectively. In addition, the anti-scalants and/or dispersants contain corrosion inhibitors as appropriate. These chemicals are injected directly into the cooling tower basin. This water treatment regime mitigates the long-term effects of fouling and corrosion within the PSWS.

PSWS materials are compatible with the PSWS water treatment regime. Based on the selected regime, carbon steel that meets ASTM standards is used as the pipe material for above-grade portions of the PSWS.

Fiberglass pressure pipe that meets ASTM and AWWA standards is used for below-grade piping. Fiberglass pressure pipe is not susceptible to internal corrosion from the chemically treated water or to external corrosion from ground contact.

Replace the second sentence of the eighth paragraph with the following.

~~In the event of a LOPP, the PSWS supports the RCCWS in bringing the plant to cold shutdown condition in 36 hours assuming the most limiting single active or passive component failure.~~

NAPS CDI
NAPS SUP 9.2.1-1

~~Unit 3 PSWS heat loads are shown in DCD Table 9.2-1.~~ The PSWS component design characteristics are shown in ~~Table 9.2-201~~ Table 9.2-2R.

ENCLOSURE 3

Response to NRC RAI Letter 036

RAI Question 09.02.01-11

NRC RAI 09.02.01-11

Reference RAI 9.2.1-05 (ID 363/1177) and Dominion response dated August 28, 2008. Tier 2 of the ESBWR DCD, Section 9.2.1.2, indicates that the heat rejection facilities are dependent upon actual site conditions and provides conceptual design information (CDI) for the standard plant design. FSAR Section 9.2.1.2 replaces the CDI but does not clearly differentiate between plant-specific and standard plant design information.

Please revise the FSAR Section 9.2.1.2 to clearly identify the plant-specific information that addresses the CDI identified in the ESBWR DCD.

Dominion Response

FSAR Section 9.2.1.2, Table 9.2-201, and Figure 9.2-201 will be revised to clearly identify the plant-specific information that addresses CDI identified in the ESBWR DCD. The standard plant design information incorporated by reference will be removed from the text in Section 9.2.1.2 and clear demarcation will be provided for the NAPS CDI information in Table 9.2-201 and Figure 9.2-201.

Proposed COLA Revision

FSAR Table 1.7-202, Table 1.8-203, FSAR Section 9.2.1.2, Table 9.2-201, and Figure 9.2-201 will be revised as indicated in the attached markup.

Markup of North Anna COLA

The attached markup represents Dominion's good faith effort to show how the COLA will be revised in a future COLA submittal in response to the subject RAI. However, the same COLA content may be impacted by revisions to the ESBWR DCD, responses to other COLA RAIs, other COLA changes, plant design changes, editorial or typographical corrections, etc. As a result, the final COLA content that appears in a future submittal may be somewhat different than as presented herein.

NAPS SUP 1.7-1

Table 1.7-201 Summary of Electrical System Configuration Drawings

Figure 8.2-201, 500/230 kV Switchyard Single-Line Diagram
Figure 8.2-202, 500/230 kV Switchyard Arrangement
Figure 8.2-203, Dominion Transmission Line Map

NAPS SUP 1.7-1

Table 1.7-202 Summary of Mechanical System Configuration Drawings

~~Figure 9.2-201~~ Figure 9.2-1R, Plant Service Water System Simplified Diagram
Figure 9.2-202, Potable Water System Simplified Diagram
Figure 9.2-203, Sanitary Waste Discharge System Simplified Diagram
Figure 9.2-204, Station Water System - Plant Cooling Tower Makeup System (PCTMS)
Figure 9.2-205, Station Water System - Pretreated Water Supply System (PWSS)
Figure 9.5-201, Fire Protection System; Main Yard Loop
Figure 9.5-202, Fire Protection System Secondary Fire Pumps
Figure 9.5-203, Fire Protection System; Cooling Tower Yard Loop
Figure 10.4-201, Circulating Water Pumps
Figure 10.4-202, Dry Cooling Tower Array
Figure 10.4-203, Hybrid Cooling Tower

NAPS SUP 1.8-5

Table 1.8-203 Conceptual Design Information (CDI)

Item in DCD	CDI in DCD adopted as actual design	CDI in DCD replaced with actual design	Evaluation	FSAR Section
9.2.1 Plant Service Water Table 9.2-2 Figure 9.2-1		X	Site-specific system description and design characteristics described	9.2.1 ~~Table 9.2-201~~ Table 9.2-2R ~~Figure 9.2-201~~ Figure 9.2-1R
9.2.3 Makeup Water System Table 9.2-9		X	Site-specific system description and design characteristics described	9.2.3 Table 9.2-202
9.2.4 Potable and Sanitary Water Systems		X	Site-specific system description and design characteristics described	9.2.4 Figure 9.2-202 Figure 9.2-203
9.2.10 Station Water System		X	Site-specific system description and design characteristics described	9.2.10 Table 9.2-203 Table 9.2-204 Figure 9.2-204 Figure 9.2-205
9.3.9 Hydrogen Water Chemistry System		X	Site-specific system description and design characteristics described	9.3.9
9.3.11 Zinc Injection System		X	Zinc Injection System not utilized	9.3.11

9.2.1.2 System Description

~~Replace the Summary Description, Detailed System Description, and Operation portions of this section with the following.~~

~~NAPS CDI~~

Summary Description

~~The PSWS rejects heat from nonsafety-related RCCWS and TCCWS heat exchangers to the environment. The source of cooling water to the PSWS is from the auxiliary heat sink (AHS), while the heat removed is rejected to the AHS. Unit 3 utilizes mechanical draft plume abated cooling towers for the AHS.~~

~~A simplified diagram of the PSWS is shown in Figure 9.2-201.~~

Replace the second, third, and fourth sentences of the first paragraph with the following.

NAPS CDI

The source of cooling water to the PSWS is from the auxiliary heat sink (AHS), while the heat removed is rejected to the AHS. The AHS utilizes mechanical draft plume abated cooling towers.

Replace the second paragraph with the following.

NAPS CDI

A simplified diagram of the PSWS is shown in Figure 9.2-1R.

Delete the third paragraph.

Detailed System Description

Replace the fourth and fifth sentences of the second paragraph with the following.

~~The PSWS consists of two independent and 100 percent redundant trains that continuously circulate water through the RCCWS and TCCWS heat exchangers.~~

~~Each PSWS train consists of two 50 percent capacity vertical pumps taking suction in parallel from the plant service water basin. Discharge is through a check valve, a self-cleaning strainer, and a motor operated discharge valve at each pump to a common header. Each common header supplies plant service water to each RCCWS and TCCWS heat exchanger train arranged in parallel. The plant service water is returned via a common header to the mechanical draft plume abated cooling tower (AHS) in each train. Remote-operated isolation valves and a cross-tie line permit routing of the plant service water to either cooling tower. The~~

~~RCCWS and TCCWS heat exchangers are provided with remotely operated isolation valves. Flow control valves are provided at each heat exchanger outlet.~~

~~The PSWS pumps are located at the plant service water basin. Each pump is sized for 50 percent of the train flow requirement for normal operation. The pumps are low speed, vertical wet-pit designs with allowance for increase in system friction loss and impeller wear. The design of the heat rejection facilities and PSWS pumps have sufficient available net positive suction head (NPSH) under worst case conditions. Basin water level is monitored to ensure sufficient NPSH at design flow is provided to the PSWS pumps.~~

~~The pumps in each train are powered from redundant electrical buses. During a LOPP, the pumps are powered from the two nonsafety related standby diesel generators.~~

~~Where needed, valves are provided with hard seats to withstand erosion. The valves are arranged for ease of maintenance, repair, and in-service inspection. During a LOPP, the motor-operated valves are powered from the two nonsafety related standby diesel generators.~~

~~The AHS provided for each PSWS train is a separate, multi-celled, 100 percent capacity mechanical draft plume abated cooling tower, with the fans in the tower from each train supplied by one of the two redundant electrical buses. During a LOPP, the fans are powered from the two nonsafety related standby diesel generators. Each tower cell has an adjustable speed, reversible motor fan unit that can be controlled for cold weather conditions to prevent freezing in the basin. A full flow bypass is provided to return water directly to the PSWS basin to allow ease of cold weather startup. Mechanical and electrical isolation allows maintenance on one tower, including complete disassembly, during full power operation. The Station Water System (SWS) provides makeup for blowdown, drift, and evaporation losses from the basin. Refer to Section 9.2.10 for the SWS discussion. Fiberglass reinforced polyester pipe is used for buried PSWS piping to preclude long term corrosion.~~

NAPS CDI

The plant service water is returned via a common header to the mechanical draft plume abated cooling tower (AHS) in each train. Remote operated isolation valves and a crosstie line permit routing of the plant service water to either cooling tower.

Replace the first sentence of the sixth paragraph with the following.

NAPS CDI

The AHS provided for each PSWS train is a separate multi-celled, 100 percent capacity mechanical draft plume abated cooling tower, with the fans in the tower from each train supplied by one of the two redundant electrical buses.

Replace the eighth sentence ~~in~~ of the sixth paragraph with the following.

NAPS COL 9.2.1-1-A

~~Fiberglass reinforced polyester pipe is used for buried PSWS piping to preclude long-term corrosion. Appropriate chemical treatment is added to the PSWS basin to preclude long-term corrosion and fouling of the PSWS components based on site water quality analysis. PSWS materials are compatible with the PSWS water treatment regime.~~

PSWS basin water is treated for biofouling, scaling, and suspended matter with biocides, phosphate based anti-scalants, and phosphate based dispersants, respectively. In addition, the anti-scalants and/or dispersants contain corrosion inhibitors as appropriate. These chemicals are injected directly into the cooling tower basin. This water treatment regime mitigates the long-term effects of fouling and corrosion within the PSWS.

PSWS materials are compatible with the PSWS water treatment regime. Based on the selected regime, carbon steel that meets ASTM standards is used as the pipe material for above-grade portions of the PSWS.

Fiberglass pressure pipe that meets ASTM and AWWA standards is used for below-grade piping. Fiberglass pressure pipe is not susceptible to internal corrosion from the chemically treated water or to external corrosion from ground contact.

Replace the second sentence of the eighth paragraph with the following.

~~In the event of a LOPP, the PSWS supports the RCCWS in bringing the plant to cold shutdown condition in 36 hours assuming the most limiting single active or passive component failure.~~

NAPS CDI
NAPS SUP 9.2.1-1

~~Unit 3 PSWS heat loads are shown in DCD Table 9.2-1.~~ The PSWS component design characteristics are shown in ~~Table 9.2-201~~ Table 9.2-2R.

~~The PSWS design detects and alarms in the MCR any potential gross leakage and permits the isolation of any such leak in a sufficiently short period of time to preclude extensive plant damage.~~

Replace the tenth paragraph with the following.

NAPS CDI

Analysis of routine PSWS basin grab samples will detect RCCWS leakage, which may contain low levels of radioactivity, into the PSWS. This provides the action required by NRC Inspection and Enforcement Bulletin No. 80-10.

~~The potential for water hammer is mitigated through the use of various system design and layout features, such as automatic air release/vacuum valves installed at high points in system piping and at the pump discharge, proper valve actuation times to minimize water hammer, limiting fluid velocities in piping, procedural requirements ensuring proper line filling prior to system operation and after maintenance operations, and the use of check valves at pump discharges to prevent backflow into the pumps.~~

Delete the twelfth paragraph.

Operation

~~The PSWS operates during startup, normal power operation, hot standby, cooldown, shutdown/refueling, and LOPP.~~

~~During normal plant operation, the cross-tie valves in the PSWS pump discharge header are open, allowing two of the four 50 percent capacity PSWS pumps to supply water to both PSWS trains. Heat removed from the RCCWS and TCCWS is rejected to the auxiliary heat sink.~~

~~Operation of any two of the four PSWS pumps is sufficient for the design heat load removal in any normal operating mode. During normal and LOPP cooldown mode, three pumps can be used for operational convenience to bring the plant to cold shutdown condition in 24 hours.~~

~~During a LOPP, running PSWS pumps restart automatically using power supplied by the nonsafety-related standby diesel generators.~~

Replace the last sentence of the second paragraph with the following.

NAPS CDI

Heat removed from the RCCWS and TCCWS is rejected to the auxiliary heat sink.

~~NAPS COL 9.2.1-1-A~~
NAPS CDI
NAPS SUP 9.2.1-1

Table 9.2-2R ~~Table 9.2-201~~ PSWS Component Design Characteristics

	PSWS Pumps	
	Type	Vertical, wet-pit, centrifugal turbine
	Quantity	4
	Capacity Each	1.262 m^3/s (20,000 gpm)
	Plant Service Water System [1]	
NAPS CDI	Flow (AHS)	2.524 m^3/s (40,000 gpm)
	PSWS Cooling Towers and Basins	
NAPS CDI	Type	Mechanical draft, multi-cell, adjustable speed reversible fans, plume abated
	Quantity	2
	Heat Load Each [2]	90 MW (3.07×10^8 BTU/hr)
	Flow Rate (Water) Each	2.524 m^3/s (40,000 gpm)
NAPS CDI	Ambient Wet Bulb Temperature [3]	26.1°C (79°F)
	Approach Temperature	5.0°C (9°F)
	Cold Leg Temperature	31.1°C (88°F)
NAPS SUP 9.2.1-1	Basin Reserve Storage Capacity [1]	2.6 million gallons
	Strainers	
	Type	Automatic cleaning basket
	Quantity	4

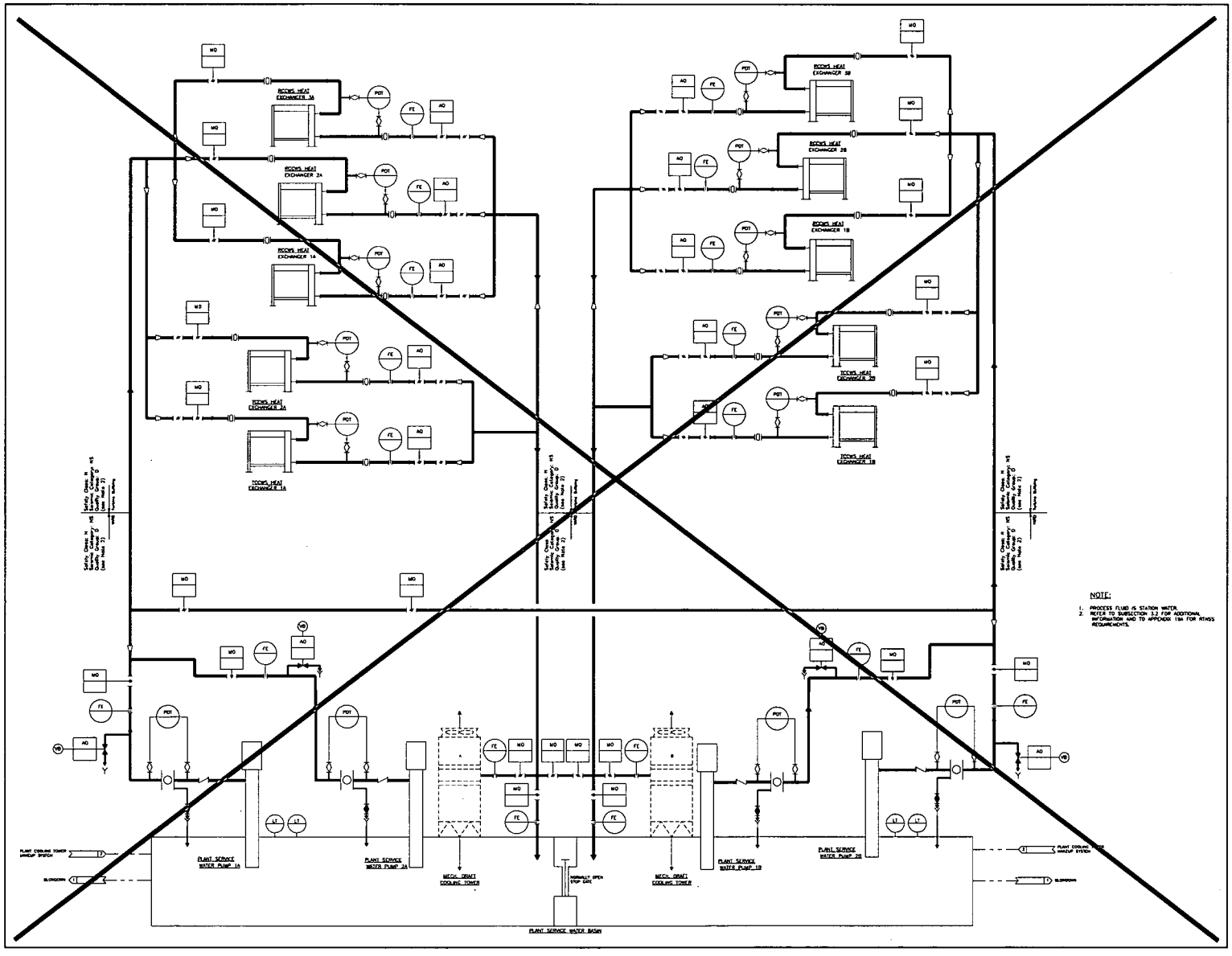
1. PSWS required to remove 2.02×10^7 MJ (1.92×10^{10} BTU) for period of 7 days without active makeup.

NAPS CDI

2. Cooling tower sizing capacity including margin over system design heat loads as defined in DCD Table 9.2-1.
3. Ambient web bulb temperature includes a 0.5°C (1°F) recirculation allowance.

~~NAPS CDI~~

~~**Figure 9.2-201 Plant Service Water System Simplified Diagram**~~



NAPS CDI

Figure 9.2-1R Plant Service Water System Simplified Diagram