UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 31, 2000

Mr. Robert P. Powers, Senior Vice President
Indiana Michigan Power Company
Nuclear Generation Group
500 Circle Drive
Buchanan, MI 49107

SUBJECT: DONALD C. COOK - SUMMARY OF MAY 16, 2000, PUBLIC MEETING REGARDING THE ESSENTIAL SERVICE WATER SYSTEM CONFIGURATION (TAC NO. MA8911)

Dear Mr. Powers:

This letter summarizes the meeting held on May 16, 2000, between members of your staff and the Nuclear Regulatory Commission (NRC) related to the Essential Service Water (ESW) system configuration at the Donald C. Cook (D. C. Cook) nuclear plant. The meeting was held at NRC headquarters in Rockville, Maryland. This meeting was open for public observations. Enclosure 1 provides a list of meeting attendees.

The licensee presented information related to the design and licensing basis for the ESW system. Enclosure 2 is the licensee's slide presentation. The licensee made a presentation of how the ESW system would be configured and operated with Unit 2 operating and Unit 1 remaining shutdown. The presentation focused on how that configuration was in accordance with design and licensing basis of D. C. Cook. During the presentation the licensee stated that in reviewing the configuration, the current plant Technical Specifications were found to be insufficient to assure plant safety in that the Technical Specifications do not require the crosstie valves to be closed to prevent diversion of ESW flow from an operating unit to a nonoperating unit.

As a result of this discovery, the licensee stated that they were following the guidance of NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications That Are Insufficient To Assure Plant Safety." The licensee indicated that Administrative Technical Requirements (ATR) would be put into place prior to Unit 2 reaching operational MODE 4. The licensee stated that the ATR provides enhanced guidance for operating the shared ESW system and provides the assurance that the ESW system can meet design basis functions. During the meeting the licensee stated that the ATR would be changed such that the allowed outage time for an ESW pump in Unit 1 being unavailable would be changed from 60 days to 7 days. The licensee indicated that a license amendment would be submitted to correct the appropriate Technical Specifications. The licensee proposed a date of November 1, 2001, to submit the license amendment.

The NRC staff and licensee discussed the licensing basis for the ESW system to understand whether implementation of the ATR would require prior NRC review and approval.

After the completion of the licensee's presentation, the NRC staff caucused to discuss the information provided by the licensee. At the conclusion of the meeting, the NRC staff stated that using the guidance found in Administrative Letter 98-10 was appropriate to address the ESW system nonconservative Technical Specifications and that the implementation of the ATR did not represent an unreviewed safety question requiring prior NRC review and approval. Also, the NRC staff expressed concern regarding the schedule for submission of the license amendment revising the appropriate technical specifications. The NRC staff requested that the licensee confirm in a letter to the NRC a date for the license amendment which is consistent with the guidance in Administrative Letter 98-10. The licensee submitted a letter to the NRC dated May 19, 2000, proposing a submittal of a license amendment by August 18, 2000. The staff has concluded that this revised data is consistent with Administrative Letter 98-10 and is acceptable.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and the enclosures will be available for public inspection at the Commission's Public Document Room, the Gelman Building, 2120 L Street, NW., Washington, DC, and accessible electronically through the ADAMS Public Electronic Reading Room link at the NRC Web site (http://www.nrc.gov).

If you have any questions regarding this matter, please contact me at 301-415-1345.

Sincerely,

/RA/

John F. Stang, Senior Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-315 and 50-316

Enclosures: 1. Attendee List
2. Licensee's Slide Presentation

cc w/encls: See next page

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The NRC staff and licensee discussed the licensing basis for the ESW system to understand whether implementation of the ATR would require prior NRC review and approval.

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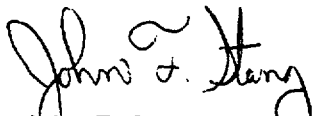

John F. Stang, Senior Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-315 and 50-316

Enclosures: 1. Attendee List
2. Licensee's Slide Presentation

cc w/encls: See next page

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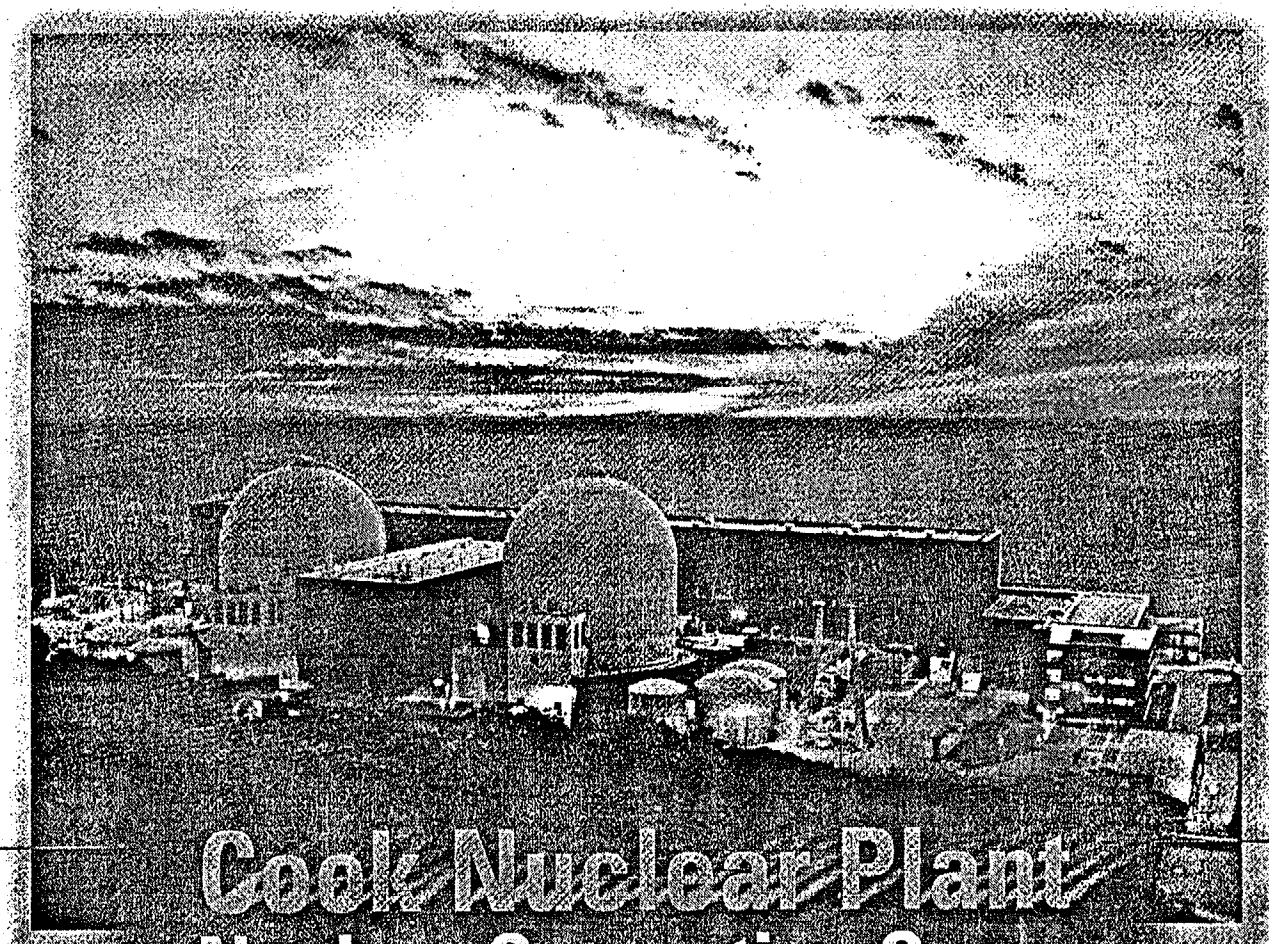
ATTENDANCE LIST FOR MAY 16, 2000, MEETING

NAME	ORGANIZATION
John Stang	NRC
Singh Bajwa	NRC
Bill Reckley	NRC
John Grobe	NRC
Anton Vegel	NRC
P. Wilson	NRC
K. Coyne	NRC
I. Jung	NRC
R. J. Giardina	NRC
Mike Case	NRC
Steve West	NRC
Jim Tatum	NRC
Fred Lyon	NRC
Janice Moore	NRC
Cindi Carpenter	NRC
David Matthews	NRC
John Lehning III	NRC
George Hubbard	NRC
William Beckner	NRC
S. Singh Bajwa	NRC
Bruce Bartlett	NRC
Brian Sheron	NRC
John Zwolinski	NRC
Gary Holahan	NRC
John Hannon	NRC
Mark Reinhart	NRC
Gordon Arent	AEP
Robert Godley	AEP
Chris Bakken	AEP
M. Rencheck	AEP
S. Greenlee	AEP
S. Partin	AEP
Brad Bentley	AEP
Dave Lochbaum	UCS
C. Coe	McGraw Hill

ENCLOSURE 1



Cook Nuclear Plant
Nuclear Generation Group

May 16, 2000

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ENCLOSURE 2

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Essential Service Water System

Crosstie Discussion

May 16, 2000

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Agenda

- Discussion of Essential Service Water Technical Specifications
- UFSAR Design Basis
- Essential Service Water Administrative Technical Requirement
- Conclusions

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ESW Technical Specification

- T/S 3.7.4.1a - Two Independent Loops OPERABLE
  - Each Unit's T/S are Independent (i.e., no credit for other units system)
  - Entered on Unit specific basis
  - Testing of system verifies that surveillance requirements are met on a unit specific basis.

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3/4.7.4 ESSENTIAL SERVICE WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.4.1

a. At least two independent essential service water loops shall be OPERABLE.

b. At least one essential service water flowpath associated with support of Unit 1 shutdown functions shall be available.

APPLICABILITY: Specification 3.7.4.1.a. - MODES 1, 2, 3, and 4.
Specification 3.7.4.1.b. - At all times when Unit 1 is in MODES 1, 2, 3, or 4.

ACTION:

When Specification 3.7.4.1.a is applicable:

With only one essential service water loop OPERABLE, restore at least two loops to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

When Specification 3.7.4.1.b is applicable:

With no essential service water flow path available in support of Unit 1 shutdown functions, return at least one flow path to available status within 7 days or provide equivalent shutdown capability in Unit 1 and return the equipment to service within the next 60 days, or have Unit 1 in HOT STANDBY within the next 12 hours and HOT SHUTDOWN within the following 24 hours. The requirements of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.4.1 At least two essential service water loops shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power operated or automatic) servicing safety related equipment that is not locked, sealed, or otherwise secured in position, is in its correct position.

b. At least once per 18 months during shutdown, by verifying that each automatic valve servicing safety related equipment actuates to its correct position on a Safety Injection test signal.+

+ The provisions of Technical Specification 4.0.8 are applicable.

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

The limitation on steam generator pressure and temperature ensures that the pressure induced stresses in the steam generators do not exceed the maximum allowable fracture toughness stress limits. The limitations of 70°F and 200 psig are based on average steam generator impact values taken at +10°F and are sufficient to prevent brittle fracture.

3/4.7.3 COMPONENT COOLING WATER SYSTEM

The OPERABILITY of the component cooling water system ensures that sufficient cooling capacity is available for continued operation of safety related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the accident analysis.

3/4.7.4 ESSENTIAL SERVICE WATER SYSTEM

The OPERABILITY of the essential service water system ensures that sufficient cooling capacity is available for continued operation of safety related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the accident conditions within acceptable limits.

3/4.7.3 and 3/4.7.4

The OPERABILITY of the Unit 2 flowpaths which support Unit 1 shutdown functions ensures the availability of cooling functions on Unit 1 and addresses the requirements of 10 CFR 50 Appendix R. The required flowpath consists of a pump and associated water supplies and delivery systems. Fire watches posted in the affected opposite unit areas (i.e., Unit 1 areas requiring use of the Unit 2 component cooling water system or essential service water system in the event of a fire) may serve as the equivalent shutdown capability specified in the action statements of Specifications 3.7.3.1 and 3.7.4.1. In the affected areas, either establish continuous fire watches or verify the OPERABILITY of fire detectors per Specification 4.3.3.7 and establish hourly fire watch patrols. The required opposite unit equipment along with the surveillance requirements necessary to ensure that this equipment is capable of fulfilling its intended Appendix R alternate safe shutdown function have been established and are included in a plant procedure. An additional plant procedure details how the above noted fire watches will be implemented.

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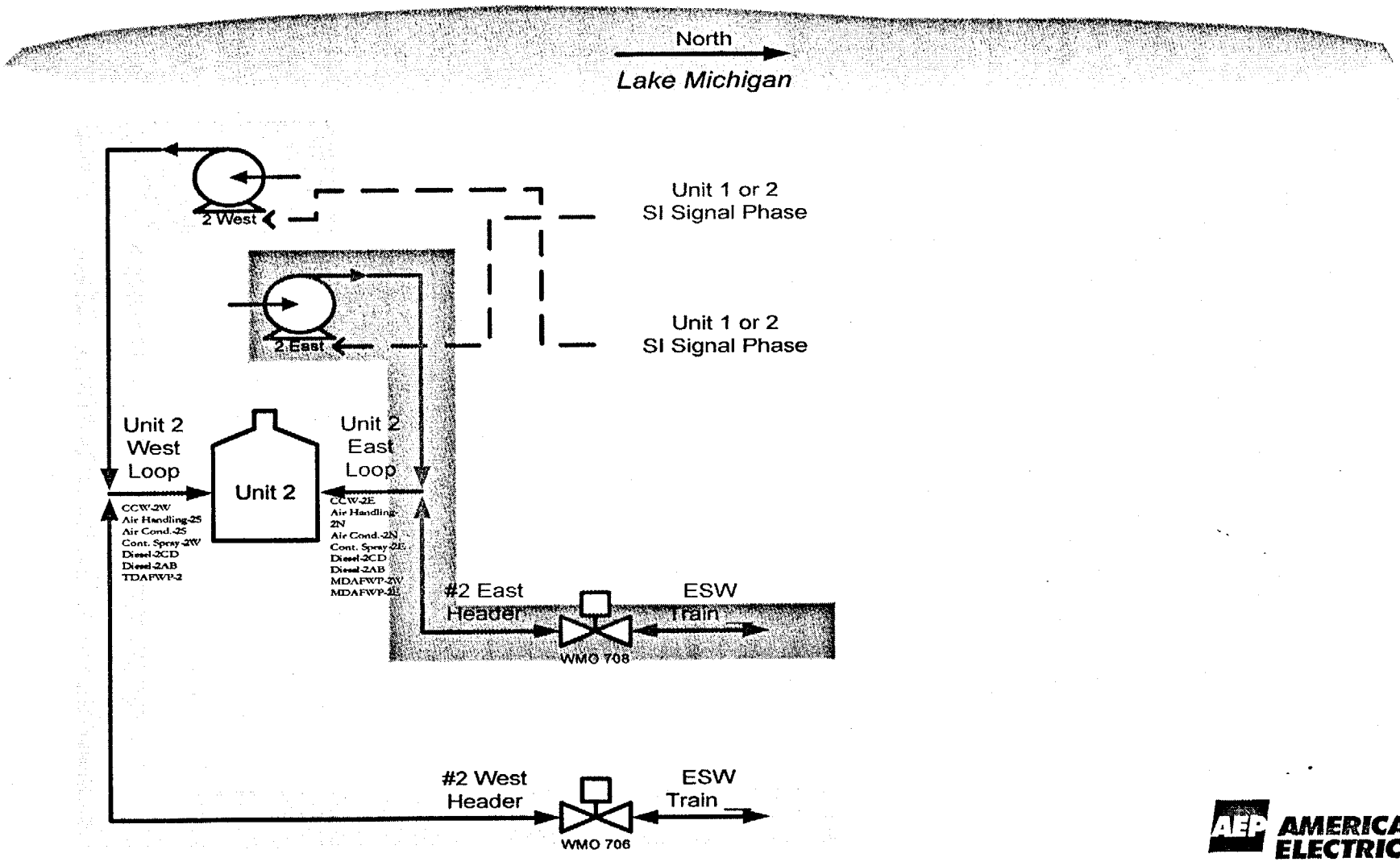
ESW Technical Specification



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ESW Technical Specification

- T/S 3.7.4.1b - Available Flowpath to Support Opposite Unit Shutdown Function
  - Would not have been required if all loops and pumps were required to be OPERABLE and open at all times.

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Design of ESW System

- UFSAR Section 9.8.3
  - The Essential Service Water System is designed to prevent any failure in its system from curtailing normal plant operation or limiting the ability of the engineered safeguards to perform their functions in the event of an accident. Since the Essential Service Water System is required for long term heat removal, it is designed to withstand a passive failure on a long term basis. Although it is not a design requirement, the Essential Service Water System has sufficient capacity to handle a LOCA on one unit and hot shutdown in the other considering the single failure criterion. Sufficient pump capacity is included to provide design service water flow under all postulated conditions. The headers are arranged such that even loss of a complete header does not jeopardize plant safety related functions.

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Design of ESW System

- UFSAR Section 9.8.3
  - The headers are arranged such that a rupture in either header will not jeopardize the safety functions of the system. Each header is served by two essential service water pumps. Two pumps are sufficient to supply all service water requirements for unit operation, shutdown, refueling, or post accident operation, including a LOCA in one unit and a simultaneous hot shutdown in the other. However, a third pump is normally started under the shutdown and refueling operations. All pumps receive a start signal in the event of an accident.

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Design of ESW System

- System Design (see diagram)
  - Four ESW pumps,
  - Four strainers
  - Associated piping and valves
  - Two independent headers

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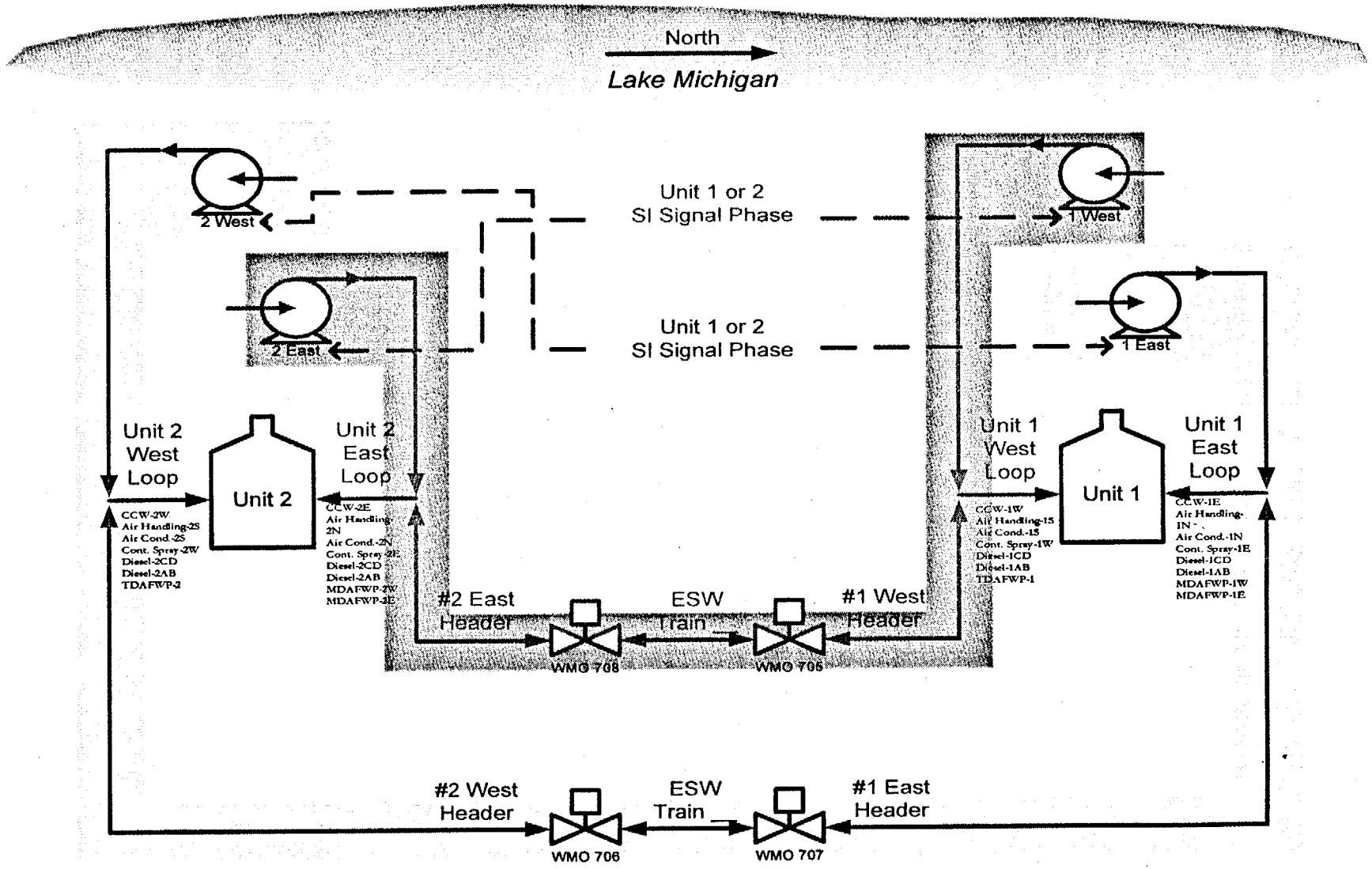
Design of ESW System - Figure



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ESW Crosstie Operation

- History:
  - Unit One Initial Startup:
    - » 3 pumps were provided to support plant operation
    - » Unit 2 East pump provided as backup to Unit 1 West pump
      - alternate source to Auxiliary Feedwater System
      - backup to Unit 1 West in event of failure during operation
      - flow verified to Unit 1 safeguards heat exchanger
    - » Technical Specifications LCO same as present with 48 hour action.
  - Unit Two Initial Startup
    - » 2 pumps per unit
    - » West Motor Driven Auxiliary Feedwater Pumps Installed.
    - » No Testing of Unit 1 pumps to support Unit 2 safeguards equipment
    - » Technical Specifications LCO same as present with 48 hour action.

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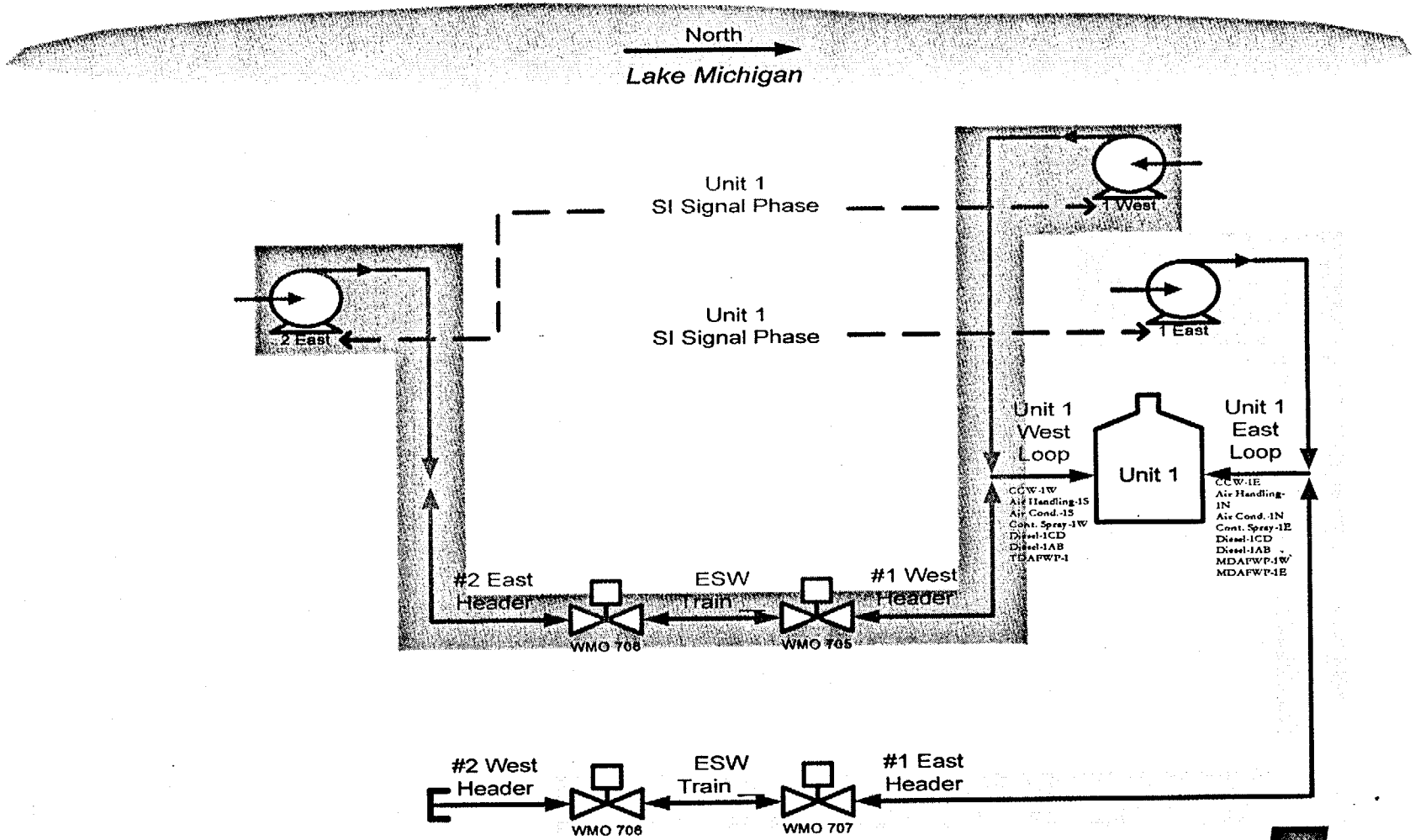
ESW - Unit One Initial Startup



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Issue Identification

- Identified Pump Interaction Issue During ESSR
  - Operating Experience Review of North Anna Event in 1991
  - Similar Configuration possible at Cook Nuclear Plant
- The ESW pump Interaction was not recognized in our Response to Generic Letter 91-13.
- Response to Individual Plant Examination modeled the ESW configuration based on routine plant operation.

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Administrative Technical Requirement

- Provides enhanced guidance for operating the Shared U1/U2 ESW System.
- Provides assurance the ESW system can meet design basis functions.
- Shutdown risk program controls shutdown unit's ESW components.

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2-ESW-1 ESSENTIAL SERVICE WATER SYSTEM

OPERATIONAL REQUIREMENTS

1. Two essential service water flowpaths shall be OPERABLE, as follows:

   A. Two essential service water headers each containing the following components:

      1. One OPERABLE essential service water pump from Unit 1
      2. One OPERABLE essential service water pump from Unit 2
      3. Two essential service water crosstie valves open between the Unit 1 and Unit 2 loops per header.
         a) 1-WMO-705 and 2-WMO-708
         b) 1-WMO-707 and 2-WMO-706

      Or

   B. Two essential service water loops each containing the following components:

      1. One OPERABLE Unit 2 essential service water pump
      2. One closed essential service water crosstie valve per header separating the Unit 1 and Unit 2 loops.
         a) 1-WMO-705 or 2-WMO-708, and
         b) 1-WMO-707 or 2-WMO-706

      Or

   C. One essential service water header with two crosstie valves open containing the following components:

      1. One OPERABLE essential service water pump from Unit 1
      2. One OPERABLE essential service water pump from Unit 2
      3. Two essential service water crosstie valves open between the Unit 1 and Unit 2 loops.
         a) 1-WMO-705 and 2-WMO-708, or
         b) 1-WMO-707 and 2-WMO-706, as applicable.

      And

      One essential service water loop with at least one crosstie valve closed containing the following components:

      1. One OPERABLE Unit 2 essential service water pump
      2. One closed essential service water crosstie valve separating the Unit 1 and Unit 2 loops.
         a) 1-WMO-705 or 2-WMO-708, or
         b) 1-WMO-707 or 2-WMO-706, as applicable.

2. At least one essential service water flowpath associated with support of Unit 1 shutdown functions shall be available

APPLICABILITY: Operational Requirement 2-ESW –1, 1 - MODES 1, 2, 3, and 4.
Operational Requirement 2-ESW –1, 2 - At all times when Unit 1 is in MODES 1, 2, 3 or 4.

ACTION:

If a header flowpath is inoperable due to the Unit 1 pump being inoperable perform the following,

1. Enter the ACTION for Technical Specification 3.7.4.1.a for Unit 2,
2. within one hour verify the affected Unit 2 pump is OPERABLE and close at least one crosstie valve in the affected header.*
3. Following crosstie closure, the ACTION for Unit 2 Technical Specification 3.7.4.1.a can be exited.

If a loop flowpath on Unit 2 is inoperable due to Unit 2 pump being inoperable, enter the ACTION for Technical Specification 3.7.4.1.a.

With no essential service water flow path available in support of Unit 1 shutdown functions, enter the ACTION for Technical Specification 3.7.4.1.b.

SURVEILLANCE REQUIREMENTS

Essential service water system operability shall be verified in accordance with T/S 4.4.7.1.

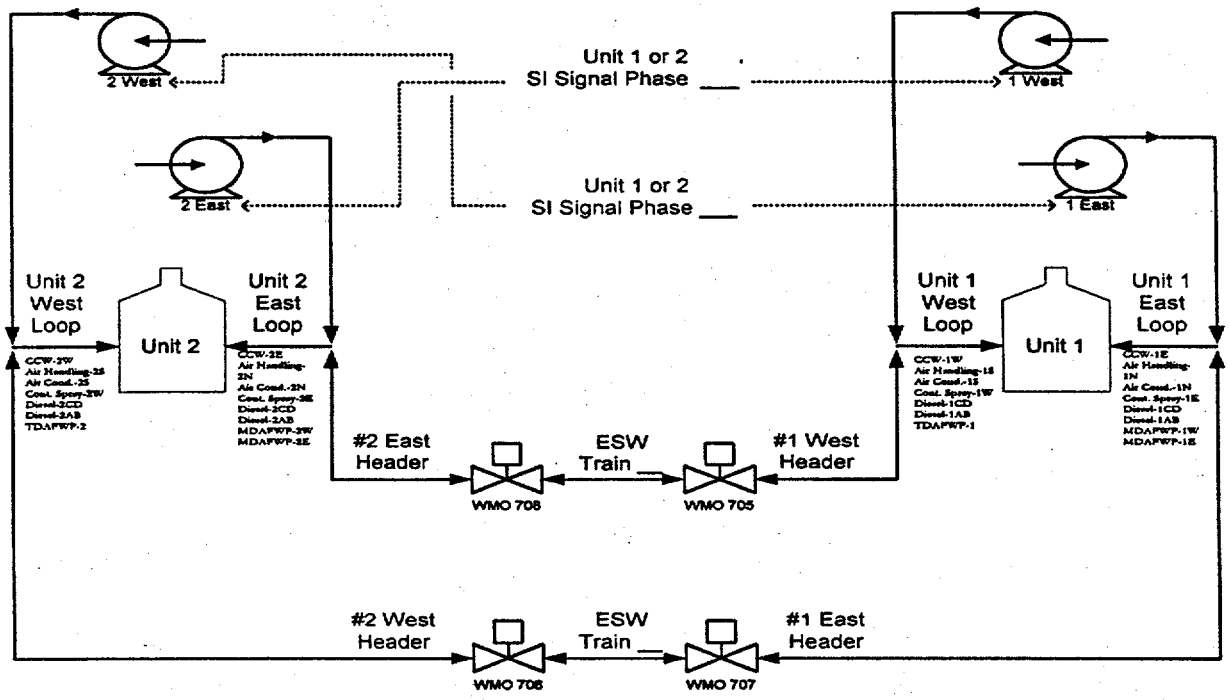
*The crosstie valve may be re-opened to support system testing and/or system refill provided the action statement of T/S 3.7.4.1.a for Unit 2 is entered.

2-ESW-1 ESSENTIAL SERVICE WATER SYSTEM - BASES

NOTE: This ATR supplements the requirements of Technical Specification 3/4.7.4.1

3/4.7.4 ESSENTIAL SERVICE WATER SYSTEM

The essential service water system is a shared system between Unit 1 and Unit 2. The system is arranged in two independent headers. Each header consists of two loops, one specific to each unit as shown below.



The header crosstie valves may be left open for operational flexibility provided that both pumps associated supporting the header are OPERABLE. In the event a pump on the opposite unit becomes inoperable, one of the crosstie valves on the affected header must be closed. This ensures that the essential service water system on the operating unit remains capable of performing its accident function assuming single failure criteria. Similarly, the crosstie valves may be left closed provided that both essential service water pumps associated with the operating unit remain OPERABLE in accordance with Technical Specification 3.7.4.1 and the associated ACTION statement.

The Unit 1 essential service water pump(s) are to be considered OPERABLE for supporting Unit 2 operation in MODES 1, 2, 3 and 4 when the associated Unit 1 emergency diesel generator(s), AC and DC electrical busses, and attendant instrumentation are OPERABLE.

For 10 CFR 50, Appendix R purposes, the ability to open both crosstie valves in a header constitutes an available flowpath. An available pump on the unaffected unit associated with the available header is also required.

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Implementation Actions

- Operations
  - Revise Procedures
    - » Normal
    - » Abnormal
    - » Surveillances
  - Train Operators
- Licensing
  - Submit T/S amendment
  - Revise submittal to GL 91-13
- PRA
  - Our New PRA will reflect the potential for crossties to be closed.

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Conclusions

- ESW System
  - Operation with crossties closed within Design and licensing basis
  - System testing performed unit specific
  - No credit taken for flow from non-accident unit
  - Operation of S/D unit's pump(s) controlled by shutdown risk program

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