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**Catawba Nuclear Station  
Nuclear Service Water System  
Technical Specification  
Extension Request**

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September 19, 2005

ATTACHMENT 2

# Participants

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| <u>Name</u>    | <u>Title</u>  |
|----------------|---|
| Bill Pitesa    | Station Manager   |
| George Hamrick | Manager – Mechanical & Civil Engineering                |
| Duncan Brewer  | Manager – Safety Assessment                             |
| Terry Edwards  | Manager – Nuclear Service Water Project: Implementation |
| Dayna Herrick  | Manager - PRA   |
| Lee Keller     | Manager - Regulatory Compliance                         |
| Paul Farish    | PRA Engineer  |
| Randy Hart     | Licensing Engineer                                      |

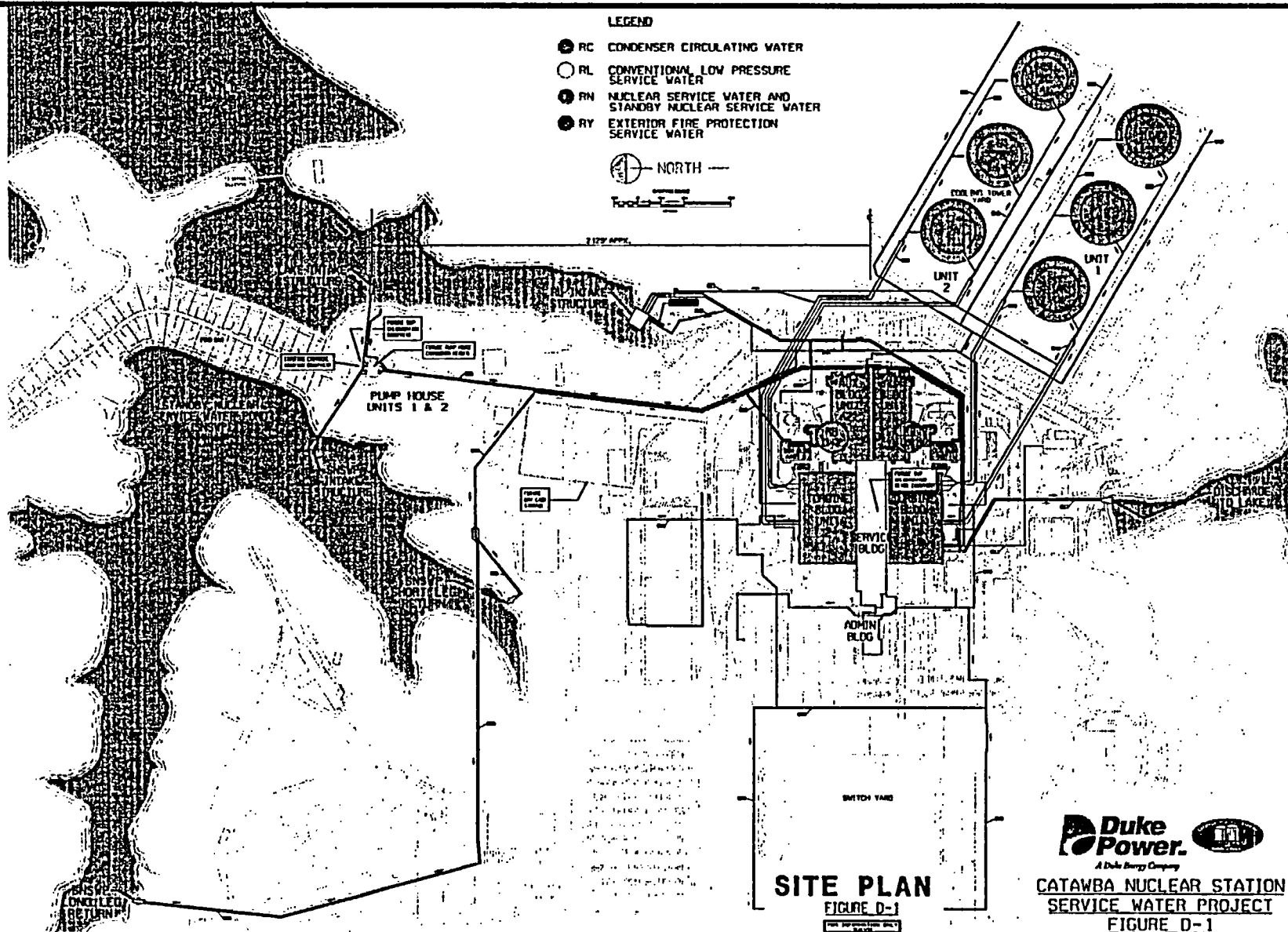
# Agenda

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|--------------------------------------|---------------|
| • Opening Remarks                    | Bill Pitesa   |
| • Nuclear Service Water (NSW) System | Bill Pitesa   |
| – Overview                           |               |
| – Background                         |               |
| • NSWS Header Outage Activities      | Terry Edwards |
| • Risk Mitigation                    | Bill Pitesa   |
| • Probabilistic Risk Assessment      | Duncan Brewer |
| • Closing Remarks                    | Bill Pitesa   |

# Nuclear Service Water System – Overview



# Nuclear Service Water System – Background

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- NSWs degradation requires large-scale system upgrades
  - Component Cooling Water heat exchangers retubed
  - NSWs to Auxiliary Feedwater System piping sections replaced
  - NSWs to control room chilled water system piping replaced
  - Containment Spray heat exchangers replaced
  - 2EOC14 first stage NSWs to Containment Spray piping replaced
  - NSWs to Containment Spray and Component Cooling pipe replacements scheduled in outages from 2005 through 2009

# Nuclear Service Water System – Background

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- In 2000, first major NSWS cleaning and inspection (License Amendment Request (LAR) for 12 day extended LCO)
- NSWS normal flow rate increase to minimize siltation and sedimentation
- NSWS chemical addition
- 2003 replaced 20 foot section of 42 inch buried piping for detailed piping condition analysis (LAR for 7 day extended LCO)
- Internal NSWS pipe condition inspections performed 1EOC14, 2EOC13, 1EOC15

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T-4  
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T-3  
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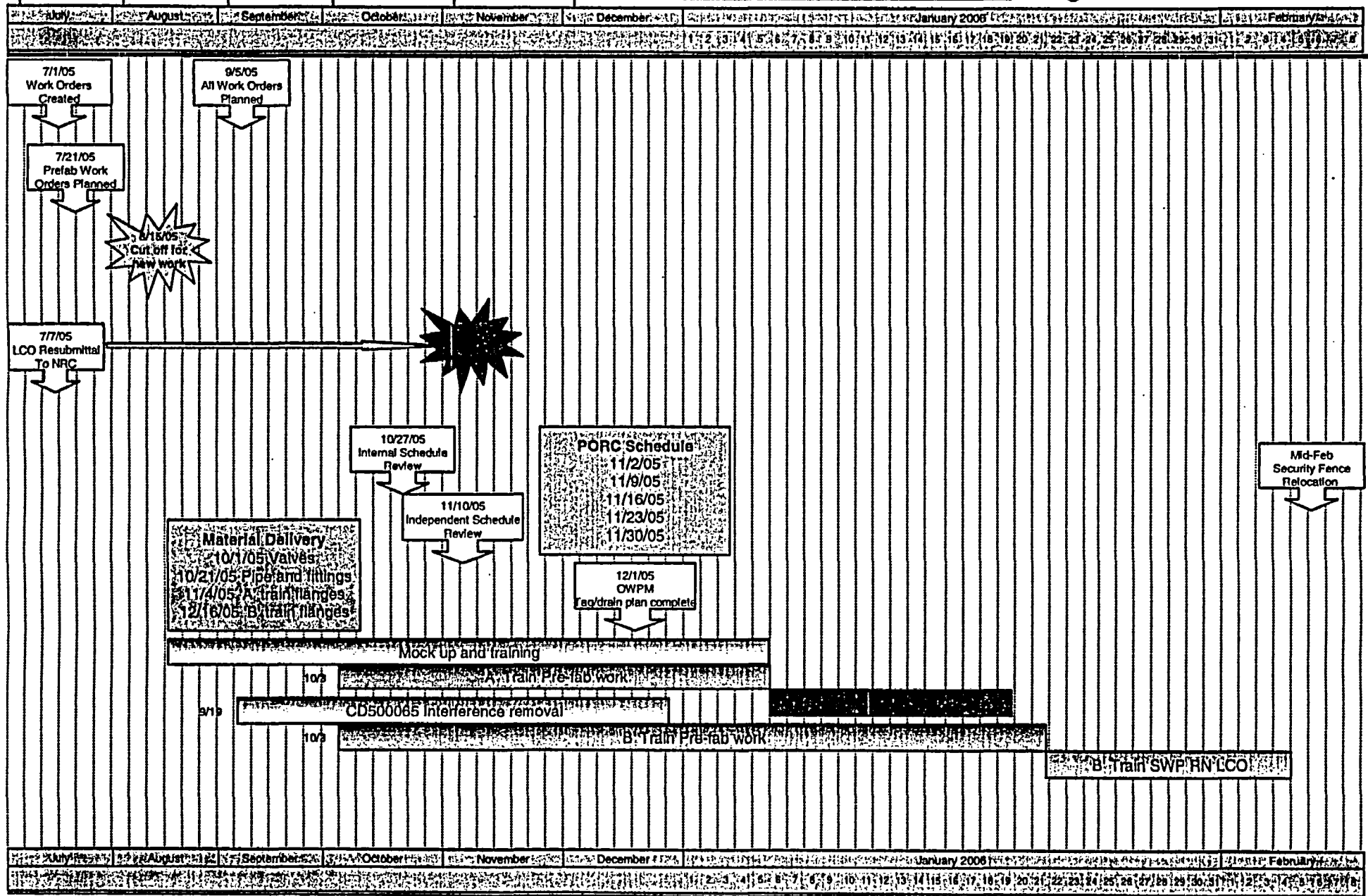
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# RN 14 Day LCO

LIKES  
ZERO  
HURTS

**Catawba**  
SOUTH CAROLINA



# Nuclear Service Water System – 14 Day AOT Activities

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- NSWS Supply header clean and coat (LAR)
  - High pressure water clean piping
  - Perform condition assessment inspection
  - Sandblast pipe internals
  - Coat to Stabilize NSWS supply header welds
  
- NSWS system modification activities to facilitate future outage/innage work for Single Header Operation
  - Install auxiliary building crossover piping and isolation valves
  - Replace piping and install crossover isolation valves in NSWS pump house
  - Install auxiliary building discharge header piping and isolation valves
  - Install emergency diesel generator supply isolation piping and valves



# Nuclear Service Water System – 14 Day AOT Activities

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- NSWS Supply Header Clean/Coat Preparation
  - Full scale piping mockup testing of all clean and coat processes and equipment
    - Prove processes
    - Establish production time frames
    - Test equipment
    - Train personnel
  - Detailed pipe inspection and evaluation process
  - Include lessons learned from NSWS lake intake pipe October 2005 clean and coat
  - Work scope reduction contingency plan in place for unforeseen events
  - All material staged, back up equipment on site, additional resources on standby
  - Detailed project controls process to monitor, evaluate, and report progress each shift
- Modification Preparation
  - All material on site
  - Use of metrology to maximize prefab assemblies
  - All assemblies prefabbed prior to NSWS Train Outage start
  - Dedicated work teams and management oversight for each modification work area

# Nuclear Service Water System – Risk Mitigation

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- Minimize maintenance activities for equipment not undergoing maintenance
- Temporary Modifications to allow DGs on NSWS train out of service to be “available”
- CCW system to be in cross train alignment during NSWS train outages
- Operations review of key abnormal procedures and appropriate training

# Nuclear Service Water System – Risk Mitigation

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- Changes have been made to loss of power procedures to address local throttling of AFW flow
- Changes will be made to plant procedures for the ability to cross tie the CCW headers
- Operations use of Configuration Risk Management Program to control and limit activities at the station
- Outage Control Center will be manned during each NSWS train outage

# Nuclear Service Water System – Probabilistic Risk Assessment

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- For the 14 day Completion Time
  - ICDP is  $5.8E-6$
  - ILERP is  $1.9E-7$
- If this were a request for a permanent change under RG 1.174, this would be in the range of a “Small Change”

# Nuclear Service Water System – Probabilistic Risk Assessment

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- Compensatory actions credited quantitatively in the PRA analysis:
  - The following systems will be kept available and protected:
    - Condenser Circulating Water System
    - AFW, ECCS, Component Cooling Water, 4160v AC, EDGs and SSF
  - Back-up cooling water will be supplied to the EDG while NSWWS is out of service

# Nuclear Service Water System – Probabilistic Risk Assessment

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- Procedure Changes Credited Quantitatively in the PRA Analysis :
  - For loss of battery chargers, operators will be dispatched to take control of turbine driven AFW pump prior to loss of DC power
  - For loss of power to the operating train, the Component Cooling Water system will be realigned to provide cooling to the train of mitigation equipment with power.

# Nuclear Service Water System – Probabilistic Risk Assessment

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- Additional compensatory actions not credited by the PRA Analysis:
  - Operators will do just in time review of loss of power, loss of service water and loss of component cooling water procedures
  - No maintenance will be allowed in the switchyard
  - NSWWS outage will be during the time of year with lower risk of severe weather
  - Increased focus by all plant personnel (OPS, Maintenance, Engineering and Management) due to awareness of risk significance

# Nuclear Service Water System – Probabilistic Risk Assessment

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- Additional actions considered but not taken because other compensatory actions accomplished the same risk reduction:
  - Cross connect DC power
  - Provide a portable power supply for the DC powered valves
  - Provide a backup cooling water source for a motor driven AFW Pump



# Nuclear Service Water System

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- Closing Remarks