

**Catawba/NRC Pre-submittal Meeting:  
LAR to Revise TS 3.7.11, “Control Room Area Chilled Water System”**

December 8, 2022



- Introduction and Opening Remarks
- Objectives
- Regulatory Evaluation
- LAR Overview
- Mitigating Actions
- Temperature Limit
- One Hour Monitoring Frequency
- 24 Hour Completion Time
- Precedent
- Schedule

## Duke Energy Attendees

Ryan Treadway (Director, Nuclear Fleet Licensing)

Chuck Jenkins (Manager, Nuclear Engineering – Catawba)

Frank Hale (Lead Nuclear Engineer – Catawba)

Chet Sigmon (Senior Nuclear Engineer, Fleet Licensing)

Scott Milton (Assistant Operations Manager Shift, Senior License Holder - Catawba)

# Objectives

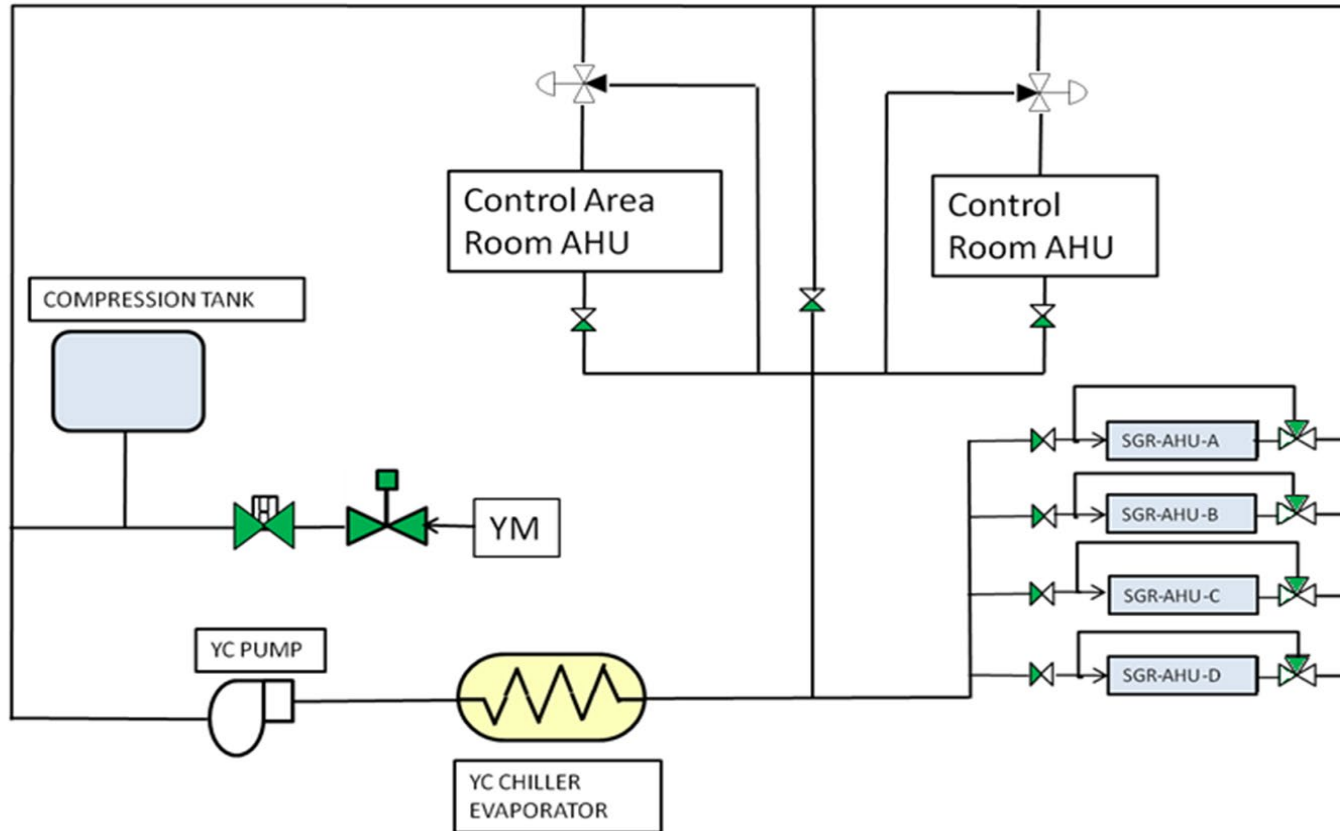
- Describe key aspects of the planned License Amendment Request
- Present proposed Technical Specification (TS) Changes
- Discuss and receive feedback on the key aspects and proposed changes

- Regulatory Requirements
  - 10 CFR 50.36 “Technical Specifications”
  - 10 CFR 50 Appendix A, General Design Criteria, Criterion 19
- Licensing Basis
  - Updated Final Safety Analysis Report (UFSAR) Section 9.4, “Air Conditioning, Heating, Cooling, and Control Room Ventilation”
  - Regulatory Guide 1.196, R0 “Control Room Habitability at Light-Water Nuclear Power Reactors”
- Safety Evaluation NUREG-1772
- Standard Review Plan (NUREG-0800)

# Overview of CRACWS

- Control Room Area Chilled Water System (CRACWS)
  - Provides air temperature control for the Control Room, Control Room Area, and Switchgear Rooms.
  - Consists of two independent and redundant trains. Each train consists of a chiller package, chilled water pump, air handling units with cooling coils, instrumentation, and controls.
  - Emergency system which also operates during normal unit operations
  - A single train will provide the required temperature control to maintain the Control Room at 74°F, which is the normal daily operating temperature.
  - Design basis is to maintain the Control Room Temperature for 30 days of continuous occupancy.

# Overview of CRACWS (YC)



## LAR Overview: TS 3.7.11

- The current TS 3.7.11 provides an action which allows 30 days to restore a single inoperable CRACWS train.
  - Based on the ability of the remaining operable CRACWS train to maintain the control room temperature within limits, the low probability of an event requiring control room isolation, and alternate cooling means that may be available.
  - Plant shutdown required if 30 day completion time is not met in Modes 1, 2, 3, or 4.
- Current required action for two inoperable CRACWS trains while in Modes 1, 2, 3, or 4 is to immediately enter Limiting Condition for Operation (LCO) 3.0.3.

# LAR Overview: Proposed Change

- The proposed change revises the Required Actions applicable when two trains of CRACWS are inoperable.
- The proposed Required Actions require immediate initiation of an action to implement mitigating actions to ensure control room temperature will not exceed 80°F, or if one CRACWS train is not restored to operable status within 24 hours while in Modes 1, 2, 3, or 4, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours. In Mode 5 or 6, or during movement of irradiated fuel assemblies, immediate suspension of movement of irradiated fuel assemblies and immediate suspension of positive reactivity conditions is required.

# LAR Overview: Proposed Change

- TS 3.7.11 Proposed Condition D

D. Two CRACWS trains inoperable.	D.1 Implement mitigating actions	Immediately
	<u>AND</u>	
	D.2 Verify control room temperature $\leq 80^{\circ}\text{F}$ .	Immediately and once per hour thereafter.
	<u>AND</u>	
	D.3 Restore one CRACWS train to operable	24 hours

# LAR Overview: Proposed Change

- TS 3.7.11 Proposed Conditions E and F

E.	Required Action and associated Completion Time of Condition D not met in MODE 1, 2, 3, or 4.	E.1	Be in MODE 3	6 hours
		<u>AND</u>		
		E.2	Be in MODE 5	36 hours
F.	Required Action and associated Completion Time of Condition D not met in MODE 5 or 6, or during movement of recently irradiated fuel assemblies.	F.1	Suspend movement of irradiated fuel assemblies	Immediately
		<u>AND</u>		
		F.2	Suspend positive reactivity additions	Immediately

## Mitigating Actions

- The following are potential mitigating actions when two CRACWS trains are inoperable:
  - Non-safety chilled water tie-in from Computer Room Chilled Water System (YJ)
  - Supplemental Coolers and Portable Fans
- A plant modification to tie-in from the YJ system is currently being put in place and will follow applicable processes and procedures, including the 10 CFR 50.59 review process to determine any need for NRC review related to the plant modification. As part of the plant modification, an evaluation will be done to ensure the capability of the non-safety chilled water source.
- Appropriate procedure and training changes will be implemented as part of this LAR to proceduralize the mitigating actions.

- Proposed temperature limit of 80 degrees Fahrenheit
  - Provides operational flexibility when in the proposed Condition
  - Slightly above normal ambient temperature range, maintains normal habitability
  - Significant margin to equipment specification limits
- Design Bases, UFSAR Section 9.4.1.1 and Design Basis Specification
  - Control room normal operating temperature 74 degrees Fahrenheit
  - Control room upper bound for equipment concerns 90 degrees Fahrenheit

# One Hour Monitoring Frequency

- Adequate given:
  - Immediate initial temperature verification
  - Continuous indication available in the control room
  - Evaluation completed prior to use of mitigating actions establishing capability
  - Operator and plant management attention to prevent an unnecessary plant transient

## 24 Hour Completion Time

- Consistent with Standard and Other Catawba TSs
- Improved Standard TSs allow a Completion Time to restore one inoperable control room cooling train, with two inoperable:
  - NUREG-1432, ISTS for CE Plants (24 hour allowance)
  - NUREG-1433, ISTS for GE BWR/4 Plants (72 hour allowance)
  - NUREG-1434, ISTS for GE BWR/6 Plants (7 day allowance)
- Current Catawba TSs provide an extended Completion Time for two or more inoperable trains:
  - TS 3.3.3, Post Accident Monitoring Instrumentation
  - TS 3.4.15, Reactor Coolant System (RCS) Leakage Detection Instrumentation
  - TS 3.7.4, Steam Generator Power Operated Relief Valves

- 2017 submittal by Constellation (then Exelon) for Byron and Braidwood Nuclear Stations (ADAMS Accession Number ML17181A276).
  - Approved in 2018 (ML18054B436)
  - CNS LAR will provide similar technical justification and level of detail.

## Schedule for Submittal

- Duke Energy plans to submit the License Amendment Request in the first quarter of calendar year 2023, seeking a 1 year review and approval from the NRC.

