



**Salem Hope Creek**  
GENERATING STATIONS

The image shows a large industrial facility, the Salem Hope Creek Generating Stations, situated along a body of water. A prominent cooling tower is visible on the left, and several large, rounded containment domes are visible in the background. The foreground shows the water's surface with some reflections and a small boat in the distance.

## **Salem Service Water Simplification Project**

**Meeting w/ NRC Office of Nuclear Reactor Regulation**

**Location: Rockville, MD**

**Date: 6/1/2006**

# Outline

## Meeting Objective

## Problem Statement

## Project Overview

- Objective
- Anticipated Benefits
- Technical Basis for Pursuing Project
- Scope
- Licensing Issues

## NRC Feedback on Project

## Meeting Objective

### **Preview Salem Service Water Simplification Project**

#### **Obtain NRC feedback**

- Information necessary to support LCR
- LCR review schedule

## Problem Statement

### **SW system design is complex**

- Different flow rates for normal and LOCA conditions
- Multiple active components change state on accident signal
- Surveillance and maintenance requirements impact system availability

### **Repeated LCO entries**

- Unplanned LCOs (23 since 1/1/05)
- Frequent entries for de-silting

# Project Objective

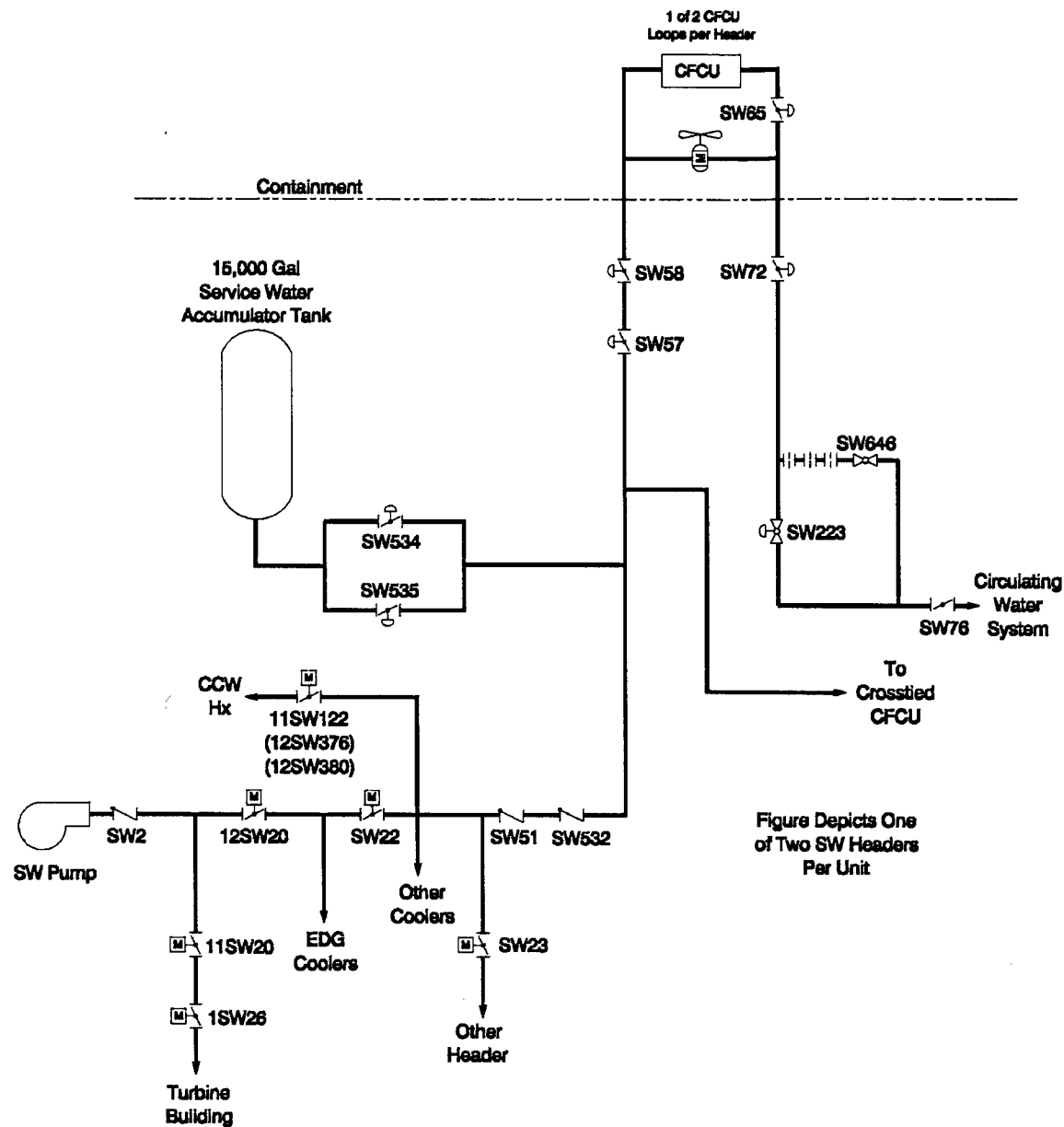
## Objectives

- Improve safety and reliability by simplifying design
- Reduce number of components with active safety functions
- Reduce unplanned LCOs

## Approach

- Adopt lower required CFCU flow rate for LOCA conditions
  - Containment re-analysis
- Implement fixed-resistance flow scheme
  - Restriction orifices (passive) in lieu of modulating flow controls
- Eliminate accumulator tanks
  - Transient hydraulic analyses and pipe support modifications

# Existing System Design



# Anticipated Benefits

## Improved safety

- Fewer safety-related valves with active safety functions
  - Reduced number of potential failure modes
  - Improvement in LRF
- Reduced unplanned LCOs
  - Main flow path and flow control: 16 LCOs since 1/1/05
  - Tanks: 7 LCOs since 1/1/05

## Recovery of system margin

## Improved industrial safety

- Reduced activities in containment at power
  - Heat stress

## Improved reliability and availability

- Simplified system
- Reduced surveillances
  - Reduction in number of valves requiring surveillance testing
  - Elimination of tanks

## **Technical Basis for Pursuing Project**

### **Containment Re-analysis (WCAP 16503)**

- Available margin allows CFCU heat removal rate to be reduced

### **Fixed-Resistance Flow Control (S-C-SW-MEE-1928)**

- Fixed-resistance flow scheme using orifices is feasible
- Single flow rate of ~1500 gpm

### **Elimination of CFCU Accumulator Tanks (MPR-2878)**

- NRC/Industry guidance for analytical approaches for GL 96-06 successfully applied at other sites
- Fixed-resistance scheme reduces severity of waterhammer for limiting case



# Project Scope: Modifications

## Valve modifications (5 each per unit)

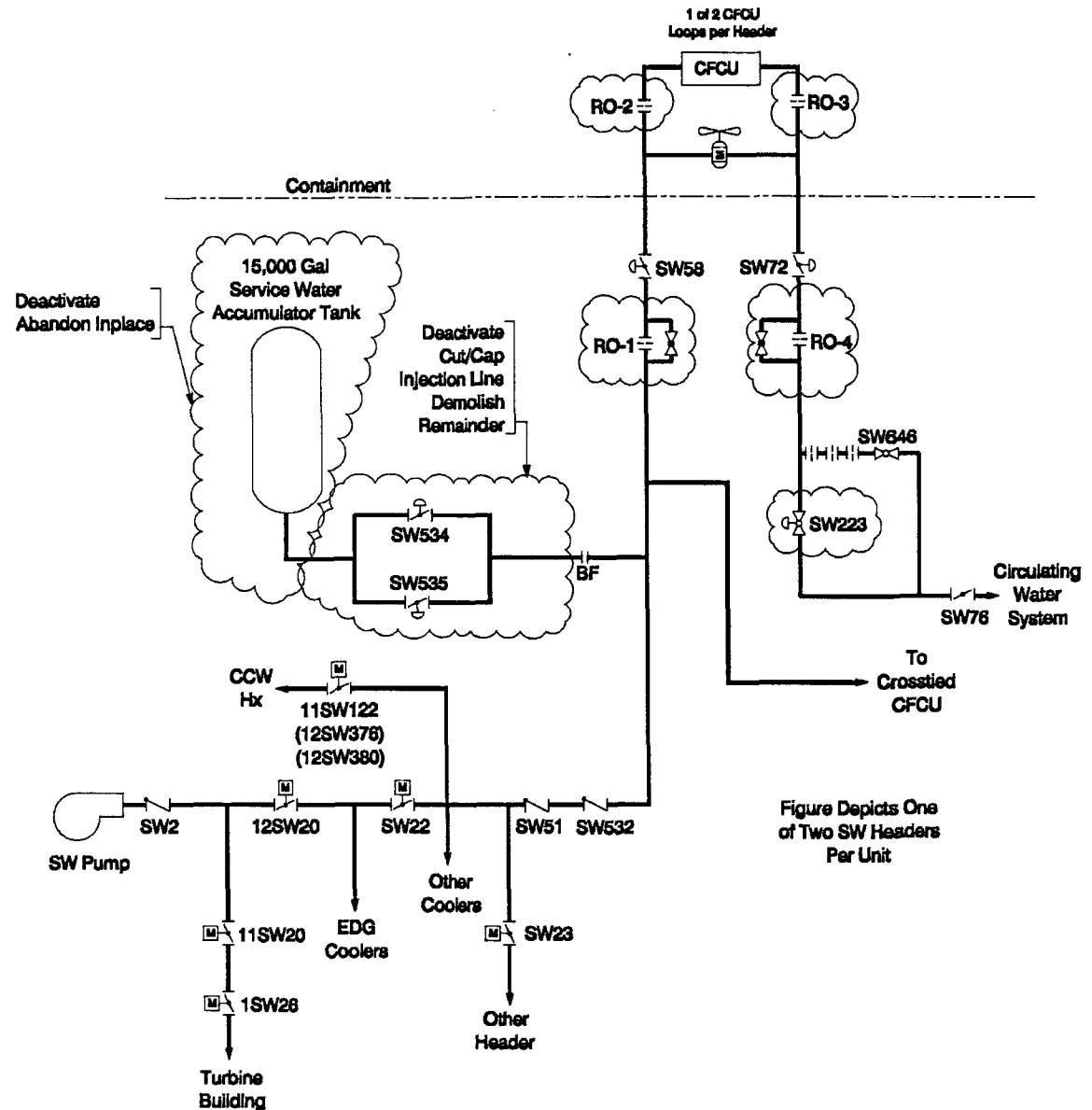
- Eliminate SW57 valves
- Eliminate SW65 valves
- Change SW223 valves to open/shut with limit stop

## Orifices

- 4 orifices per CFCU loop
- Bypass lines to allow high flow flush of CFCUs

## Tank elimination (2 per unit)

- Cut and cap injection line
- Abandon tanks in place



## Licensing Issues

### License Change needed to:

- Reduce CFCU accident flow rate
  - Changes Tech Spec limit
- Eliminate accumulator tanks
  - Eliminates Tech Spec criteria
  - Alters commitment that SW System remains water solid

# Preliminary NRC feedback??