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Sent: Tuesday, June 06, 2017 4:11 PM
To: Regner, Lisa
Subject: [External_Sender] RBS HVK Pre-Submittal Meeting Presentation.pdf - Adobe Acrobat Professional
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Lisa, Please see the attached PowerPoint for the pre-submittal meeting on June 20th 10am. If you have any questions, please feel free to contact me.

Thank You

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Hearing Identifier: NRR_PMDA
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RIVER BEND STATION PRE-SUBMITTAL MEETING

License Amendment Request (LAR): Technical Specification 3.7.7, "Control Building Air Conditioning (AC) System"

June 20, 2017

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OPENING REMARKS

Tim Schenk
Regulatory Assurance Manager
River Bend Station

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INTRODUCTIONS

Tim Schenk

Regulatory Assurance Manager

River Bend Station

Agenda

Introduction	Tim Schenk – Reg. Assurance Manager
Overview – HVC, HVK, SSW Systems	Tim Schenk – Reg. Assurance Manager
Current TS Requirements	Tim Schenk – Reg. Assurance Manager
Reason for Proposed Change	Tim Schenk – Reg. Assurance Manager
Description of Proposed Change	Tim Schenk – Reg. Assurance Manager
Technical Evaluation	Tim Schenk – Reg. Assurance Manager
Closing Comments	Tim Schenk – Reg. Assurance Manager

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OVERVIEW – HVC, HVK, AND SSW SYSTEMS

Tim Schenk
Regulatory Assurance Manager
River Bend Station

HVC System Design

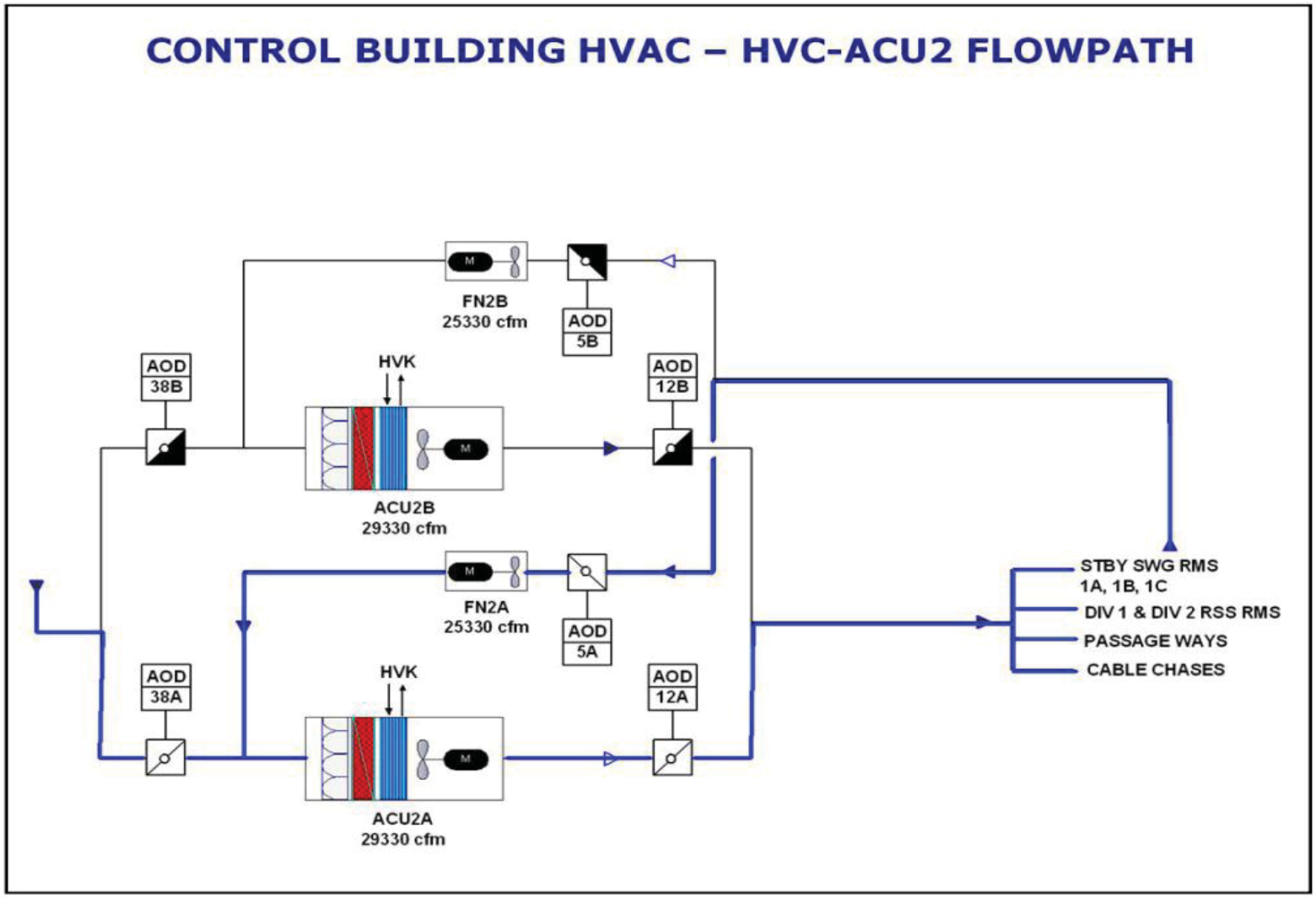
Control Building HVAC (HVC)

- Two 100% capacity divisions / subsystems
  - Division I – HVC-ACU1A, HVC-ACU2A, & HVC-ACU3A
  - Division II – HVC-ACU1B, HVC-ACU2B, & HVC-ACU3B

- The HVC ACUs function to provide cooling, heating, ventilation to the following areas in the Control Building:
  - HVC-ACU1A/B
    - Main Control Room
  - HVC-ACU2A/B
    - Standby Switchgear Rooms
    - General Areas
    - Inverter Charger Rooms
    - Cable Chase Rooms
    - Remote Shutdown Rooms
    - Battery Rooms
  - HVC-ACU3A/B
    - Chiller Equipment Rooms

- The HVC ACUs are safety related and are supplied with Power from their respective safety related buss or Emergency Diesel Generator

HVC Diagram – Normal Flow Path – 1 of 2 Redundant Divisions

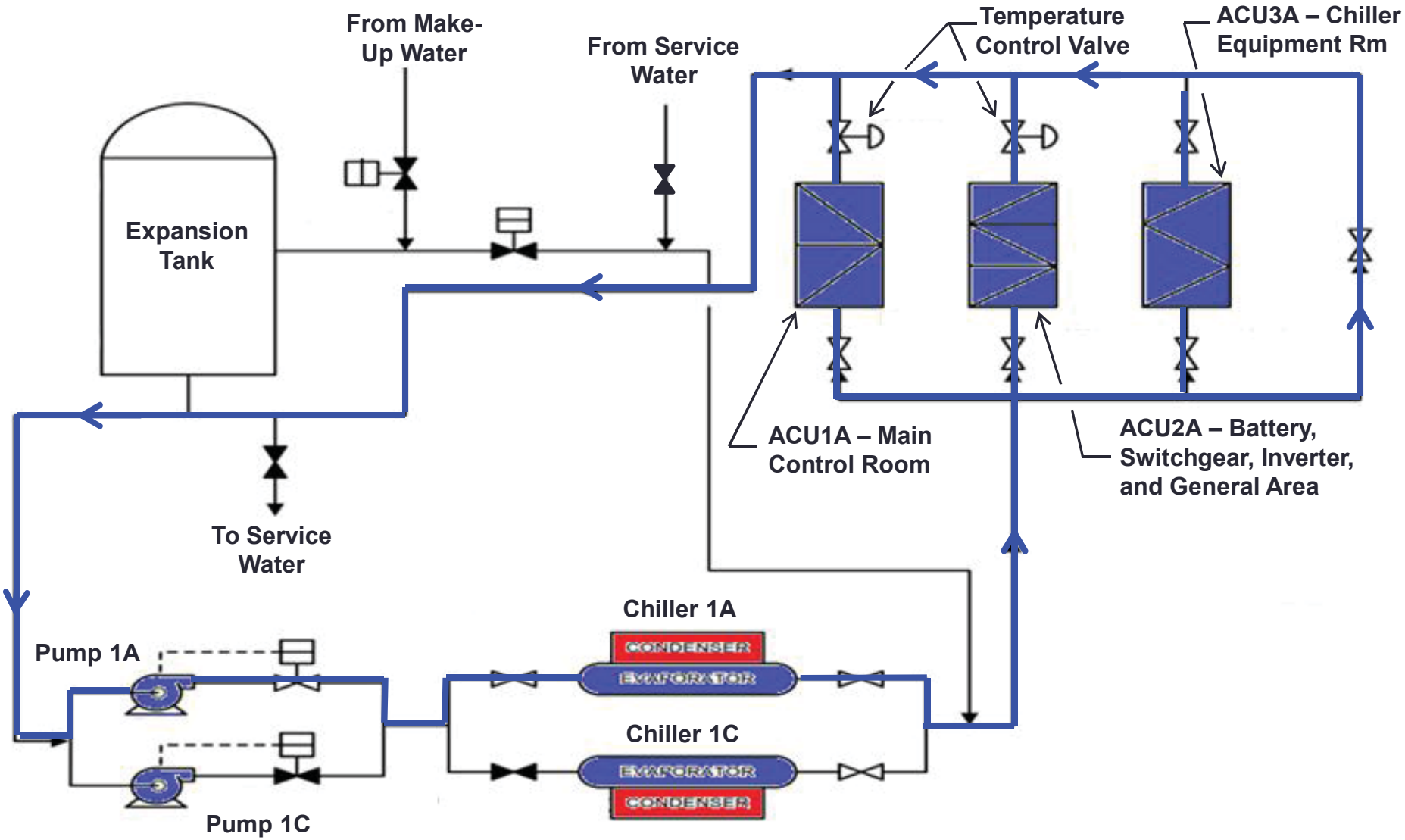


HVK System Design

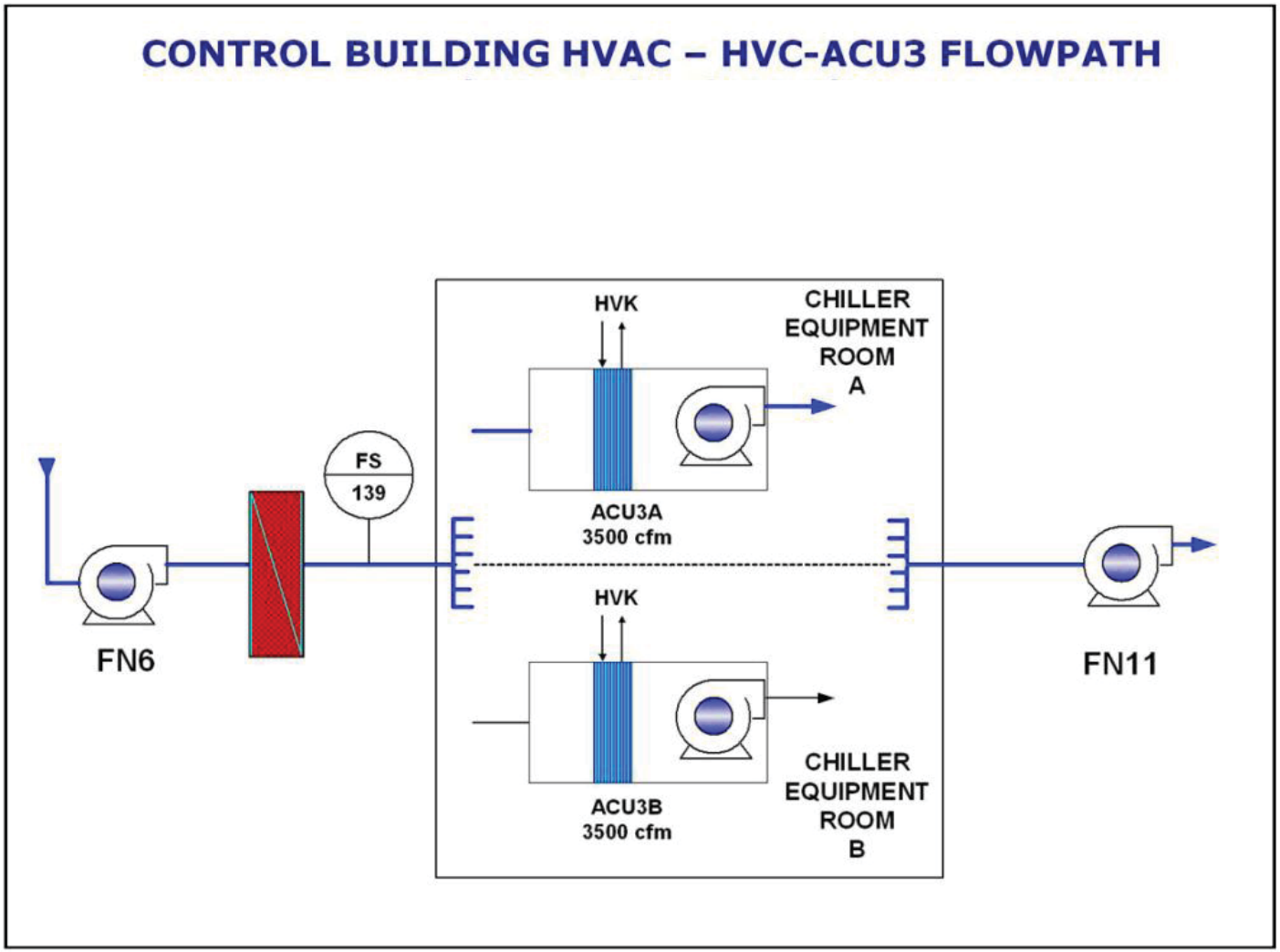
Control Building Chilled Water (HVK)

- Four 100% capacity refrigeration compressors/chillers (2 per division / subsystem), associated valves, chilled water pumps, service water pumps, instrumentation, and compression tanks.
  - Division I – HVK-CHL1A & HVK-CHL1C
  - Division II – HVK-CHL1B & HVK-CHL1D
- The chilled water system functions during normal, shutdown, and accident conditions to supply chilled water to the cooling coils in HVC-ACU1A/B, HVC-ACU2A/B, and HVC-ACU3A/B.
- The Normal Service Water system provides cooling water to the chiller condenser. In a DBA or loss of Normal Service Water the Standby Service Water system functions as the Ultimate Heat Sink.
- The Standby Service Water system is also connected to the Chilled Water piping circuit and in the event both subsystems of HVK fail it can function as the cooling medium for HVC-ACU1A/B, HVC-ACU2A/B, and HVC-ACU3A/B.
- The HVK Chillers are safety related and are supplied with power from their respective safety related buss or Emergency Diesel Generator

HVK Diagram – Normal Flow Path for 1 of 2 Redundant Divisions



HVC Diagram – Normal Flow Path – 1 of 2 Redundant Divisions



SSW System Design

Standby Service Water (SSW)

- Provides a reliable source of cooling water to plant auxiliaries that are essential for a safe reactor shutdown following a design basis Loss of Coolant Accident (LOCA)
- Two 100% capacity, redundant piping subsystems which provide cooling for
  1. Standby Diesel Generators (Div 1 and Div 2)
  2. High Pressure Core Spray Diesel Generator (Div 3)
  3. Auxiliary Building Room Unit Coolers
  4. Containment Unit Coolers
  3. Control Building Chilled Water – Condensers

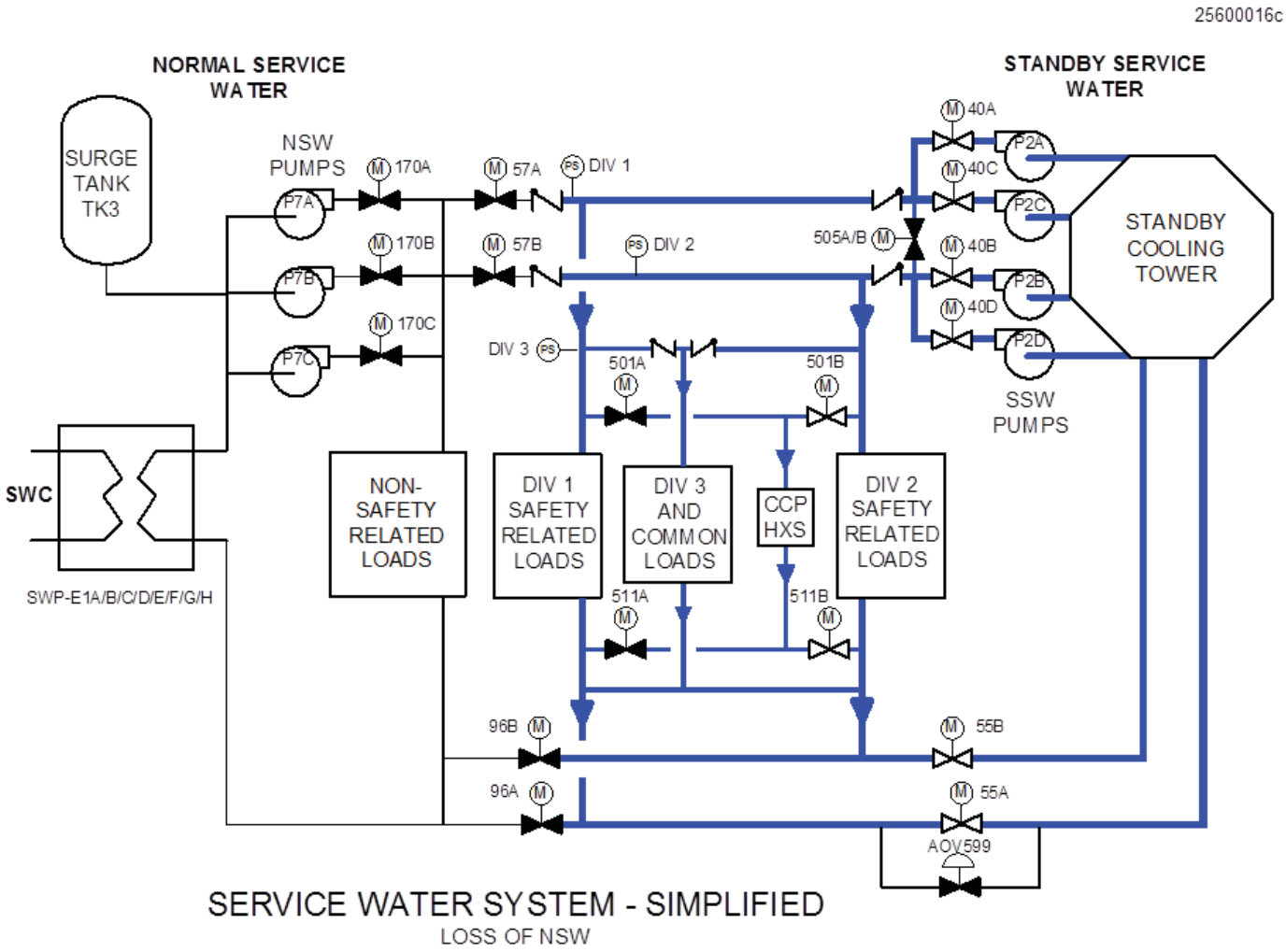
  Each SSW subsystem is fully capable of supporting safe shutdown of the reactor.

  Service water flow rate to the control building chilled water chillers is based upon heat removal requirements with the chilled water system at maximum capacity, i.e., maximum ambient temperature plus maximum heat gain from control building equipment.

- Four 50% capacity, 7,690 gpm pumps, SWP-P2C is powered by Div 3

- One Ultimate Heat Sink cooling tower and associated storage basin

Standby Service Water System



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CURRENT TS REQUIREMENTS

Tim Schenk
Regulatory Assurance Manager
River Bend Station

Current TS Requirements

- The Control Room Air-Conditioning System is fully addressed by existing TS 3.7.3 requiring two control room AC subsystems to be operable with a required action to repair within 30 days of one required AC subsystem being inoperable.

- Currently there is no TS addressing the following:

  - HVC-ACU2A/B
    - Standby Switchgear Rooms
    - General Areas
    - Inverter Charger Rooms
    - Cable Chase Rooms
    - Remote Shutdown Rooms
    - Battery Rooms

  - HVC-ACU3A/B
    - Chiller Equipment Rooms

- The equipment providing cooling to the above areas will be referred to as the Control Building AC (CBAC).

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REASON FOR PROPOSED CHANGE

Tim Schenk
Regulatory Assurance Manager
River Bend Station

Reason for Proposed Change

- March, 24, 2015, the NRC completed its initial assessment of the circumstances surrounding a loss of control building ventilation due to HVK chillers, which occurred on March 9, 2015, at River Bend Station.
- At the time, RBS considered the HVK a non-TS support system for all applications except the control room air conditioning system. In the event that one subsystem of HVK chilled water became nonfunctional, the supported divisional equipment was considered operable because cooling was maintained by the redundant support system. River Bend's position was that this was supported by TS LCO 3.0.6.
- On August 4, 2015, River Bend requested an Interpretation of Technical Specifications.
- September 19, 2016, the NRC responded that the exception to LCO 3.0.2 allowed by LCO 3.0.6 can only be applied in a situation where both a supporting and a supported system have LCOs in TS, and that the supported system is rendered inoperable by the inoperable support system.

Reason for Proposed Change

- Based on the NRC interpretation that the exception to LCO 3.0.2 allowed by LCO 3.0.6 can only be applied in a situation where both a supporting and a supported system have LCOs in TS, the loss of one subsystem of HVK could affect operability of the following;
  - DC Sources – Operating (TS 3.8.4),
  - Inverters – Operating (TS 3.8.7), and
  - Distribution Systems – Operating (TS 3.8.9)
- TS 3.8.4 DC Sources – Operating is the most limiting TS LCO, with a Completion Time (CT) of 2 hours, else be in Mode 3 within the following 12 hours of one required battery charger on Division I or II being inoperable.

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DESCRIPTION OF PROPOSED CHANGE

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River Bend Station

Proposed Change

RBS is requesting to add a new Technical Specification related to "Control Building Air Condition (AC) System".

This amendment will establish a Completion Time of 72 hours to allow time to complete minor maintenance activities on the Control Building AC System equipment and thus reduce the need for unnecessary plant shutdowns.

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TECHNICAL EVALUATION

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Proposed 72 hour Completion Time

Proposed 72 hour Completion Time is based on

- TS 3.7.1 Standby Service Water (SSW) and Ultimate Heat Sink (UHS) and

- On the low probability of an event occurring resulting in a loss of all cooling to the building, the consideration that the remaining subsystem can provide the required protection, and the availability of alternate cooling methods.

TS 3.7.1 Standby Service Water (SSW) and Ultimate Heat Sink (UHS)

Per TS 3.7.1 in MODES 1, 2, and 3, the SSW System is required to be OPERABLE to support OPERABILITY of the equipment serviced by the SSW System required to be OPERABLE in these MODES. If one SSW subsystem is inoperable (Condition G), it must be restored to OPERABLE status within 72 hours (TS 3.7.1 Condition G, Required Action G.1).

With the unit in this condition, the remaining operable SSW subsystem is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure in the operable SSW subsystem could result in loss of SSW function

Conclusion

- If one SSW subsystem is inoperable, cooling to both chillers in that subsystem (HVK-CHL1A and HVK-CHL1C OR HVK-CHL1B and HVK-CHL1D) would be unavailable. This will result in the loss of the ACUs in that subsystem (HVC-ACU1A ,HVC-ACU2A, and HVC-ACU3A OR HVC-ACU1B, HVC-ACU2B, and HVC-ACU3B).
- The loss of one subsystem of Standby Service Water scenario has the same results as taking one subsystem of the CBAC system out of service, in addition to the many functions impacted by having one SSW subsystem inoperable.
- The consequences of a Loss of CBAC is much more limited than the consequences of a Loss of Service Water.
- Therefore, the CBAC proposed completion time 72 hours is bounded by the scenario of one subsystem of Standby Service Water out of service.

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CLOSING COMMENTS

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