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

Subject: UniStar Nuclear Energy, NRC Docket No. 52-016
Response to Request for Additional Information for the
Calvert Cliffs Nuclear Power Plant, Unit 3,
RAI No. 204, Potable and Sanitary Water Systems

Reference: Surinder Arora (NRC) to Robert Poche (UniStar Nuclear Energy), "FINAL RAI No. 204 CHPB 4188," email dated February 1, 2010

The purpose of this letter is to respond to the request for additional information (RAI) identified in the NRC e-mail correspondence to UniStar Nuclear Energy, dated February 1, 2010 (Reference). This RAI addresses Potable and Sanitary Water Systems, as discussed in Section 9.2.4 of the Final Safety Analysis Report (FSAR), as submitted in Part 2 of the Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 Combined License Application (COLA), Revision 6.

The enclosure provides our response to RAI No. 204, Question 09.02.04-1, and includes revised COLA content. A Licensing Basis Document Change Request has been initiated to incorporate these changes into a future revision of the COLA.

Our response does not include any new regulatory commitments. This letter does not contain any sensitive or proprietary information.

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NRO

If there are any questions regarding this transmittal, please contact me at (410) 470-4205, or Mr. Wayne A. Massie at (410) 470-5503.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on March 3, 2010

Greg Gibson

Enclosure: Response to NRC Request for Additional Information RAI No. 204, Question 09.02.04-1, Potable and Sanitary Water Systems, Calvert Cliffs Nuclear Power Plant, Unit 3

cc: Surinder Arora, NRC Project Manager, U.S. EPR Projects Branch
Laura Quinn, NRC Environmental Project Manager, U.S. EPR COL Application
Getachew Tesfaye, NRC Project Manager, U.S. EPR DC Application (w/o enclosure)
Loren Plisco, Deputy Regional Administrator, NRC Region II (w/o enclosure)
Silas Kennedy, U.S. NRC Resident Inspector, CCNPP, Units 1 and 2
U.S. NRC Region I Office

GTG/JER/mdf

Enclosure

Response to NRC Request for Additional Information
RAI No. 204, Question 09.02.04-1, Potable and Sanitary Water Systems
Calvert Cliffs Nuclear Power Plant, Unit 3

RAI No. 204

Question 09.02.04-1

CCNPP-3 FSAR Tier 2, Rev. 6, Section 9.2.4 and Figure 9.2-1 present information on the potable water supply system and describe features that are used to ensure that the system is not connected to radioactive systems in order to prevent the possibility of unmonitored and uncontrolled radioactive releases. The design features include backflow preventers, siphon breakers and air gaps, and application of differential system pressures. While the staff finds these features consistent with the requirements of Part 20.1406, GDC 60 of Appendix A Part 50, and IE Bulletin 80-10, a review of FSAR Figure 9.2-1 indicates that a feature of the design includes a recirculation loop, with an isolation valve used to separate the potable water system from other plant systems servicing the nuclear power block. The safety evaluation described in CCNPP-3 FSAR Section 9.2.4.3 does not address the types of administrative control measures that will be applied to ensure that the need for recirculation is justified and that the opening of the recirculation valve is controlled to avoid inadvertent openings and that other plant systems are isolated from the potable water system during recirculation. The applicant is requested to revise the safety evaluation of the potable water system described in CCNPP-3 FSAR Section 9.2.4.3 by providing information that describes administrative control measures and/or additional design features that will ensure that the potable water system does not become contaminated whenever the system is being recirculated. (Note: A review of FSAR Figure 9.2-1 indicates that the recirculation valve and check valve/backflow preventer P&ID symbol legends are not consistent with that presented in U.S. EPR FSAR, Tier 2, Rev. 1, Figure 1.7-1. It is recommended that as part of this RAI, the applicant makes the necessary corrections to CCNPP-3 FSAR Tier 2, Figure 9.2-1 to ensure consistency in the depiction of system components.)

Response

FSAR Figure 9.2-1, Potable Water System, will be revised to clarify the depiction of the recirculation line for each transfer pump and to note the presence of backflow prevention devices at each building connection requiring potable/sanitary water. In addition, as stated in Section 9.2.4.3, Safety Evaluation, backflow preventers are provided at "hard" connections to specific components or systems in certain areas of the plant (i.e., in radiologically controlled areas) to further prevent backflow under abnormal, reversed differential pressure conditions.

As a result, no administrative measures are required since the installed backflow preventers at each building receiving potable/sanitary water will not allow backflow to the potable water storage tank.

The revised Figure 9.2-1, which includes the update to the symbol for the check valves shown downstream of the transfer pumps, is in compliance with the U.S. EPR FSAR Figure 1.7-1, P&ID Symbol Legend. [Note: As explained in Note 1 of revised Figure 9.2-1, the check valves shown on revised Figure 9.2-1 are not the backflow prevention devices discussed in CCNPP Unit 3 COLA, Rev. 6, Section 9.2.4.]

The name "Pressure Maintenance Pumps" in FSAR Section 9.2.4.2.2, Component Description, will be clarified to be "Potable Water Transfer Pumps".

FSAR Section 9.2.4.2.2, Potable Water System, Piping and Valves, will be revised to add the following:

"Recirculation lines are included as a protective measure for the potable water transfer pumps to provide a recirculation path back to the potable water storage tank during periods when the operating pump must run continuously, but at a reduced flowrate demand. The automatic recirculation valve, located in each recirculation line, throttles open, as required, to allow water to flow back to the potable water storage tank."

FSAR Section 9.2.4.3, Potable Water System, will be revised to add the following:

"Where potable water is delivered to buildings, there is no path for water from the supplied buildings to be recirculated back to upstream components (i.e., potable water storage tank, transfer pumps or recirculation lines)."

COLA Impact

FSAR Section 9.2.4.2.2 will be updated as follows:

9.2.4.2.2 Component Description

Potable Water System

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~~*Pressure Maintenance Pumps*~~*Potable Water Transfer Pumps*
Two 100% capacity pumps are provided to maintain system pressure within the prescribed operating range. These pumps are made of materials compatible with drinking-quality water. Each pump is equipped with a discharge check valve and suction and discharge isolation valves

Piping and Valves
Branch connections to equipment, including hose bibs, or to other systems are individually isolable and are equipped with backflow preventers to prevent backflow and potential contamination of the Potable Water System. Connections to sinks or showers do not require backflow preventers, because there is an air gap between the potable water and the receiving drains. However, siphon breakers are installed where needed.

Recirculation lines are included as a protective measure for the potable water transfer pumps to provide a recirculation path back to the potable water storage tank during periods when the operating pump must run continuously, but at a reduced flowrate demand. The automatic recirculation valve, located in each recirculation line, throttles open, as required, to allow water to flow back to the potable water storage tank.

Water Heaters
Water heaters are provided for showers, wash and janitorial sinks, lunchroom, kitchen, laundry, and eyewash stations, and are sized, installed and controlled in such fashion as to supply on-demand hot water. Eyewash stations and emergency showers also include pre-set temperature control valves to deliver tepid water, per OSHA requirements.

FSAR Section 9.2.4.3 will be updated as follows in a future COLA revision:

9.2.4.3 Safety Evaluation

Potable Water System
The Potable Water System is not a safety-related system. Therefore, it does not require a safety evaluation with respect to plant design basis events.

With respect to compliance with Criterion 60 of Appendix A to 10 CFR 50, the Potable Water System is not connected to any components or other systems that have the potential to carry radiological material, nor do any systems discharge to it with the exception of the desalination plant that supplies makeup. Further, under normal operating conditions, system pressure is maintained above the pressure of supplied components or systems, thus preventing backflow from that supplied component / system.

In addition, a backflow preventer and isolation valve are provided at "hard" connections to supplied components or systems, including hose bibs. These devices are on the potable water side of the connection to prevent backflow under abnormal, reversed differential pressure conditions. Where potable water is delivered to buildings, there is no path for water from the supplied buildings to be recirculated back to upstream components (i.e., potable water storage tank, transfer pumps or recirculation lines).

At sinks or showers, an air gap between the potable water supply and the receiving drain prevents possible contamination from backflow. There are also siphon breakers where necessary on supply risers.

With respect to flooding concerns, the potable water storage tank is located such that even its catastrophic failure would not threaten the functionality of safety-related SSCs. Intervening topography and site drainage configuration would direct released water away from areas where it might otherwise cause damage. Site flooding is discussed in Section 2.4.10.

Figure 9.2-1—(Potable Water System)

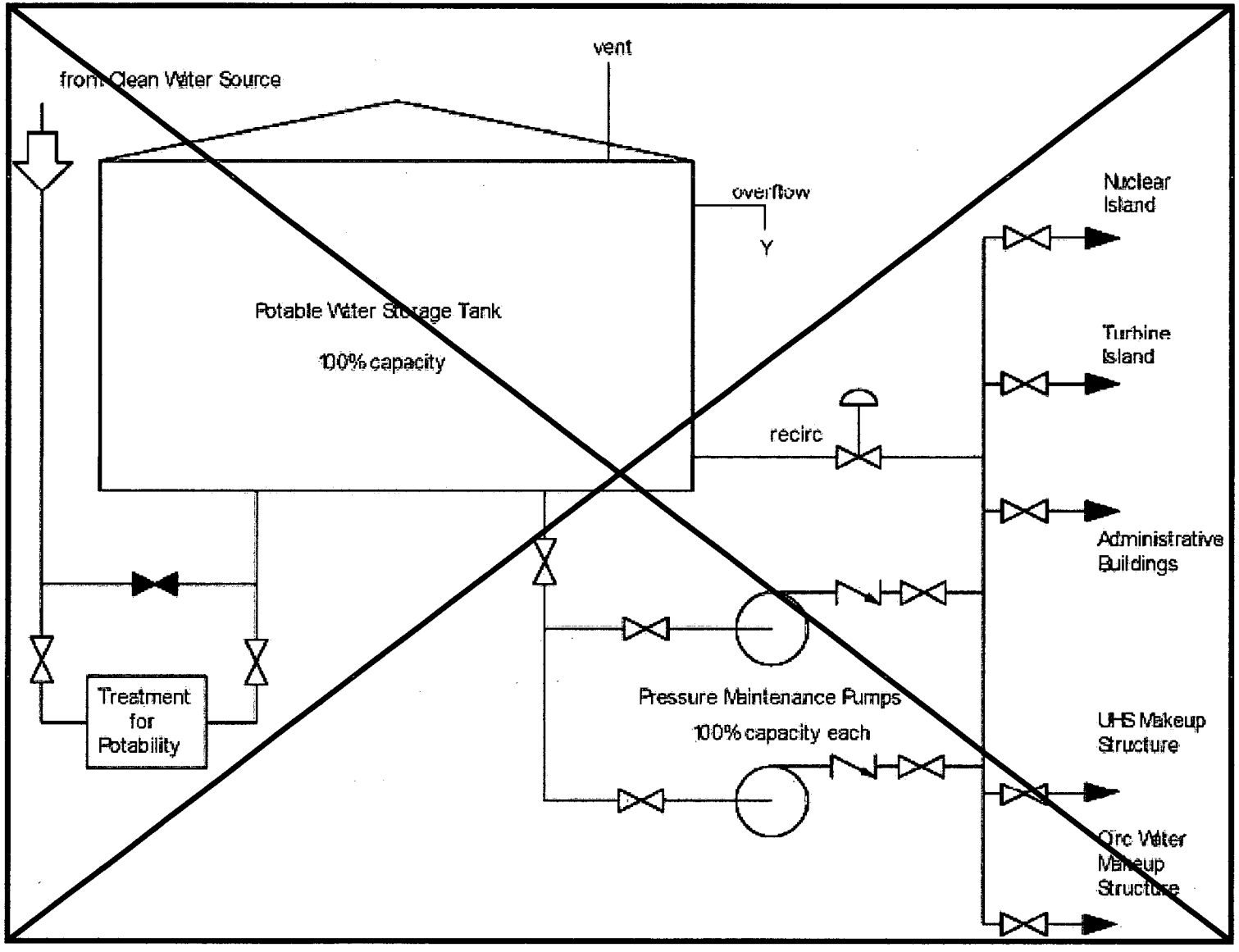
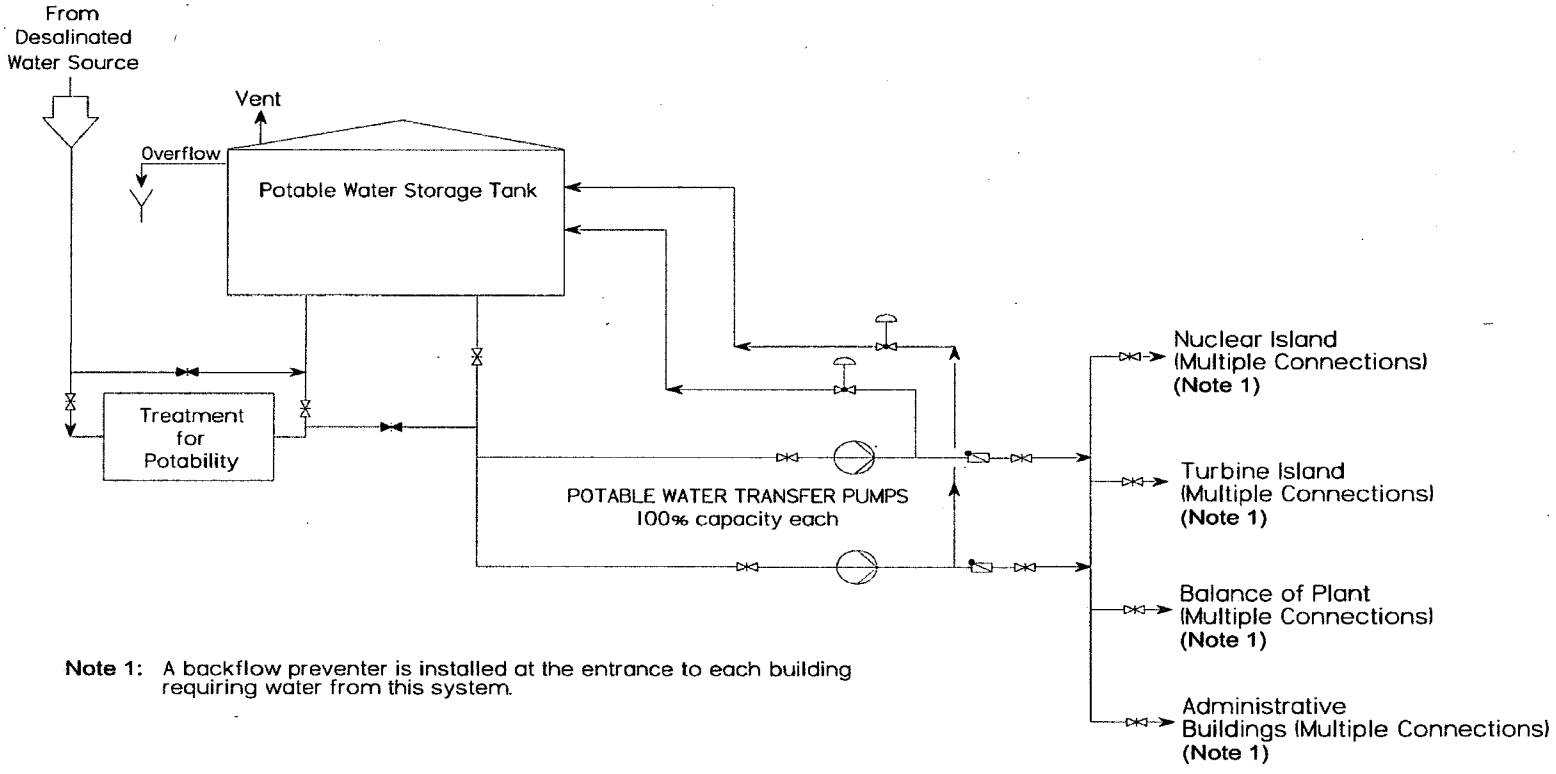


Figure 9.2—1 {Potable Water System}



Note 1: A backflow preventer is installed at the entrance to each building requiring water from this system.