



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

January 24, 1997

MEMORANDUM TO: David B. Matthews, Chief  
Generic Issues and Environmental  
Projects Branch  
Division of Reactor Program Management  
Office of Nuclear Reactor Regulation

FROM: Ralph E. Architzel, Section Chief  
Generic Issues and Environmental  
Projects Branch  
Office of Nuclear Reactor Regulation  
Division of Reactor Program Management

SUBJECT: SUMMARY OF MANAGEMENT MEETING HELD BETWEEN THE BOILING WATER  
REACTOR OWNERS' GROUP (BWROG) AND THE NRC STAFF

On October 23, 1996, the staff held a public meeting with the BWROG at NRC headquarters in Rockville, Maryland. The purpose was to discuss the status of various technical topics listed below. For each topic, the BWROG provided an overview describing the status of the owners' group activities and indicated where interactions with the staff would be beneficial in resolving the issue. A list of attendees and their affiliations is provided as Attachment 1. A copy of the handouts used by the BWROG in its presentation is provided as Attachment 2.

ECCS Suction Strainer Performance

Regarding Bulletin 96-03 implementation, the BWROG noted that six plants with spring 97 outages were working towards resolution, but would be requesting deferrals. Some of the difficulty included the delay in obtaining generic approval, and the need to bring the analyses up-to-date basis following generic approval. The NRC indicated that the priority should remain on the Utility Resolution Guidance document, rather than plant-specific reviews. The NRC agreed to provide feedback on whether the interim actions were acceptable

Severe Accident Management

Regarding the water level strategies for an ATWS, the BWROG was requested to provide their rationale by the end of CY 1996. The NRC noted that their contractor, ORNL, was reviewing Revision 0 of the emergency procedure and severe accident guidelines (EP/SAG) and would be available to meet with the BWROG at the conclusion of the review. The staff indicated that they would like the BWROG work concerning EP/SAG implementation timeline for a typical sequence to be moved up to allow completion of the contractor work.

MSIV Leakage

The BWROG presented a status of closure of this technical issue. They noted that the revised RAI response was targeted for December 1, 1996. The NRC requested that where verifications are being done, that other plants follow

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the lessons learned from the approved license change requests so that approval of the other plants would easily follow approval of the Topical Report.

#### Feedwater Nozzle Inspection

The BWROG discussed the status of this issue as outlined in the attached handout material.

#### CRD Scram Solenoid Pilot Valves

The status of this issue was discussed. The BWROG noted that the root cause report would be submitted by the end of October. The staff requested that qualification data be submitted for the solenoid valves. Regarding fee recovery, the NRC indicated that they would look into whether or not this review was fee recoverable. (Following the meeting the NRC determined that fees were not being charged for this review).

#### Calibration Interval Extension

Regarding this issue, the BWROG indicated that they wanted to meet with the staff to go over their concerns. The staff acknowledged that a meeting was needed. The BWROG stated that they would follow through on the actions to resolve this issue identified in the handouts, including setting up a meeting with the staff.

#### Response Time Testing

This issue arose as a result of the WNP-2 actions to eliminate response time testing under 10 CFR 50.59. It was clarified that the response time testing was being eliminated. The staff agreed that equipment degradation identified by response time testing is also detectable during other routine periodic testing. The staff did not agree with the characterization of response time testing in the handouts, and pointed out the need for amendments to the technical specifications when implementing revisions to response time testing. The BWROG agreed with the staff that the topical report approval eliminated specific technical specification required response time testing for selected equipment.

#### Status on Action Items and Open Discussion

The participants went over the status of previous open items as reflected in the BWROG handout material and as noted above for the current issues. The NRC requested that the actions being taken by the BWROG for Target Rock Relief Safety relief valves should be on the agenda for the next management meeting. The BWROG discussed the summary of refueling shutdown risk, including Hope Creek lessons learned that had been communicated to the BWROG utilities.

The staff requested the BWROG to discuss the status of several recent sump debris issues. The BWROG went over their understanding of the situation at that time at Nine Mile Unit 2 (construction debris in the downcomers including

several hard hats, other floating debris, and some plastic caps on the downcomers and Lasalle (several large pieces of debris found in drywell, including a large gasket and a nylon bag).

Project No. 691

Attachments: As stated

cc w/atts: See next page

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| OFC  | SC:PGEB       | ADT      | C:PGEB    |
| NAME | RArchitzel:sw | BSheron  | DMatthews |
| DATE | 01/22/97      | 01/22/97 | 01/24/97  |

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January 24, 1997

several hard hats, other floating debris, and some plastic caps on the downcomers and Lasalle (several large pieces of debris found in drywell, including a large gasket and a nylon bag).

Project No. 691

Attachments: As stated

cc w/atts: See next page

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Boiling Water Reactor Owners' Group

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LIST OF ATTENDEES AT MANAGEMENT MEETING WITH BWROG HELD IN  
WASHINGTON, DC ON OCTOBER 23, 1996

| <u>NAME</u>   | <u>AFFILIATION</u>  |
|---------------|---------------------|
| B. Sheron     | NRC/ADT             |
| R. Wessman    | NRC/DE              |
| M. Virgilio   | NRC/DSSA            |
| R. Architzel  | NRC/DRPM            |
| J. Strosnider | NRC/DE              |
| G. Jones      | PP&L/VP-Nuc. Ops    |
| R. Sgarro     | PP&L                |
| D. Feters     | PECO Energy         |
| T. Rausch     | Commonwealth Edison |
| S. Stark      | General Electric    |
| K. Donovan    | Centerior           |
| C. Terry      | NMPC                |
| C. Brinkman   | ABB-CE              |
| J. Wermiel    | NRC/DRCH            |
| K. Noonan     | Framatome           |
| F. Burke      | Framatome           |
| S. Peterson   | NRC/ADT             |
| R. Palla      | NRC/DSSA            |
| K. Kavanagh   | NRC/DSSA            |
| D. Naujock    | NRC/DE              |
| P. Negus      | General Electric    |
| R. Rybak      | Commonwealth Edison |
| L. Spessard   | NRC/DRCH            |
| D. Powell     | PSE&G               |

**NRC/BWROG MANAGEMENT MEETING  
OCTOBER 23, 1996  
1:30 p.m. - 4: 30 p.m.**

**Agenda**

**1:30 pm Introduction**

**ECCS Suction Strainer Performance**

**Severe Accident Management**

**MSIV Leakage**

**Feedwater Nozzle Inspection (NUREG 0619)**

**CRD Scram Solenoid Pilot Valves**

**Calibration Interval Extension**

**Response Time Testing**

**Status on Action Items from June 13, 1996  
Meeting**

**Open Discssion**

**4:30 pm Adjourn**

# **INTRODUCTION**

**NRC/BWROG MANAGEMENT MEETING**

**OCTOBER 23, 1996**

**ROCKVILLE, MD**

## **INTRODUCTION**

### **Significant Progress Being Made by BWROG & NRC**

- **Draft ECCS Suction Strainer Utility Resolution Guidance (URG) submitted to Staff October 7, 1996**
  - **Met with NRC October 16 for preliminary review**
  
- **Stability hardware documentation nearing closure**
  - **Option 1A SERs issued**
  - **Option 1A Solution Closure LTR (Supplement 5) submitted**
  - **Option 1A calculation procedure successfully audited**
  - **Option III Plant Specific Implementation Data based on Detect & Suppress Methodology transmitted to utilities and NRC**
  
- **Emergency Procedure Guidelines/Severe Accident Guidelines submitted to NRC**

## **INTRODUCTION - continued -**

- **NRC issued SER for Near Term Operating License SRV Performance Reporting**
- **Dual ASCO Scram Solenoid Pilot Valve Root Cause Report being submitted to NRC**

**ECCS SUCTION STRAINER PERFORMANCE**

**NRC/BWROG MANAGEMENT MEETING**

**OCTOBER 23, 1996**

**ROCKVILLE, MD**



## ECCS SUCTION STRAINER

***Committee  
Objective:***

- Resolve the ECCS Suction Strainer Issue for BWRs
  - Ensure interim safe operation
  - Ensure final resolution meets regulatory requirements
  - Resolve within key constraints
    - Containment analytical envelope
    - Drywell dose, temperature considerations
    - Minimize costs

***Presentation  
Objective:***

- Update NRC Management

## ECCS SUCTION STRAINER

### ***Background:***

- Formally established in September, 1993
- Current funding authorized: \$5.5M to date

### Key support:

- General Electric Nuclear Energy
  - Continuum Dynamics, Inc.
  - Sequoia Consulting, Inc.
  - Electric Power Research Institute
  - Teledyne Brown, Inc.
  - Bechtel Power
- Interface with International Task Group

# ECCS SUCTION STRAINER

## ***Activities Summary:***

- *Safety Assessment*
- *Development of Unique Alternate Strainer Designs*
  - Self-cleaning strainer
    - Scoping tests
    - Full scale design, fabrication, and test
    - Reliability issues
  - 60 point star and stacked disk strainers
    - Scoping tests
    - Full scale tests
    - Scaling of strainer designs for plant specific application
  - Evaluated effect of Reflective Metal Insulation (RMI) and other miscellaneous debris on alternate strainer performance
  - Other key information developed
    - Suppression pool sludge particle size distribution
    - Suppression pool sludge generation rates
    - Containment coatings performance

## ECCS SUCTION STRAINER

### *Activities Summary (Continued):*

- Document in Utility Resolution Guidance (URG) the calculational methodology employed to justify acceptability of alternate strainers
  - Zone of destruction
    - Computational Fluid Dynamics (CFD) modeling
    - % destruction within zone
    - Air jet testing of typical insulation materials
  - Drywell transport
    - Break flow
    - Washdown flow
    - Scale model testing
  - Strainer head loss
    - Fibrous insulation debris, iron oxide sludge, RMI, other materials
    - Small scale testing in "gravitational" head loss facility
    - Full scale testing at EPRI

## ECCS SUCTION STRAINER

### *US NRC Regulatory Status:*

- Bulletin 96-03 published on May 6, 1996
  - Large enough strainers to handle bounding scenario
  - Self-cleaning strainer
  - Strainer backflush
  - Other industry selected resolutions
- Requires issue resolution first refueling outage beginning after January 1, 1997
- Associated Regulatory Guide 1.82 Revision 2 issued May 10, 1996

## ECCS SUCTION STRAINER

### ***US NRC Bulletin 96-03 Implementation:***

- Alternate passive strainers is preferred resolution option
- Plant specific critical path
  - Final strainer sizing calculation
    - Requires NRC approval of Utility Resolution Guidance (URG) document
  - Structural analysis/hydrodynamics loads
  - Final design fabrication & delivery
- NRC approval requirements
  - New generic design criteria, eg:
    - URG
    - Supporting technical reports
  - Plant specific requests
    - Bulletin response(s)
    - Plant specific issues not covered by URG
    - Potential changes to technical specifications

## ECCS SUCTION STRAINER

### *Recent Actions:*

- Nine (9) utilities with spring '97 RFOs met with A. Thadani (NRC) on August 8 to discuss difficulties with respect to resolving issue in the spring, and to investigate deferral potential
  - NRC is expecting compensatory actions if deferral is requested
- Most utilities with spring '97 RFOs have requested deferrals



## ECCS SUCTION STRAINER

### ***Recent Actions:***

- All BWROG testing to support URG positions complete
  - Air jet impact testing of 26 typical insulation design configurations
  - RMI head loss testing
  - Jet deflector / downcomer transport testing
- Draft URG along with technical support documentation provided to NRC and full Committee in early October
  - October 16th NRC meeting
  - Formal transmittal in mid-November
  - Need SER from NRC in January '97 to support fall 1997 RFOs

## **ECCS SUCTION STRAINER**

### ***Utility Resolution Guidance (URG) for ECCS Suction Strainer Blockage***

BWROG supporting technical documents:

- (1) Testing of alternate strainers with insulation fiber and other debris
- (2) Zone of influence as defined by computational fluid dynamics
- (3) Insulation transport through downcomers/vents into the wetwell
- (4) Air jet impact testing of fibrous and reflective metal insulation
- (5) BWR drywell floor flow modeling following pipe break loss-of-coolant accident
- (6) Performance of containment coatings during a loss-of-coolant accident
- (7) Evaluation of the effects of debris on ECCS performance
- (8) Suppression pool sludge particle size distribution
- (9) Suppression pool sludge generation rate data
- (10) Evaluation for existence of blast waves following licensing basis double-ended guillotine pipe breaks
- (11) Total pressure topography and zone of destruction for steam and mixture discharge from ruptured pipes
- (12) Effect of temperature on Net Positive Suction Head (NPSH) including strainer head loss

## ECCS Suction Strainer Project Schedule

| ID | Task Name                               | 1996 |     |     |     |         |         |     |        |     |     |     |
|----|---|------|-----|-----|-----|---------|---------|-----|--------|-----|-----|-----|
|    |   | Jun  | Jul | Aug | Sep | Oct     | Nov     | Dec | Jan    | Feb | Mar | Apr |
| 1  | Draft URG and Tech Support Doc. to NRC* |      |     |     |     | ◆ 10/7  |         |     |        |     |     |     |
| 2  | Meeting with NRC Regarding Draft URG    |      |     |     |     | ◆ 10/16 |         |     |        |     |     |     |
| 3  | Draft URG Transport Section to NRC      |      |     |     |     | ◆ 10/25 |         |     |        |     |     |     |
| 4  | Formal URG Submittal                    |      |     |     |     |         | ◆ 11/22 |     |        |     |     |     |
| 5  | NRC Approval of URG                     |      |     |     |     |         |         |     | ◆ 1/31 |     |     |     |
| 6  |   |      |     |     |     |         |         |     |        |     |     |     |
| 7  | *without transport section              |      |     |     |     |         |         |     |        |     |     |     |

Project:  
Date: 10/2/96

Task

Progress

Milestone



Summary

Rolled Up Task

Rolled Up Milestone



Rolled Up Progress



**SEVERE ACCIDENT MANAGEMENT**

**NRC/BWROG MANAGEMENT MEETING**

**OCTOBER 23, 1996**

**ROCKVILLE, MD**

## EPC-II and AMWG

### *Committee Objective:*

- To support the Severe Accident Emergency Procedure Guidelines (EPG/SAG)
- To address EPG/SAG implementation issues
- To assist utilities as they implement their plant specific programs by information exchange.

### *Presentation Objective:*

- Provide a status of committee work
- Announce the merging of Emergency Procedures Committee (EPC) and Accident Management Working Group (AMWG)

## EPC-II and AMWG

### *Background:*

- The Emergency Procedures Committee (EPC) is responsible for developing and maintaining the Emergency Procedure Guidelines
- The AMWG has been responsible for developing Accident Management Guidelines consisting of:
  - The Overview Document
  - Flexible assignment criteria
  - Technical support guidelines
  - Training guidelines
- With the completion of the EPG/SAG the AMWG has completed its function.
- Any remaining implementation issues will be the scope of the EPC

## EPC-II and AMWG

### *Issues:*

- ATWS water level
  - NRC requested BWROG to provide consensus rationale of why they will retain lower water level control procedures for ATWS
  - BWROG documenting rationale for NRC; will be provided by the end of 1996
- The NRC has provided AMG scenarios for BWROG to provide information
  - The BWROG is targeting early 1997 for its response

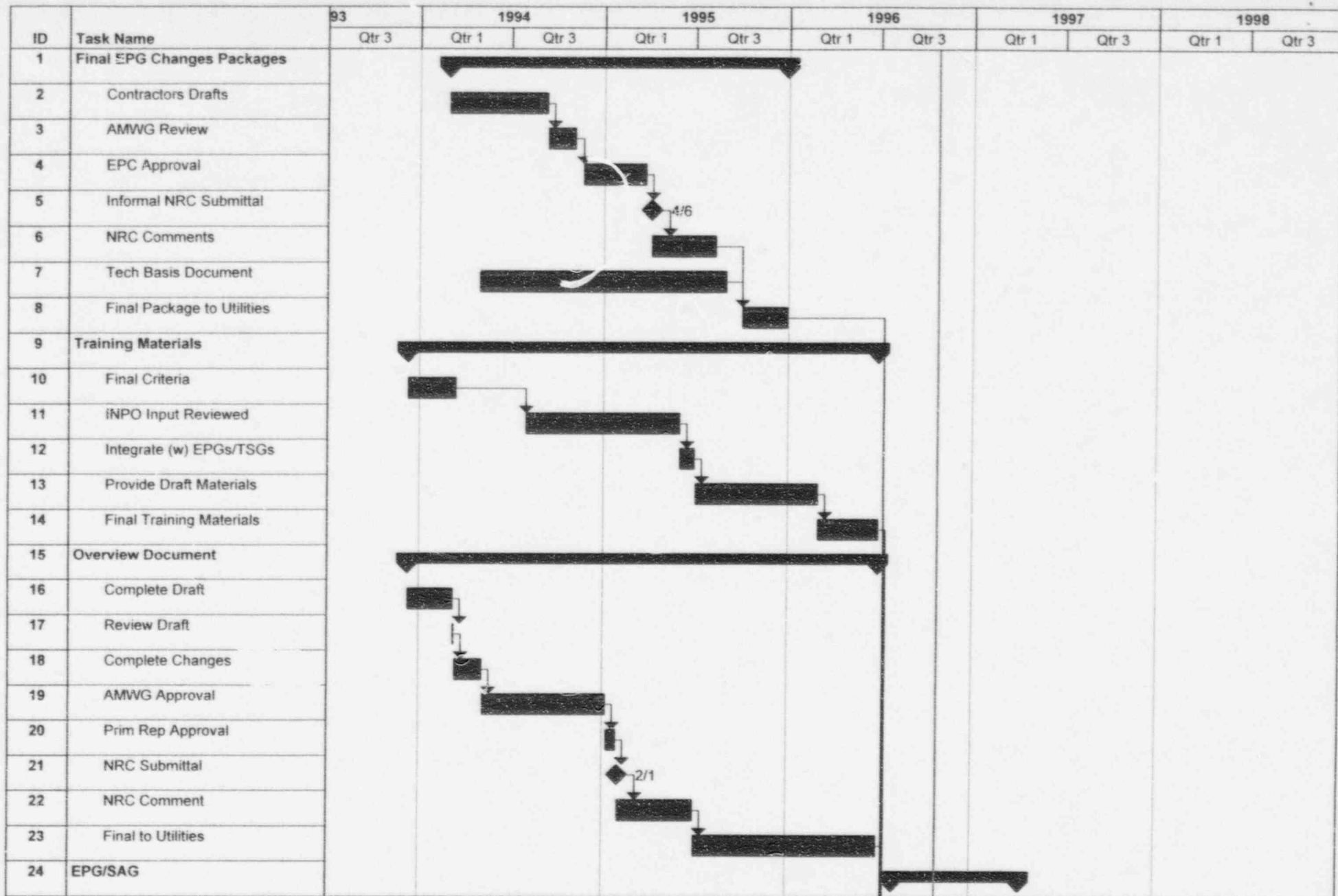


## EPC-II and AMWG

### *Actions:*

- Respond to NRC regarding the ATWS water level
- Respond to the NRC regarding AMG scenarios

*Participants: All 21 utilities*

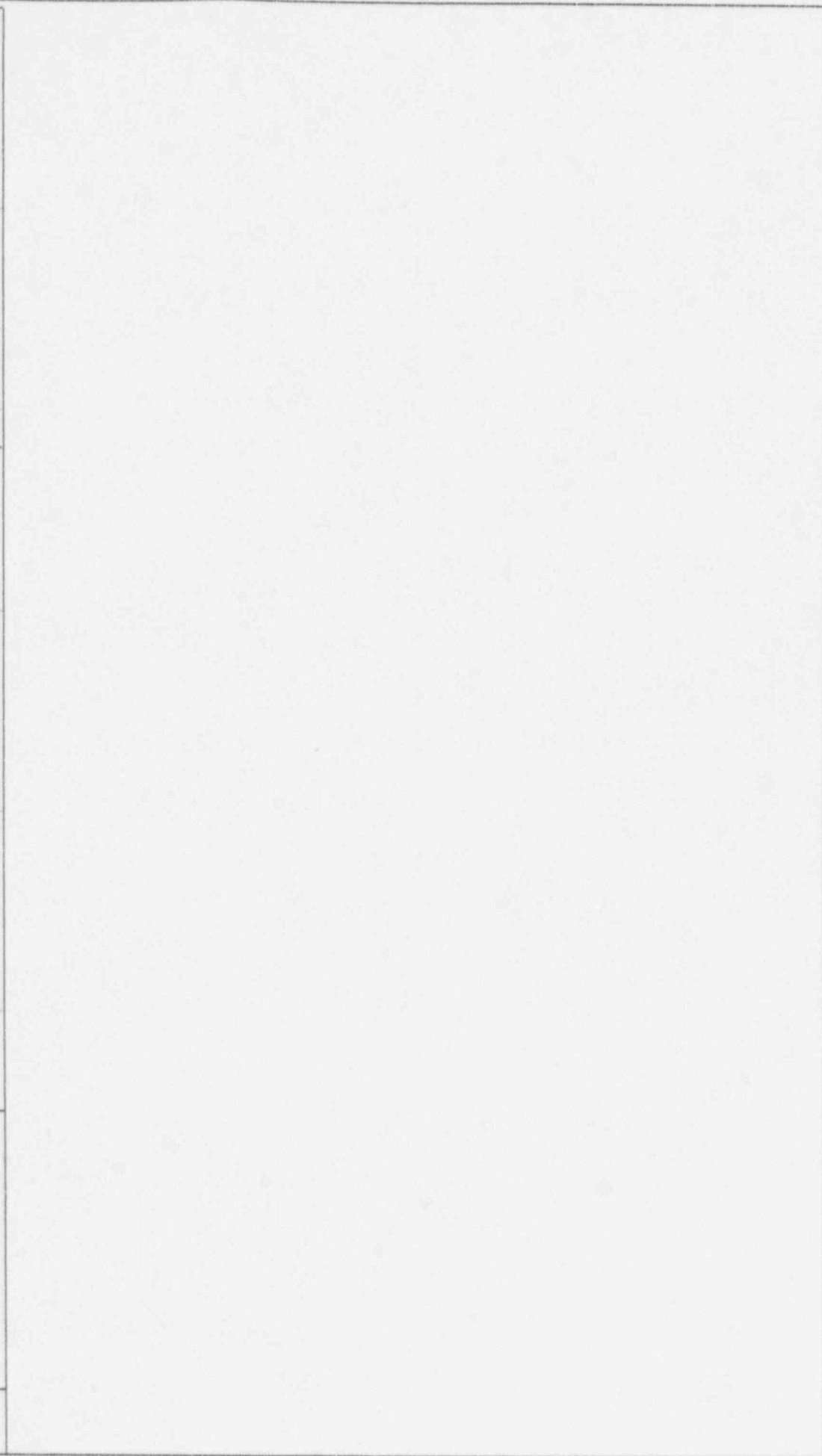


Project:  
 Date: 10/23/96

|                        |  |                         |  |                     |  |
|------------------------|--|-------------------------|--|---------------------|--|
| Task                   |  | Milestone               |  | Rolled Up Milestone |  |
| Task Progress          |  | Summary                 |  | Rolled Up Progress  |  |
| Critical Task          |  | Rolled Up Task          |  |                     |  |
| Critical Task Progress |  | Rolled Up Critical Task |  |                     |  |

Page 1

| ID | Task Name            | 93    |  |  | 1994  |       |       | 1995  |       |       | 1996  |       |       | 1997  |       |       | 1998 |  |  |
|----|----------------------|-------|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|--|--|
|    |                      | Qtr 3 |  |  | Qtr 1 | Qtr 3 | Qtr 1 | Qtr 3 | Qtr 1 | Qtr 3 | Qtr 1 | Qtr 3 | Qtr 1 | Qtr 3 | Qtr 1 | Qtr 3 |      |  |  |
| 25 | Issue EPG/SAG to NRC |       |  |  |       |       |       |       |       |       |       |       |       |       |       |       |      |  |  |
| 26 | NRC Review           |       |  |  |       |       |       |       |       |       |       |       |       |       |       |       |      |  |  |
| 27 | Comment resolution   |       |  |  |       |       |       |       |       |       |       |       |       |       |       |       |      |  |  |



|                            |                        |  |                         |  |                     |  |
|----------------------------|------------------------|--|-------------------------|--|---------------------|--|
| Project:<br>Date: 10/23/96 | Task                   |  | Milestone               |  | Rolled Up Milestone |  |
|                            | Task Progress          |  | Summary                 |  | Rolled Up Progress  |  |
|                            | Critical Task          |  | Rolled Up Task          |  |                     |  |
|                            | Critical Task Progress |  | Rolled Up Critical Task |  |                     |  |

**MSIV LEAKAGE**

**NRC/BWROG MANAGEMENT MEETING**

**OCTOBER 23, 1996**

**ROCKVILLE, MD**

## MSIV LEAKAGE CLOSURE

***Committee  
Objective:***

- Obtain technical specification relaxation to significantly increase allowable MSIV Leakage rates and to eliminate requirements for MSIV Leakage control systems
- Support plant specific license change requests with respect to radiological dose calculations

***Presentation  
Objective:***

Update NRC Management

# MSIV LEAKAGE CLOSURE

## *Background:*

- Alternate treatment equipment (main steam piping and condenser) for MSIV leakage demonstrated to be highly reliable
- Lead BWROG License Change Requests have been approved
  - Hatch 2                      March '94
  - Limerick 1, 2              February '95
  - Duane Arnold              February '95
  - Susquehanna 1, 2        August '95
  - LaSalle 1, 2              April '96
- Others have completed seismic verifications:
  - Hope Creek
  - Perry
  - Hatch 1
  - Nine Mile Point 2
  - Oyster Creek
  - Peach Bottom 2, 3
  - Brunswick 1
  - WNP-2
  - Browns Ferry 2, 3

# MSIV LEAKAGE CLOSURE

## *Background:*

- Alternate treatment equipment (main steam piping and condenser) for MSIV leakage demonstrated to be highly reliable
- Lead BWROG License Change Requests have been approved
  - Hatch 2                      March '94
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- Others have completed seismic verifications:
  - Hope Creek
  - Perry
  - Hatch 1
  - Nine Mile Point 2
  - Oyster Creek
  - Peach Bottom 2, 3
  - Brunswick 1
  - WNP-2
  - Browns Ferry 2, 3



# MSIV LEAKAGE CLOSURE

## *Issues:*

- Generic approval of NEDC-31858P Revision 2 (Submitted by BWROG in September 1993)
  - RAI issued March 29, 1995
  - BWROG response transmitted February 19, 1996
  - Conference call held on May 9, 1996 to discuss BWROG response along with new NRC questions
    - Reliability of the alternate pathway, include boundary valves in plant ISI program [new]
    - Seismic adequacy of condenser structural members in addition to anchorage [new]
    - NRC will review results of Conservative Deterministic Failure Margins (CDFM) methodology on plant specific basis (RAI #8)
    - For seismic database, clarify method used to estimate distance between the facility and the fault rupture (RAI #11)

## *Actions:*

- BWROG to revise RAI response
  - Target resubmittal December 1, 1996

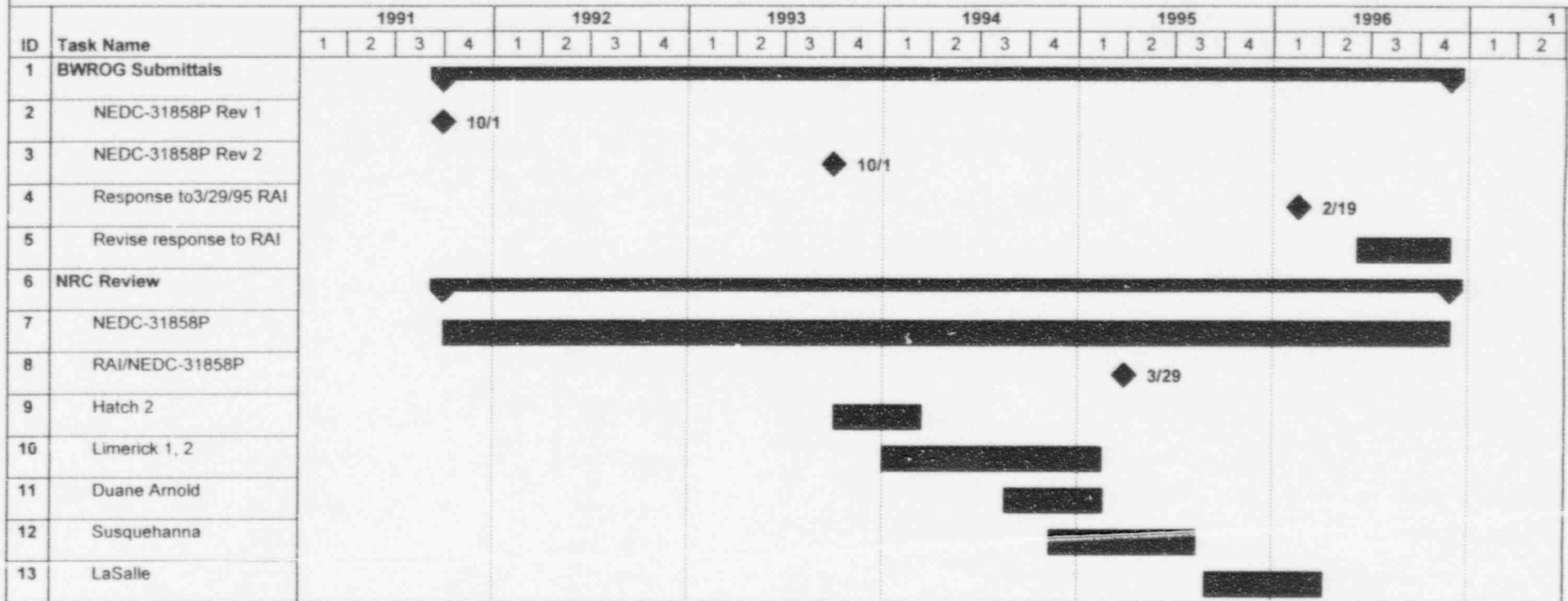
# MSIV LEAKAGE CLOSURE

## *Current Participants:*

BECO  
CP&L  
Centerior  
ComEd  
DECO  
Entergy Operations  
Southern Nuclear

GPUN  
NMPC  
NSP  
PECC Energy  
PP&L  
TVA  
Supply System

# MSIV LEAKAGE CLOSURE



Project: BWROG  
Date: 10/2/96

Task



Summary



Rolled Up Progress



Progress



Rolled Up Task



Milestone



Rolled Up Milestone



**FEEDWATER NOZZLE INSPECTION  
(NUREG 0619)**

**NRC/BWROG MANAGEMENT MEETING**

**OCTOBER 23, 1996**

**ROCKVILLE, MD**

# FEEDWATER NOZZLE INSPECTION

## *Committee*

### *Objective:*

- Obtain NRC approval of BWROG recommendations for feedwater nozzle inspections intended as an alternative to NUREG-0619

## *Presentation*

### *Objectives:*

- Obtain status of NRC review

## FEEDWATER NOZZLE INSPECTION

- Background:***
- NUREG-0619 issued in 1980 as a result of feedwater nozzle cracking
  - Due to lack of confidence in UT at the time, periodic liquid penetrant testing and frequent UT exams required
  - Improvements in UT and installation of new nozzle designs allow changes to inspection type and frequency

## FEEDWATER NOZZLE INSPECTION

### *Issues:*

- Generic BWROG Report (alternative inspection requirements) submitted for NRC review October 1995
  - Would eliminate PT exams and increase period between UT exams
- NRC issued letter (5/28/96): review of BWROG submittal will be complete before Fall 1996 outages
  - In the interim, NRC will approve deferral of PT exam for one operating cycle on a plant-specific basis
- Proposed UT frequency still under review

### *Actions:*

- NRC to complete review of BWROG submittal addressing PT and UT frequency issues

# FEEDWATER NOZZLE INSPECTION

## *Participating Utilities:*

SNC  
CP&L  
Centerior  
ComEd

DECO  
Entergy  
GPU-N  
IES Utilities

NYPA  
NMPC  
NSP  
PECO Energy

PP&L  
PSE&G  
TVA  
WPPSS



# Feedwater Nozzle Inspection

| ID | Task Name                         | 1995  |       |       |   | 1996  |       |       |       | 1997  |       |       |       |
|----|-----------------------------------|-------|-------|-------|---|-------|-------|-------|-------|-------|-------|-------|-------|
|    |                                   | Qtr 2 | Qtr 3 | Qtr 4 |   | Qtr 1 | Qtr 2 | Qtr 3 | Qtr 4 | Qtr 1 | Qtr 2 | Qtr 3 | Qtr 4 |
| 1  | Submittal of Generic BWROG Report |       |       |       | ◆ |       |       |       |       |       |       |       |       |
| 2  | NRC Letter: Status of Review      |       |       |       |   |       | ◆     |       |       |       |       |       |       |
| 3  | NRC SER                           |       |       |       |   |       |       | ◆     |       |       |       |       |       |
| 4  | Fall '96 Outages                  |       |       |       |   |       |       |       | ■     |       |       |       |       |

|                           |           |                     |                    |
|---------------------------|-----------|---------------------|--------------------|
| Project:<br>Date: 6/10/96 | Task      | Summary             | Rolled Up Progress |
|                           | Progress  | Rolled Up Task      |                    |
|                           | Milestone | Rolled Up Milestone |                    |

**CRD SCRAM SOLENOID PILOT VALVES**

**NRC/BWROG MANAGEMENT MEETING**

**OCTOBER 23, 1996**

**ROCKVILLE, MD**

## SSPV COMMITTEE

### *Committee Objective:*

- Work with GE and NRC to resolve SSPV issue
  - Monitor GE development of replacement SSPV diaphragms
  - Assess process root cause and apply lessons learned to current program
  - Evaluate alternative valves for SSPV application
  - Develop recommendations for resolution and obtain NRC acceptance

### *Presentation Objective:*

- Review status of BWROG SSPV program
- Discuss actions needed to resolve issue

## SSPV COMMITTEE

### *Background:*

- Qualification of dual type SSPV with extended life elastomers (Viton) completed early 1994
- Increase in 5% insertion scram time observed at some utilities in late 1995 (after approximately 6 months operation)
- Augmented testing recommended by RRG being performed by utilities
- GE Phenomenological root cause report completed and provided for NRC review at the GE WDC offices
- GE qualification of replacement diaphragms complete
  - Buna N (10 years)
  - Viton (15 or more years)

## SSPV COMMITTEE

### *Background (continued):*

- Plant data suggests that performance of existing Viton diaphragms may be acceptable if adequate margin exists
  - Delay is small and does not continue to increase
  - Performance consistent with root cause conclusions
- Proposed resolution discussed with NRC with positive feedback
  - Install new qualified diaphragms and return to normal test schedule
  - Continue use of existing Viton diaphragms supported by augmented testing as appropriate
  - Use ITS basis and DART test as appropriate

## SSPV COMMITTEE

### *Issues:*

- NRC requires submittal of the GE root cause report on the BWROG docket as a condition for closure
- NRC requested review of plant data demonstrating Viton delay characteristics
- NRC requested review of SSPV Committee recommendations
  - Information only (approval will not be requested)
  - NRC feedback will be addressed
  - NRC endorsement will smooth implementation
- Delivery of new Viton diaphragms delayed due to production low yield rate

## SSPV COMMITTEE

### *Actions:*

- SSPV Committee recommendations reviewed by BWROG with agreement to provide to NRC for information
- BWROG reviewing GE root cause report for submittal to NRC (approval anticipated by 10/25)
  - Submittal being made for NRC information
  - BWROG not anticipating NRC questions or review fees
- Plant data discussions with NRC are in progress
- GE working to improve producibility of Viton diaphragms

# CRD/SSPV Committee

| ID | Task Name                                | 1996 |     |        |        |        |        |         |     |     | 1997 |     |     |     |     |     |     |     |     |     |     |     |
|----|--|------|-----|--------|--------|--------|--------|---------|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|    |  | Apr  | May | Jun    | Jul    | Aug    | Sep    | Oct     | Nov | Dec | Jan  | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 1  | Phenomenological Root Cause (GE)         |      |     |        | ◆ 8/1  |        |        |         |     |     |      |     |     |     |     |     |     |     |     |     |     |     |
| 2  | Process Root Cause                       |      |     |        |        |        |        | ◆ 10/30 |     |     |      |     |     |     |     |     |     |     |     |     |     |     |
| 3  | Alt. Valve Evaluation                    |      |     |        |        |        | ◆ 10/1 |         |     |     |      |     |     |     |     |     |     |     |     |     |     |     |
| 4  | Alt. Testing Recommendations             |      |     |        | ◆ 7/17 |        |        |         |     |     |      |     |     |     |     |     |     |     |     |     |     |     |
| 5  | Tech. Spec. Recommendations              |      |     |        |        |        |        | ◆ 10/30 |     |     |      |     |     |     |     |     |     |     |     |     |     |     |
| 6  | Qualified Buna Diaphragms Available (GE) |      |     | ◆ 6/17 |        |        |        |         |     |     |      |     |     |     |     |     |     |     |     |     |     |     |
| 7  | Qualified Viton Diaphragm Available (GE) |      |     |        |        | ◆ 8/15 |        |         |     |     |      |     |     |     |     |     |     |     |     |     |     |     |
| 8  | Submit GE Root Cause Report to NRC       |      |     |        |        |        |        | ◆ 10/30 |     |     |      |     |     |     |     |     |     |     |     |     |     |     |
| 9  | Discuss Plant Data with NRC              |      |     |        |        |        |        | ◆ 10/30 |     |     |      |     |     |     |     |     |     |     |     |     |     |     |
| 10 | Issue Recommendations for Resolution     |      |     |        |        |        |        | ◆ 11/15 |     |     |      |     |     |     |     |     |     |     |     |     |     |     |
| 11 | Respond to NRC Questions                 |      |     |        |        |        |        |         |     |     |      |     |     |     |     |     |     |     |     |     |     |     |
| 12 | Coordinate Resolution                    |      |     |        |        |        |        |         |     |     |      |     |     |     |     |     |     |     |     |     |     |     |

Project:  
Date: 10/10/96

Task

Progress

Milestone

Summary

Rolled Up Task

Rolled Up Milestone

Rolled Up Progress



**CALIBRATION INTERVAL EXTENSION**

**NRC/BWROG MANAGEMENT MEETING**

**OCTOBER 23, 1996**

**ROCKVILLE, MD**

## CALIBRATION INTERVAL EXTENSION

*Committee  
Objective:*

- Develop methodology to extend instrumentation calibration interval to 45 months (36 months plus 25%)
- Obtain NRC approval of the methodology and application

*Presentation  
Objective:*

- Review status of calibration interval extension program
- Express BWROG concern with NRC response to CIE submittals
- Discuss actions needed to resolve issues

## CALIBRATION INTERVAL EXTENSION

### *Background:*

- Calibration interval extension offers efficient use of utility resources in addition to providing safety benefits
  - Reduces false safety system trips
  - Reduces radiation exposure
  - Increases safety system availability
- Licensing Topical Report NEDC-32160P submitted January 1993
- Discussed issues and approach at meeting with the NRC in November 1994 (agreed on overall approach)

## CALIBRATION INTERVAL EXTENSION

### *Background (continued):*

- Responses to NRC request for additional information (RAI) provided
  - First round responses submitted Jan. 1994
  - Second/third round responses plus Tech. Spec. & LTR revisions submitted Nov. 1995
  - Significant technical effort expended
- BWROG did not anticipate major issues because:
  - Agreement reached with NRC on approach
  - NRC approved basic methodology as part of Setpoint Methodology review

## CALIBRATION INTERVAL EXTENSION

### *Issues:*

- CIE approval anticipated in June 1996 time frame (supported by a meeting to address remaining issues)
- Instead, NRC issued "status report" on technical evaluation on June 13, 1996
  - Identified major new issues which will require substantial BWROG resources to address
  - Not consistent with previously agreed upon approach

## CALIBRATION INTERVAL EXTENSION

### *Actions:*

#### Proposed actions to reconcile issue:

- BWROG define concerns with NRC June 1996 Status Report
- Obtain NRC staff and management input on appropriate methodology and basis for calibration Interval Extension Program
- BWROG meet with NRC staff to reconcile remaining issues with BWROG submittals and obtain approval

# Calibration Interval Extension

| ID | Task Name                             | 1993 |    |    |    | 1994 |    |    |      | 1995 |    |    |       | 1996 |      |      |       |
|----|---------------------------------------|------|----|----|----|------|----|----|------|------|----|----|-------|------|------|------|-------|
|    |                                       | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4   | Q1   | Q2 | Q3 | Q4    | Q1   | Q2   | Q3   | Q4    |
| 1  | LTR Submitted                         | 1/15 |    |    |    |      |    |    |      |      |    |    |       |      |      |      |       |
| 2  | Response to RIA (Round 1)             |      |    |    |    | 1/12 |    |    |      |      |    |    |       |      |      |      |       |
| 3  | Met with NRC to Discuss Concerns      |      |    |    |    |      |    |    | 11/3 |      |    |    |       |      |      |      |       |
| 4  | Response to RIA (Rounds 2 & 3)        |      |    |    |    |      |    |    |      |      |    |    | 11/20 |      |      |      |       |
| 5  | Receive new NRC RIA                   |      |    |    |    |      |    |    |      |      |    |    |       |      | 6/17 |      |       |
| 6  | Review RIA and Revised BWROG Plan     |      |    |    |    |      |    |    |      |      |    |    |       |      |      | 8/15 |       |
| 7  | Prepare Response to NRC Status Report |      |    |    |    |      |    |    |      |      |    |    |       |      |      |      | 10/25 |

Task

Progress

Milestone

Summary

Rolled Up Task

Rolled Up Milestone

Rolled Up Progress

Project:  
Date: 10/17/96

**RESPONSE TIME TESTING**

**NRC/BWROG MANAGEMENT MEETING**

**OCTOBER 23, 1996**

**ROCKVILLE, MD**



## *Response Time Testing*

- Replaced\* selected Response Time Testing (RTT) as defined in Tech Specs with demonstration that changes in response times beyond acceptable limits are detectable during other routine periodic testing
  - "Mini" FMEAs used to show that failures affecting response time would be detected via calibrations, functional tests, and/or channel checks
  - \* Confirmation of response times not eliminated, alternate means provided
  - Technician awareness methods employed to supplement FMEA results
- NRC approved BWROG Generic Licensing Report in December 1994
- BWROG now developing technical basis for replacement of additional selected RTTs not covered in NRC approved Licensing Report

**STATUS ON ACTION ITEMS  
FROM JUNE 13, 1996 MEETING**

**NRC/BWROG MANAGEMENT MEETING**

**OCTOBER 23, 1996  
ROCKVILLE, MD**

**ACTION ITEMS from JUNE 13, 1996**  
**NRC/BWROG Management Meeting**

- 1. Utilities individually close Near Term Operating License SRV Surveillance reporting on their dockets**
  - BWROG has reminded utilities of this action**
- 2. BWROG provide NRC with the consensus rationale of why they will retain lower water level control procedure for ATWS**
  - BWROG documenting rationale for NRC**
- 3. BWROG summarize for NRC Hope Creek Shutdown event lessons learned communicated to BWROG utilities**
  - Summary available**
- 4. BWROG hold meeting or conference call with NRC to review progress towards closure on the Dual ASCO Scram Solenoid Pilot Valve delayed scram**
  - Conference call held**

## BWR UTILITY BRIEFING ON REFUELING SHUTDOWN RISK

*(Including Hope Creek Lessons Learned)\**

- Lessons learned from recent shutdown events and experience
- Good practices that utilities have found to minimize shutdown risk
- Examples:
  - Identify and highlight defense in depth systems and their safety function on the master outage schedule (level 1) and/or on the daily outage status/summary report
  - If a full core offload has been accomplished, evaluate and communicate the time to boil of the fuel pool
  - Consider maintaining all RHR shutdown cooling paths available until cavity is flooded-up and refueling gates are removed
  - Consider adopting a procedure or process that avoids a shutdown cooling bypass due to opening of recirculation pump suction and discharge valves at the same time (SIL 069)\*

## BWR UTILITY BRIEFING ON REFUELING SHUTDOWN RISK

*(Including Hope Creek Lessons Learned)\**

(Continued)

- Results confirm that RHR heat exchanger temperatures correlate well with bulk coolant and core exit temperatures\*
- Results confirm significant margin exists when water level is maintained above the turnaround point if shutdown cooling is lost for short time periods\*
- Schedule fuel pool cooling work as much as possible on-line and late in the operating cycle