December 23, 1999

LICENSEE: ENTERGY OPERATIONS, INC.

FACILITY: ARKANSAS NUCLEAR ONE, UNIT 1 (ANO-1)

SUBJECT: SUMMARY OF MEETING WITH ENTERGY OPERATIONS, INC., REGARDING UNIT 1 LICENSE RENEWAL APPLICATION

On December 15, 1999, representatives of Entergy Operations, Inc., met with the Nuclear Regulatory Commission (NRC) staff to provide an overview of its license renewal application to be submitted in accordance with 10 CFR Part 54 requirements and the associated environmental report submitted in accordance with 10 CFR Part 51 requirements. The meeting was divided into two sessions with discussions regarding the renewal application in the morning and discussions on the environmental report in the afternoon. Attendees at the two sessions are listed in Attachments 1 and 2. Presentation materials used by Entergy are contained in Attachments 3 and 4.

Entergy indicated that it plans to submit the ANO-1 renewal application in January 2000. The application will follow the standard format for a renewal application recently established with the industry. Entergy is monitoring the ongoing review of the Calvert Cliffs and Oconee renewal applications and the resolution of generic renewal issues and has incorporated lessons learned into the ANO-1 application. A peer review of the application was also conducted through the Nuclear Energy Institute and inputs incorporated.

The reactor vendor for ANO-1 is Babcock and Wilcox (B&W) (the same as Oconee), and the development of the ANO-1 license renewal application is similar to the Oconee application. Entergy will also utilize the generic and relevant information from the B&W Owners Group license renewal topical reports.

Entergy provided an overview of its organization, approach to license renewal, results of its environmental review, and documentation being prepared onsite that supports its application. Using the presentation materials, Entergy summarized the format and content of its application. A draft table of contents was also provided. Entergy's presentation was beneficial as it provided the staff with an overview of the ANO-1 application which will facilitate the staff's review when the application is received.

Original Signed By

Stephen T. Hoffman, Senior Project Manager
License Renewal and Standardization Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No. 50-313
Attachments: As stated
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Arkansas Nuclear One
Docket No. 50-313

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ATTENDANCE LIST
ARKANSAS NUCLEAR ONE, UNIT 1, LICENSE RENEWAL APPLICATION
10 CFR PART 54
DECEMBER 15, 1999

	NAME	ORGANIZATION
1.	Steve Hoffman	NRC/NRR/DRIP/RLSB
2.	Mark Rinckel	Framatone
3.	Reza Ahrable	Entergy
4.	Tom Ott	Entergy
5.	Brian Steinman	Entergy
6.	Randy Hutchinson	Entergy
7.	Garry Young	Entergy
8.	Scott Newberry	NRC/NRR/DRIP
9.	Chris Grimes	NRC/NRR/DRIP/RLSB
10.	Jon Johnson	NRC Region II/NRR Transition
11.	Jake Zimmerman	NRC/NRR/DRIP/RLSB
12.	Jit Vora	NRC/RES/DET/MEB
13.	Goutam Bagchi	NRC/NRR/DE
14.	Ricky N. Buckley	Entergy
15.	Robert M. West	Entergy
16.	John W. Hotz	Entergy
17.	Pat Patnaik	NRC/NRR/DE/EMCB
18.	Cliff Munson	NRC/NRR/DE/EMEB
19.	J. Rajan	NRC/NRR/DE/EMEB
20.	John S. Ma	NRC/NRR/DE/EMEB
21.	Yueh-Li (Renee) Li	NRC/NRR/DE/EMEB
22.	Chang-Yeng Li	NRC/NRR/DSSA/SPLB
23.	Duc Nguyen	NRC/NRR/DE/EEIB
24.	Amar Pal	NRC/NRR/DE/EEIB
25.	Chris Gratton	NRC/NRR/DSSA/SPLB
26.	Chris Nolan	NRCNRR/DLPM/PDIV-1
27.	Matthew Mitchell	NRC/NRR/DE/EMCB
28.	David C. Jang	NRC/NRR/DE/EMEB
29.	Kris Parczewski	NRC/NRR/DE/EMCB
30.	Carolyn L. Lauron	NRC/NRR/DE/EMCB
31.	John Rycyna	Constellation Nuclear Services
32.	Tatsuya Taminami	Tokyo Electric Power
33.	Tanya Eaton	NRC/NRR/DSSA/SPLB
34.	Sherry Bernhoft	FPC
35.	Mark Hartzman	NRC/NRR/DE/EMEB
36.	Shou-nien Hou	NRC/NRR/DE/EMCB
37.	Dan Dorman	NRR/DIPM/IQMB
38.	P. D. Milano	NRC/NRR/DE/EMCB

39. Raj Anand	NRC/NRR/DRIP/RLSB
40. P. T. Kuo	NRC/NRR/DRIP/RLSB
41. Noel Dudley	ACRS
42. Thomas Kenyon	NRC/NRR/DRIP/RGEB
43. Eva Eckert Hickey	Pacific Northwest National Laboratory
44. S. K. Mitra	NRC/NRR/DRIP/RLSB
45. B. J. Elliott	NRC/NRR/DE/EMCB
46. Sam Lee	NRC/NRR/DRIP/RLSB
47. Paul Shamanski	NRC/NRR/DE/EEIB
48. Stephanie Coffin	NRC/NRR/DE/EMCB
49. Wan C. Liu	NRC/NRR/DRIP/RLSB
50. Hai-Boh Wang	NRC/NRR/DRIP/RLSB
51. Meena Khanna	NRC/NRR/DE/EMCB
52. William Burton	NRC/NRR/DRIP/RLSB
53. Arnold Lee	NRC/NRR/DE/EMEB
54. Ted Sullivan	NRC/NRR/DE/EMCB
55. Dick Wessman	NRC/NRR/DE
56. Natalie Mosher	Entergy Operations-ANO Licensing

ATTENDANCE LIST
ANO-1 LICENSE RENEWAL APPLICATION -ENVIRONMENTAL REVIEW
DECEMBER 15, 1999

	NAME	ORGANIZATION
1.	Thomas Kenyon	NRC/NRR/DRIP/RGEB
2.	Eva Eckert Hickey	Pacific Norwest National Laboratory
3.	Cindi Carpenter	NRC/NRR/DRIP/RGEB
4.	Barry Zalcman	NRC/NRR/DRIP/RGEB
5.	John Holtz	Entergy/FTN
6.	Robert M. West	Entergy
7.	William Burton	NRC/NRR/DRIP/RLSB
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9.	Steve Hoffman	NRC/NRR/DRIP/RLSB
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18.	Natalie Mosher	Entergy
19.	Ricky Buckley	Entergy
20.	Garry G. Young	Entergy

Attachment 2

Applicant's Environmental Report - Operating License Renewal Stage

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December 15, 1999

Entergy Operations, Inc.

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Attachment 4

Environmental Report

- **Format of Environmental Report (ER)**
  - Format of the ER is consistent with the Oconee submittal
  - Section 1.0 - Purpose and Need For the Proposed Action
  - Section 2.0 - Site and Environmental Interfaces
  - Section 3.0 - Proposed Action
  - Section 4.0 - Environmental Consequences of the Proposed Action
  - Section 5.0 - Alternatives Considered
  - Section 6.0 - Comparison of Impacts
  - Section 7.0 - Status of Compliance

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Environmental Report

- **ANO and Oconee Comparison**
  - ANO low population area vs Oconee's medium population area
  - ANO discharge temperature limits higher than Oconee's
  - ANO has no groundwater wells onsite
  - Three historic or archaeological areas of interest located on ANO site
  - ANO does not have a Hazardous Waste Storage Permit, Landfill Permit, or Drinking Water Well Permit

Entergy

Environmental Report

- **General Description of the Site**
  - Located in Pope County approximately 57 miles northwest of Little Rock
  - Site consists of 1164 acres
  - Once-through cooling system
  - Population estimates within 80-km (50-mile radius) obtained using SECPOP90

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Environmental Report

- **Evaluation of the Category 2 Issues**
  - Twenty-one Category 2 issues were incorporated into twelve specific requirements
  - Three of the twelve requirements not applicable to ANO site
    - Ground-Water Use Conflicts (Ranney Wells or pumps more than 100 gallons per minute of groundwater
    - Ground-Water Quality (Plants with cooling ponds)
    - Vehicle Exhaust Emissions
  - One of the twelve requirements not applicable to ANO-1
    - Water use conflicts (Plants with cooling towers and cooling ponds)

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Environmental Report

- **Entrainment, Impingement, and Heat Shock of Fish and Shellfish**
  - Seasonal temperatures related to impingement number and biomass
  - Impingement and entrainment primarily affect Gizzard and Threadfin Shad
  - Thermal discharge limits and thermal monitoring program outlined in ANO's NPDES Permit
  - ANO operations is not impacting the water quality standard of 95°F established for Lake Dardanelle
  - ANO and Arkansas Game & Fish Commission concluded no significant impact on Lake Dardanelle fish population

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Environmental Report

- **Refurbishment Impacts on Important Plant and Animal Habitats, and Threatened or Endangered (T&E) Species**
  - No significant refurbishment activities required for license renewal
  - USFWS consulted for T&E federally-listed species
  - No critical habitats for federally-listed species identified
  - Arkansas Natural Heritage Commission (ANHC) consulted for T&E state-listed species (none identified)
  - Other state-listed elements of interest were identified
  - No federally-listed or state-listed T&E species identified along transmission line right-of-ways (ROWs)

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Environmental Report

- **Microbiological (Thermophilic) Organisms**
  - ANO participated in a prior EPRI study regarding thermophilic pathogens (1985)
  - Results of EPRI study showed low health risk
  - Arkansas Department of Health reported no known human health exposure problems in Lake Dardanelle
- **Electrical Shock from Induced Currents**
  - Description of transmission lines (500 kV and 161 kV lines)
  - 500 kV and 161 kV lines evaluated per NESC for ground clearance
  - 500 kV line evaluated per NESC 5 mA requirement (ENVIRO)

Entergy

Environmental Report

- **Housing, Land-Use, Public Schools, and Public Water Supply Impacts**
  - ANO accepts GEIS case studies as bounding analysis for housing, land-use and public schools
  - Additional evaluation provided for local public water supply availability
- **Local Transportation**
  - ANO accepts GEIS case study as bounding analysis

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Environmental Report

- **Historic and Archaeological Properties**
  - No significant refurbishment activities required for license renewal
  - State Historic Preservation Office (SHPO) consulted for new information regarding historic and archaeological sites
  - Three sites of interest identified on ANO property
  - No historic or archaeological properties identified along transmission line ROWs
- **Transportation of High-Level Waste**
  - Referred to September 3, 1999 final rule
  - Not aware of new and significant information that would make issue not applicable
  - ANO-1 meets NRC criteria for fuel enrichment and burnup conditions

Entergy

Environmental Report

- **Irreversible or Irretrievable Resource Commitments**
  - Resource commitments identified (materials and equipment for plant maintenance and operation, nuclear fuel, onsite storage of spent fuel assemblies)
  - Power generation alternatives will require commitment of resources for construction as well as fuel to operate
- **Short-Term Versus Long-Term Productivity**
  - FES evaluated balance initially
  - This balance is now well established
- **Unavoidable Adverse Impacts**
  - No significant adverse impacts associated with the continued operation of ANO-1 were identified
  - No significant refurbishment activities necessary to support continued operation of ANO-1

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Environmental Report

- **Environmental Justice Review**
  - Evaluation of the twelve Category 2 issues identified no significant environmental impacts
  - Entergy followed guidance in NRR Procedure for Environmental Justice Reviews
  - Compared a 10-mile radius environmental impact site to a 15-mile radius geographic area
  - Compared a 50-mile radius environmental impact site to a statewide geographic area
  - Population data based on 1990 U.S. Census with block groups identified using ARCVIEW GIS software
  - Results of minority population review
    - 10-mile radius environmental impact site percentage of 5.0% did not exceed the 15-mile radius geographic area percentage of 4.1% by 20%
    - Minority population percentage of 5.0% within 10-mile radius environmental impact site did not exceed 50%

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Environmental Report

- **Environmental Justice Review (cont'd)**
  - Results of minority population review (cont'd)
    - 50-mile radius environmental impact site percentage of 5.8% did not exceed the State of Arkansas geographic area percentage of 17.3% by 20%
    - Minority population percentage of 5.8% within 50-mile radius environmental impact site did not exceed 50%
    - For purposes of an environmental justice review, a minority population does not exist
  - Results of low-income population review
    - 10-mile radius environmental impact site percentage of 16.4% did not exceed the 15-mile geographic area percentage of 16.9% by 20%
    - 50-mile radius environmental impact site percentage of 7.1% did not exceed the State of Arkansas geographic area percentage of 7.4% by 20%
    - For purposes of an environmental justice review, a low-income population does not exist

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Environmental Report

- **Environmental Justice Review (cont'd)**
  - **Review did not identify minority or low-income populations having special vulnerabilities due to customs, activities, location, or dependence on particular resources that would be disproportionately and adversely affected by renewal of the ANO-1 license**

Entergy

Environmental Report

- **Process for Identifying New and Significant Information**
  - Reviewed Category 1 issues to verify that GEIS conclusions remained valid for ANO-1
  - Five independent consultants (environmental, technical and legal) assisted in preparation and review of ER
  - Meeting with State regulatory agencies who were provided copies of the Draft ER for review
  - Environmental activities receive reviews at corporate, peer group, and site levels
  - Peer group consists of environmental representatives from each EOI site and corporate personnel

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Environmental Report

- **Process for Identifying New and Significant Information (cont'd)**
  - New requirements are identified at corporate level, assessed for impact at peer group level, and implemented at site level
  - Plant activities that could potentially affect the environment or site permits receive an environmental review per ANO procedures
  - Based on this process, Entergy Operations did not identify any new and significant information

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Environmental Report

- **Alternatives Considered**
  - **Alternatives for replacement power (wind, photovoltaic cells, solar thermal power, hydro-electric generation, geothermal, wood waste, municipal solid waste, energy crops, delayed retirement of non-nuclear units, imported power, and conservation) not considered reasonable due to high land-use impacts, low capacity factors, geographic availability of resource, emerging technology, and availability**
  - **Alternatives considered reasonable replacement power (conventional coal fire units, oil and gas combined cycle, natural gas combined cycle, and nuclear power)**

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Environmental Report

- **Comparison of Impacts**
  - Replacement goal is production of at least 1000 MW(e)
  - Annual capacity factor goal is 89.9 percent
  - Impacts from conventional coal fire units
  - Impacts from oil and gas (combined cycle)
  - Impacts from natural gas (combined cycle)
  - Impacts from nuclear power
  - Benefits of no-action alternative
- **Status of Compliance**
  - List of ANO permits and compliance status
  - Station personnel responsible for monitoring and ensuring compliance with permits
  - Entergy Operations has measures in place to ensure environmentally sensitive areas or species of concern are adequately protected

Entergy

Environmental Report

- **Severe Accident Mitigation Analysis (SAMA)**
  - **Methodology based on "Regulatory Analysis Technical Evaluation Handbook", NUREG/BR-0184, January 1997**
  - **Input for the ANO-1 SAMA benefits analysis was the ANO-1 Probabilistic Safety Assessment model, an updated version of the Individual Plant Examination**

Entergy

Environmental Report

- **Approach taken in the SAMA analysis:**

- **Establish the base**
  - **Offsite exposure**
  - **Offsite economic costs**
  - **Onsite exposure costs**
  - **Onsite economic costs**

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Environmental Report

- **SAMA Identification – 169 SAMAs**
  - Severe Accident Mitigation Design Alternative analyses
  - NRC and industry documentation discussing potential plant improvements
  - Documented insights provided by the ANO-1 staff
- **Preliminary Screening – 80 SAMAs screened out**
  - SAMA improvements that modify features not applicable to ANO-1; or
  - SAMA improvements that have already been implemented at ANO-1

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Environmental Report

- Final Screening of Remaining – 89 SAMAs
- Implementation of SAMA would
  - Require extensive plant reconstruction, or
  - Cost of implementing SAMA would exceed maximum benefit for the base case evaluation; or
- Benefit/Cost Evaluation
  - Benefit calculation
  - Existing Level 2 modeling used
  - SAMA impacts
  - Averted SAMA impacts
  - SAMA Benefits
- Cost estimate

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Environmental Report

- **Sensitivity Analysis**
  - *Averted onsite costs*
  - *Discount rate*
- **Conclusions**
  - *"Emphasize timely recirculation swapover in operator training" potentially cost-beneficial*
  - *Not age-related*

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Environmental Report

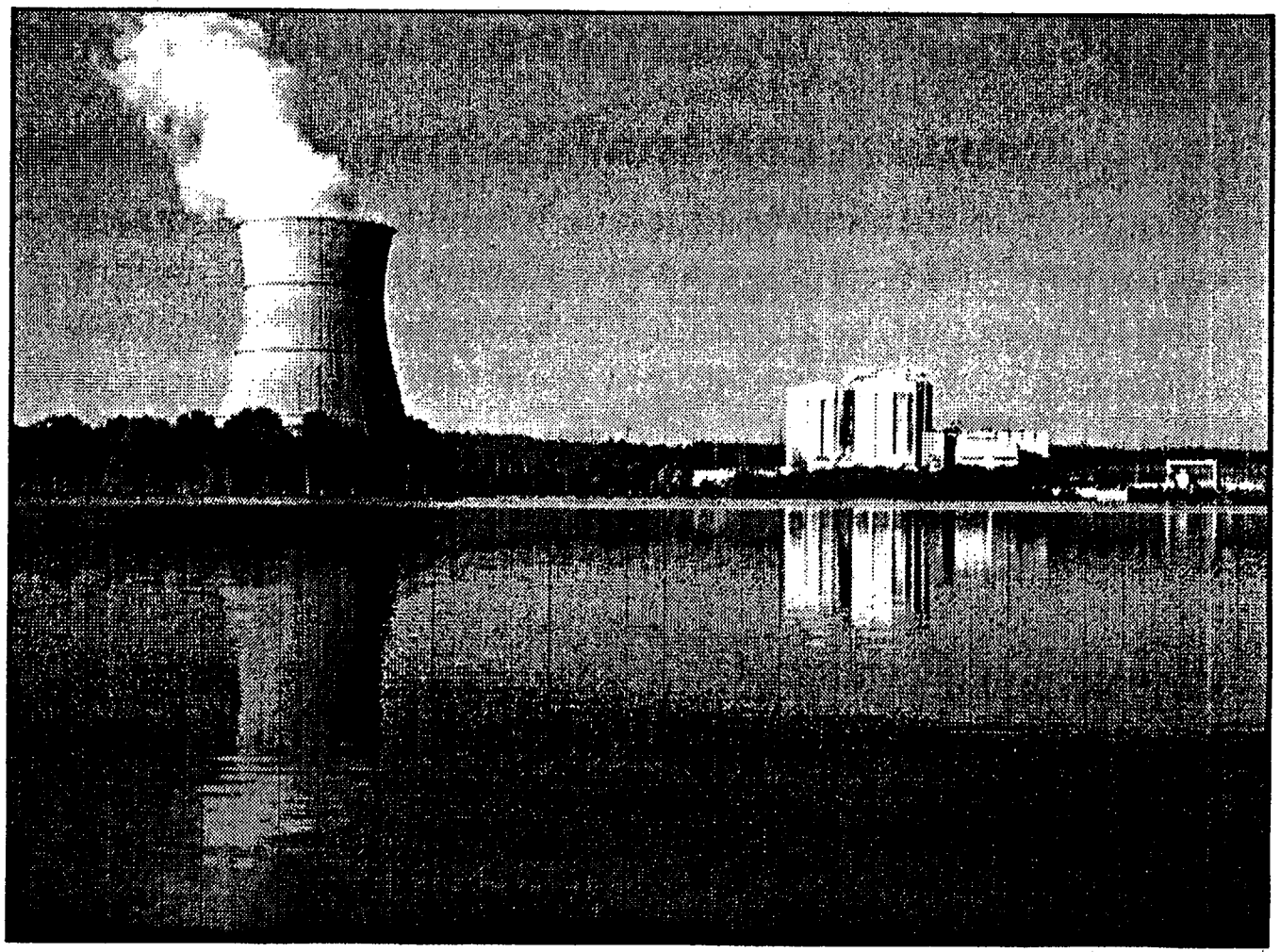
- **Conclusions**
  - Environmental impacts from ANO-1 license renewal are small
  - No unique plant characteristics identified that could affect the environment
  - No federally-listed or state-listed T&E species present on-site or transmission line ROWs
  - No significant historic or archaeological properties located on-site or transmission line ROWs
  - No environmental justice issues identified
  - No age-related SAMAs identified

Entergy

DRAFT

TABLE OF CONTENTS

ANO-1
License Renewal Application



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Attachment 3

Overview

- Background
- Entergy's Purpose/Objectives
- ANO-1 License Renewal Project Overview
- License Renewal Application Contents

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Background

- *ANO-1's current license expires in May 2014*
- *10CFR54 allows the issuance of a renewed license for an additional 20 years*
- *ANO-1 plans to request such a renewal by filing a license renewal application in January 2000*
- *When approved, the renewed license would allow continued operation until May 2034*

Purpose

The purpose of Entergy Operation's license renewal project is to provide the option to continue operating ANO-1, for an additional 20 years beyond the end of the current operating license term.

Entergy

Objective

Obtain a renewed license for ANO-1 in a timely and efficient manner based on:

- Utilize the generic and relevant information from the BWOG Topical Reports and the Oconee application
- Implementing relevant lessons learned from the Calvert Cliffs and Oconee application review process
- Coordinating with NRC to help ensure the ANO-1 application preparation and subsequent application review process are effective, efficient, timely, and predictable
- Improved guidance resulting from the Calvert Cliffs and Oconee experience

Project Overview

- **Industry Participation**
  - **ANO has participated in B&W Owners Group (BWOG) Generic License Renewal Program (GLRP) since 1992**

    NRC review of RCS Piping, Pressurizer, Reactor Vessel, and RV Internals Aging Management Reports were done generically
  - **Participating in the NEI and EPRI License Renewal efforts on generic issues**

    Current efforts include resolving generic license renewal issues, work on revising NEI 95-10 (industry guidance for license renewal), input to update of the Standard Review Plan, etc.

Entergy

Project Overview

- **Technical Requirements of 10CFR54**
  - **Perform Integrated Plant Assessment**

    Includes identification of systems, structures, and components that are in scope; performing an aging management review (AMR) to demonstrate that the effects of aging will be adequately managed so that the intended function(s) will be maintained for the period of extended operation

  - **Identify Time Limited Aging Analyses (TLAAs) and Evaluate**

    Includes identifying calculations and analyses that meet the criteria for TLAAs (e.g., have time-limited assumptions such as 40-years) and demonstrating that the term of the renewed license (60-years) will be addressed

Project Overview

- **Technical Requirements of 10CFR54** *(cont.)*
  - **Identify License Exemptions and Evaluate**

    Includes identification of plant-specific exemptions granted by NRC and in effect that are based on TLAA and evaluates and justifies the continuation of these exemptions for the period of extended operation

- **Perform Review for Requirements of 10CFR51, Applicant's Environmental Report (ER) - Operating License Renewal Stage**

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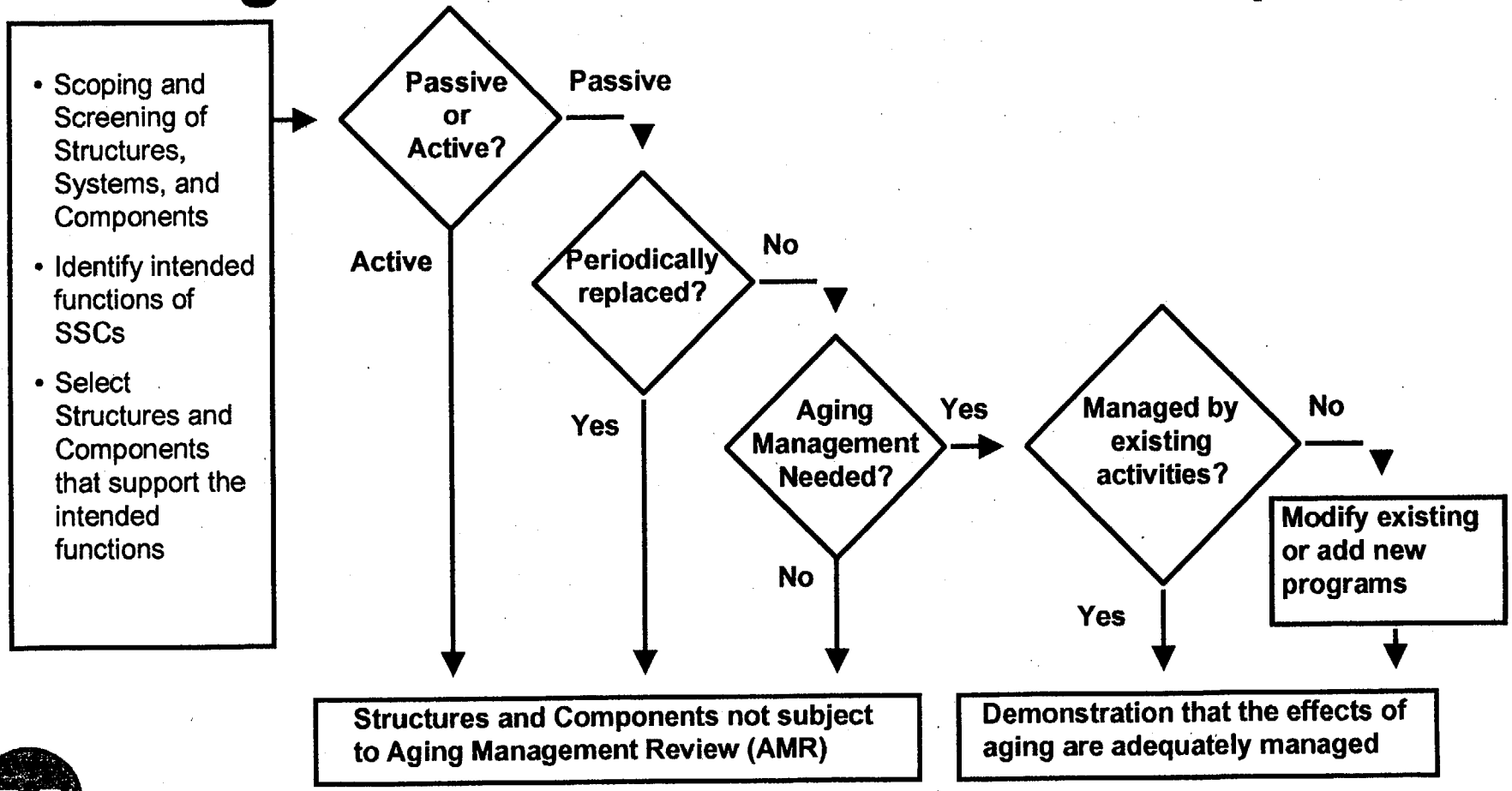
Project Overview

Integrated Plant Assessment (IPA)



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Project Overview

- ***License Renewal Application (LRA) Contents***
  - ***Technical Requirements***
    - *Identification of Structures and Components Subject to Aging Management Review (AMR)*
    - *Identification of Applicable Aging Effects*
    - *Aging Management Programs and Activities*
    - *TLAAs and Exemptions*
  - ***Safety Analysis Report Supplement***
  - ***Technical Specification Changes*** *(None)*
  - ***Supplemental Environmental Report*** *(10CFR51)*

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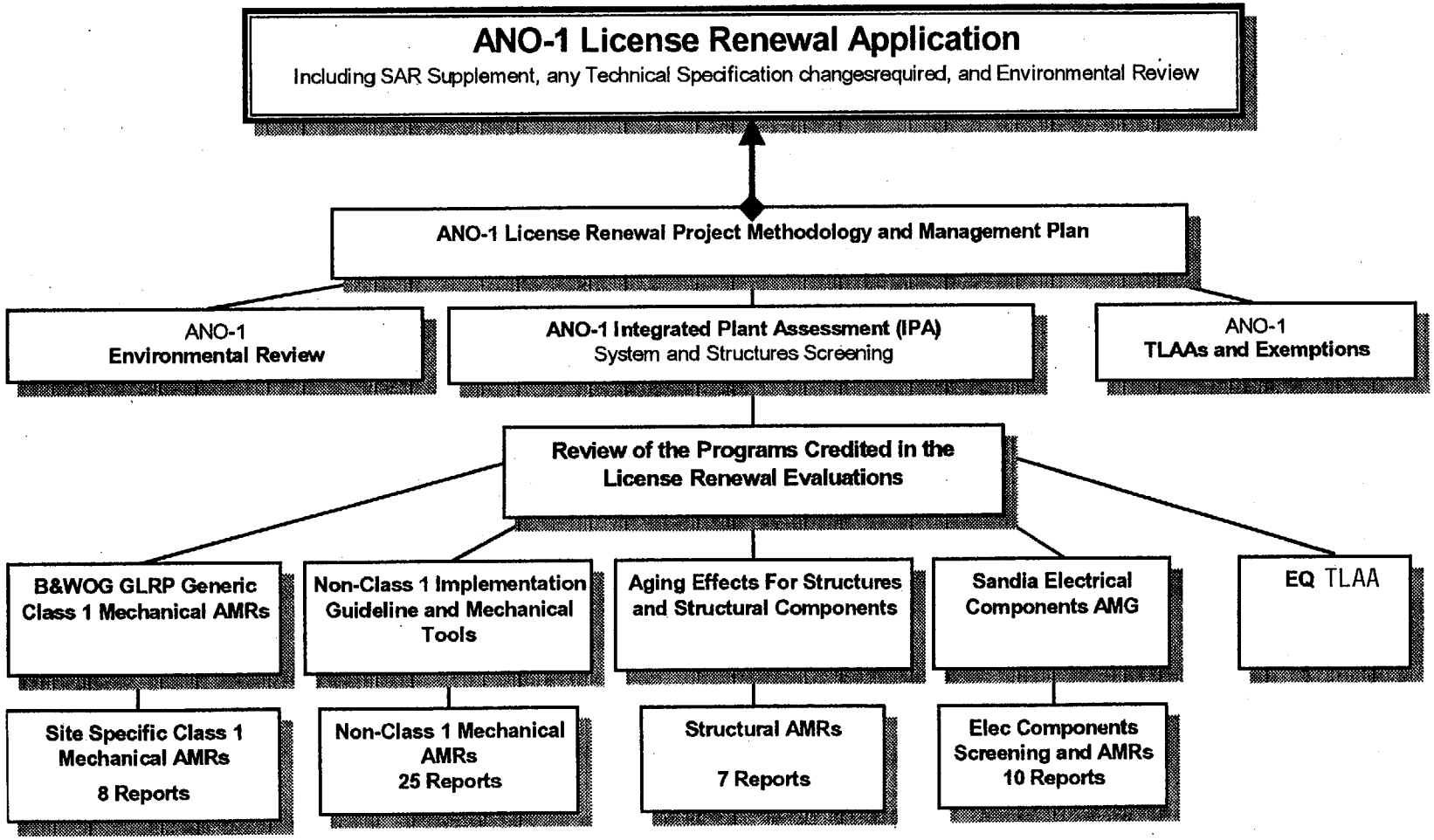
ANO Documentation Hierarchy



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8 Class 1 Mechanical AMRs

1. **RCS Piping** *GLRP Topical Report SER issued*
2. **Pressurizer** *GLRP Topical Report SER issued*
3. **Reactor Vessel** *GLRP Topical Report SER issued*
4. **R. V. Internals** *GLRP Topical Report awaiting SER*
5. **Once Through Steam Generator**
6. **Reactor Coolant Pumps**
7. **Control Rod Drive Mechanism**
8. **Fatigue**

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25 Non-Class 1 Mech. AMRs

1. Core Flood
2. Reactor Building Spray
3. Main Feedwater
4. Spent Fuel
5. Fire Protection
6. Service Water
7. Emergency Diesel Generator
8. MU/High Pressure Injection
9. RB Cooling & Purge
10. DH/Low Pressure Injection
11. Emergency Feedwater
12. Sodium Hydroxide
13. Hydrogen Control
14. Main Steam
15. Penetration Room Ventilation
16. Auxiliary Building and Reactor Building Drains
17. Auxiliary Building Ventilation
18. Alternate AC Generator
19. Condensate Storage
20. Control Room Ventilation
21. Halon System
22. Fuel Oil System
23. Containment Isolation
24. Chilled Water
25. Instrument Air

7 Structural AMRs

1. Reactor Building
2. Reactor Building Internals
3. Auxiliary Building
4. Intake Structure
5. Emergency Cooling Pond and Intake/Discharge Canals
6. Aboveground/Underground Yard Structures
7. Bulk Commodities

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10 Electrical AMRs

1. Aging Management Review of Passive Electrical Components
2. Screening of Ohmic Heating in Power Cables
3. Screening of Power Cables Potentially Subjected to Wetting
4. Screening of Frequently Manipulated Cables and Cable Terminations
5. Screening of Cables and Terminations Exposed to Potentially Hazardous Chemicals
6. Screening of Impedance Sensitive Circuits
7. Screening of Cables Exposed to High Radiation Dose Rates
8. Screening of Cables Outside Containment Exposed to Elevated Temperatures or Hot Spots
9. Screening of Cables Inside Containment Exposed to Elevated Temperatures
10. Screening of Splices and Terminal Blocks

LRA Preparation Approach

- Develop LRA similar to Oconee using BWOG Topical Reports, etc.
- Participate in NEI/EPRI issue resolution and incorporate relevant results
- Monitor Calvert Cliffs and Oconee interactions with the NRC & incorporate relevant information
- Use NRC's new standard format for the preparation of the ANO-1 LRA
- Conducted NEI peer review of early draft of the ANO-1 LRA and incorporated input

LRA Contents

Application Format

1.0 Administrative Information

- 1.1 Purpose and General Information
- 1.2 Plant Description
- 1.3 Technical Information Required for an Application
- 1.4 Current Licensing Basis Changes during NRC Review

2.0 Structures and Components Subject to an Aging Management Review

- 2.1 Scoping and Screening Methodology
- 2.2 Plant Level Scoping Results
- 2.3 Mechanical System Scoping and Screening Results
- 2.4 Structures and Structural Components Scoping and Screening Results
- 2.5 Electrical and Instrumentation and Controls System Scoping and Screening Results

3.0 Aging Management Review Results

- 3.1 Common Aging Management Programs
- 3.2 Reactor Coolant System
- 3.3 Engineered Safety Features
- 3.4 Auxiliary Systems
- 3.5 Steam and Power Conversion Systems
- 3.6 Structures and Structural Components
- 3.7 Electrical and Instrumentation & Controls

4.0 Time Limited Aging Analyses

- 4.1 Identification of TLAAs
- 4.2 Reactor Vessel Neutron Embrittlement
- 4.3 Metal Fatigue
- 4.4 Environmental Qualification
- 4.5 Concrete Reactor Building Tendon Prestress
- 4.6 Reactor Building Liner Plate Fatigue Analysis
- 4.7 Aging of Boraflex in Spent Fuel Pool Racks
- 4.8 Other TLAAs

LRA Contents

Application Format *(continued)*

Appendix A - Safety Analysis Report Supplement

Appendix B - Aging Management Programs and Activities

Appendix C - Process for Identifying Aging Effects

Appendix D - Technical Specification Changes

Applicant's Environmental Report - Operating License Renewal (ER) Stage

Entergy

1.0 Administrative Information

1.1 Purpose and General Information

1.2 Plant Description

1.3 Technical Information Required for an Application

1.4 Current Licensing Basis Changes during NRC Review

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2.0 Structures and Components Subject to an Aging Management Review

2.1 Scoping and Screening Methodology

2.2 Plant Level Scoping Results

2.3 Mechanical Systems Scoping and Screening Results

- 2.3.1 Reactor Coolant System
  - 2.3.1.1 RCS Scoping
  - 2.3.1.2 BWOG Topical Report Use
  - 2.3.1.3 RCS Piping
  - 2.3.1.4 Pressurizer
  - 2.3.1.5 Reactor Vessel
  - 2.3.1.6 Reactor Vessel Internals
  - 2.3.1.7 Once-Through Steam Generators
  - 2.3.1.8 Reactor Coolant Pumps
  - 2.3.1.9 Control Rod Drive Mechanisms

2.0 Structures and Components Subject to an Aging Management Review

2.3 Mechanical Systems Scoping and Screening Results (cont.)

- 2.3.2 Engineered Safeguards
- 2.3.3 Auxiliary Systems
- 2.3.4 Steam and Power Conversion Systems

2.4 Structures and Structural Components Scoping & Screening Results

- 2.4.1 Reactor Building
- 2.4.2 Reactor Building Internal Structures
- 2.4.3 Auxiliary Building
- 2.4.4 Intake Structure
- 2.4.5 Earthen Embankments
- 2.4.6 Other Structures and Structural Components

2.5 Electrical and I&C System Scoping and Screening Results

3.0 Aging Management Review Results

3.1 Common Aging Management Programs

- 3.1.1 Chemistry Control
- 3.1.2 Quality Assurance
- 3.1.3 Structure and System Walkdowns

3.2 Reactor Coolant System

- 3.2.1 Process for Identification of Aging Effects Requiring Management
- 3.2.2 Process to Incorporate BWOG Topical Reports
- 3.2.3 RCS Piping
- 3.2.4 Pressurizer
- 3.2.5 Reactor Vessel
- 3.2.6 Reactor Vessel Internals
- 3.2.7 Once-Through Steam Generators
- 3.2 8 Reactor Coolant Pumps
- 3.2.9 Control Rod Drive Mechanisms

3.0 Aging Management Review Results

3.3 Engineered Safeguards

3.4 Auxiliary Systems

3.5 Steam and Power Conversion Systems

3.6 Structures and Structural Components

- 3.6.1 Structural Steel and Steel Components
- 3.6.2 Concrete Structures and Concrete Components
- 3.6.3 Prestressed Concrete
- 3.6.4 Threaded Fastners
- 3.6.5 Fire Barriers
- 3.6.6 Earthen Embankments
- 3.6.7 Elastomers and Teflon

3.7 Electrical and I&C

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4.0 Time-Limited Aging Analyses

4.1 Identification of TLAAs
4.2 Reactor Vessel Neutron Embrittlement
4.3 Metal Fatigue
4.4 Environmental Qualification
4.5 Concrete Reactor Building Tendon Prestress
4.6 Reactor Building Liner Plate Fatigue Analysis
4.7 Aging of Boraflex in Spent Fuel Pool Racks
4.8 Other TLAAs

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Appendices

Appendix A - Safety Analysis Report Supplement

Appendix B - Aging Management Programs and Activities

- 1.0 Introduction
- 2.0 Program and Activity Attributes
- 3.0 New Activities
- 4.0 Existing Activities

Appendix C - Process for Identifying Aging Effects

Appendix D - Technical Specification Changes

10CFR54.4 Criteria

- **Safety-Related Criteria - 10CFR54.4(a)(1) - LRA Section 2.1**

  ANO-1 used the site component database, which has the component level Q-list (CLQL), to identify safety-related components. In the ANO-1 SAR, Table 2-1, "safety-related" is defined based on the guidelines in 10CFR100, Appendix A as:

  "These structures, systems, and components are those necessary to assure:

  (1) The integrity of the reactor coolant pressure boundary,

  (2) The capability to shut down the reactor and maintain it in a safe shutdown condition, or

  (3) The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the guideline exposures of this part. "

10CFR54.4 Criteria

- **Nonsafety-Related Criteria - 10CFR54.4(a)(2) - LRA Section 2.1**

  ANO-1 used the site component database, which has the component level S-list (CLSL), the ANO-1 SAR, and site design documents (e.g., design basis documents), to identify nonsafety-related systems, structures, and components whose failure could prevent satisfactory accomplishment of any safety-related functions.

10CFR54.4 Criteria

- **Other Scoping Criteria - 10CFR54.4(a)(3) - LRA Section 2.1**
  - **10CFR50.48, Fire Protection**

    ANO-1 used the site component database, which has the component level F-list, the SAR, and site design documents to identify 50.48 SSCs.
  - **10CFR50.49, Environmental Qualification**

    ANO-1 used the site component database, which has the EQ equipment master list, and site procedures to identify 50.49 SSCs.
  - **10CFR50.61, Pressurized Thermal Shock**

    ANO-1 meets the screening criteria through the renewal license term.
  - **10CFR50.62, ATWS**

    ANO-1 used the site design documents to identify the electrical components that are relied upon for ATWS.
  - **10CFR50.63, Station Blackout**

    ANO-1 used the site component database and site design documents to identify 50.63 SSCs.

Generic Safety Issues

GSI's Addressed in ANO-1 LRA

- **GSI 23 - Reactor Coolant Pump Seal Failure**

  RCP seals are routinely replaced and are not long-lived components. Therefore, these seals are not subject to aging management review.

- **GSI 168 - Environmental Qualification of Electrical Equipment**

  EQ evaluations of electrical equipment are TLAAs. Therefore, this GSI is addressed in Section 4.0 of the ANO-1 LRA.

- **GSI 173A - Spent Fuel Storage Pool: Operating Facilities**

  The age-related issue in this GSI is Boraflex degradation which is a TLAA. Therefore, this GSI is addressed in Section 4.0 of the ANO-1 LRA.

- **GSI 190 - Fatigue Evaluation of Metal Components**

  Fatigue evaluations are TLAAs. Therefore, this GSI is addressed in Section 4.0 of the ANO-1 LRA.

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B&WOG Topical Reports

Applicant Action Items

- **BAW-2243A, Section 4.1 of SER - RCS Piping**
- **BAW-2244A, Section 4.1 of SER - Pressurizer**
- **BAW-2251A, Section 4.1 of SER - Reactor Vessel**
- **BAW-2248, 10/27/99 NRC Letter - Reactor Vessel Internals**

Section 2.3.1 includes a table to document each applicant action item and the specific response to that item for ANO-1, in a similar format to Oconee's LRA.

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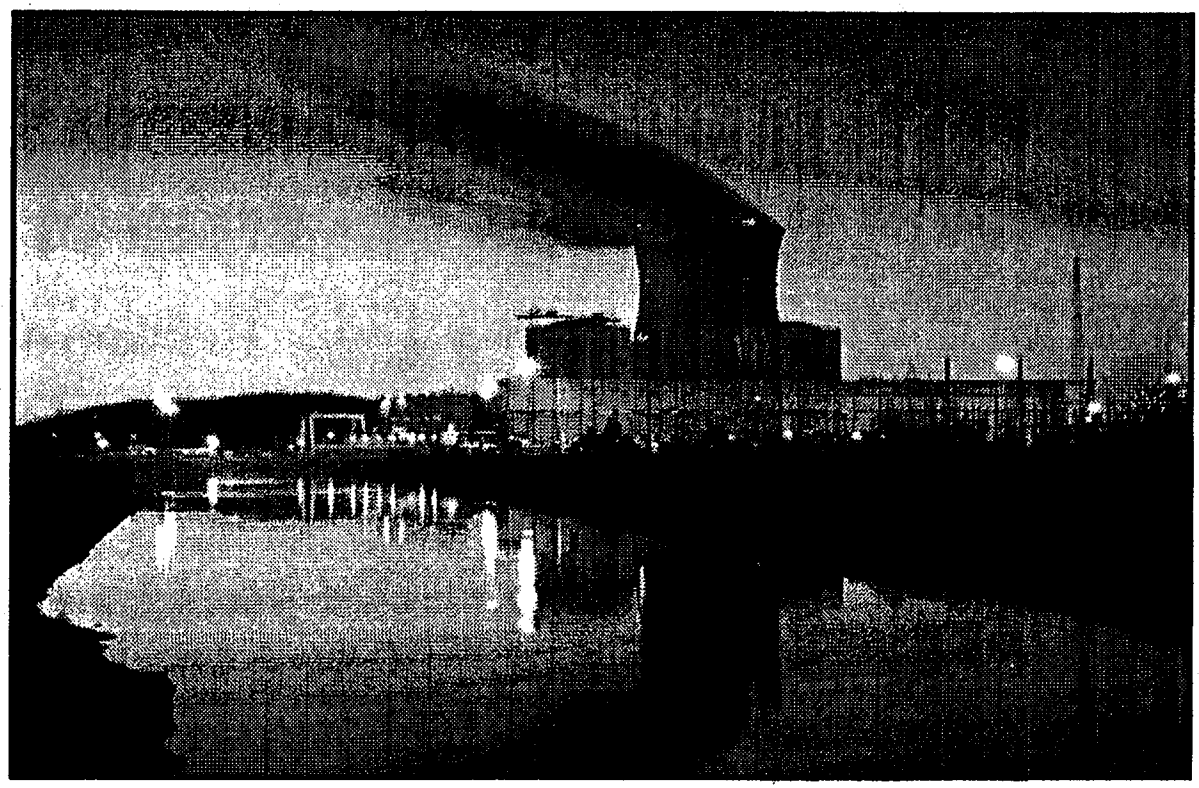
Conclusion

ANO-1 Application Submittal - January 2000



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