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**American Electric Power  
Meeting with**

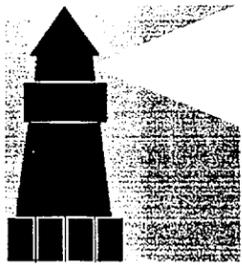
**Nuclear Regulatory Commission**

**Resolution of Containment  
Structural Issues**

**D. C. Cook  
June 11, 2001**

6/27

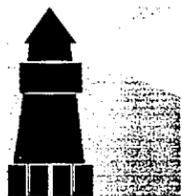




# Agenda

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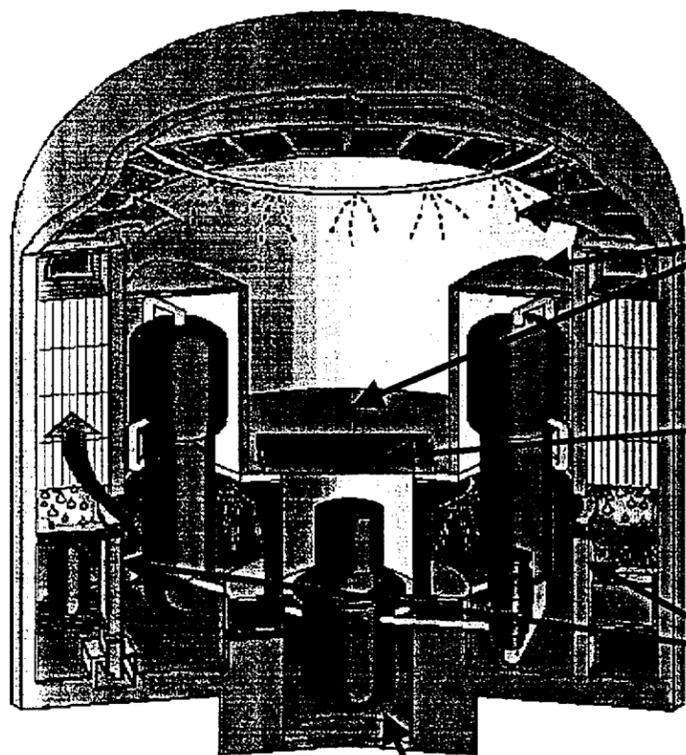
- **Introduction** **Mike Rencheck**
  
- **Background** **Scot Greenlee**
  
- **Project Status** **Ron Smith**  
**Project Results**  
**Remaining Activities**
  
- **Conclusion** **Mike Rencheck**



# Background

Containment Structures

Structures at Restart



Pressurizer Enclosure

Divider Barrier

Missile Shield

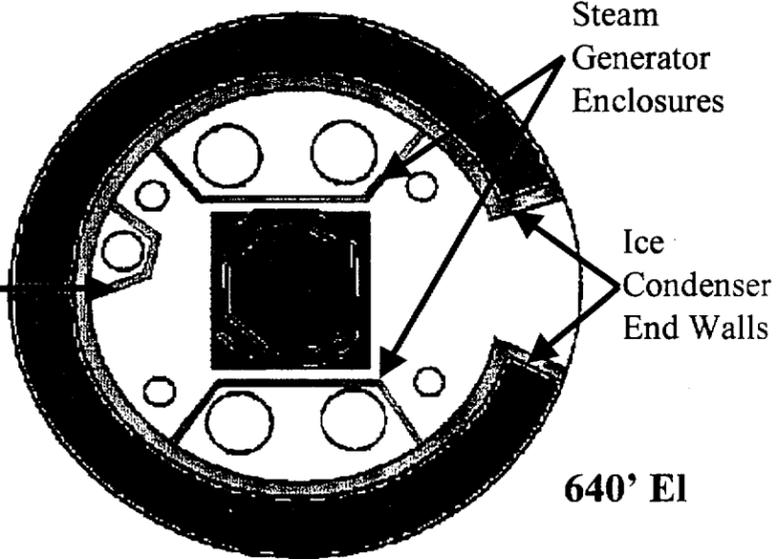
Crane Wall

Reactor Cavity

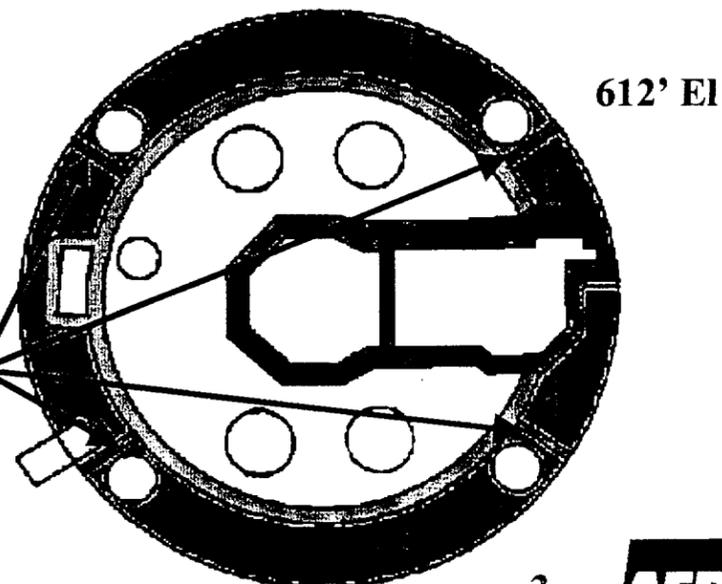
Fan/Accumulator Room Walls

### Operability Determination Evaluation (ODE) Results

- Design Basis Capacity
- Operable Capacity



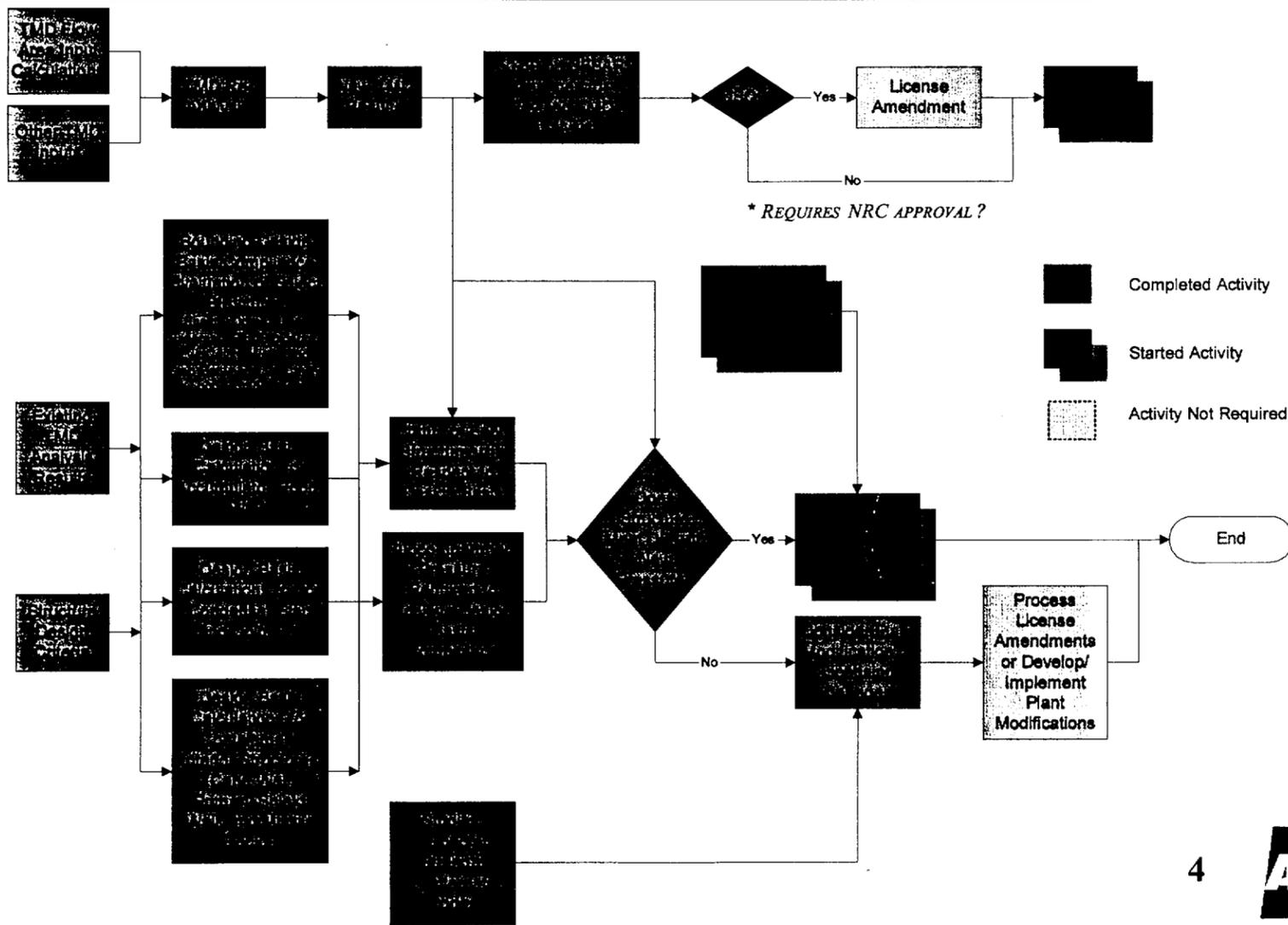
640' El

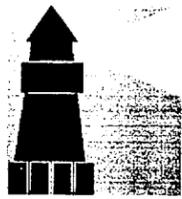


612' El



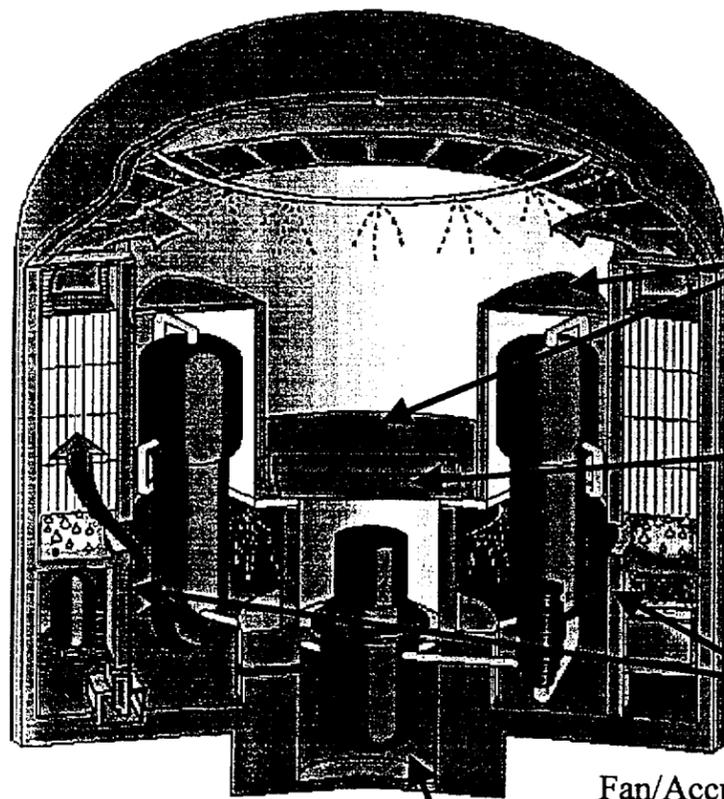
# Project Status





# Project Results

Structures May 2001



Pressurizer Enclosure

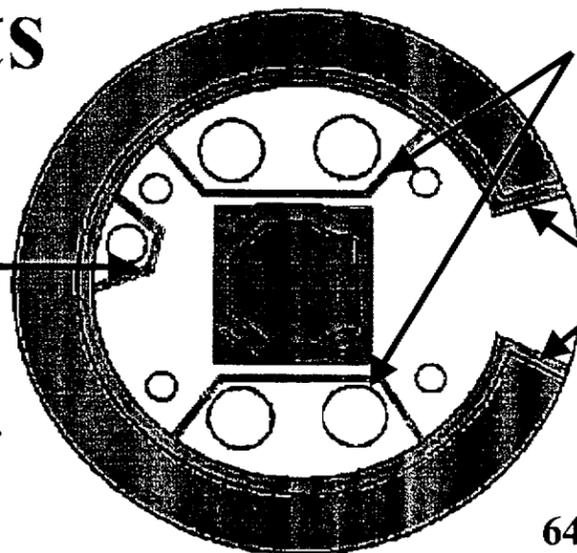
Divider Barrier

Missile Shield

Crane Wall

Fan/Accumulator Room Walls

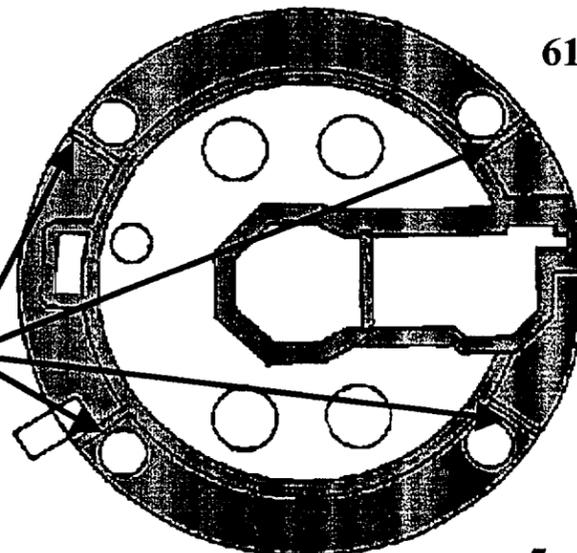
Reactor Cavity



Steam Generator Enclosures

Ice Condenser End Walls

640' El



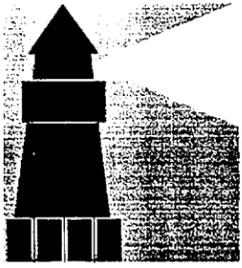
612' El

## Evaluation Results

- Design Basis Capacity
- Operability Capacity

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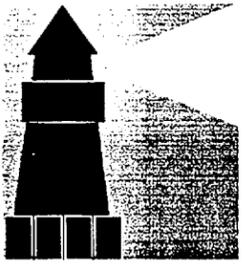




# Project Results: Historical Perspective

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- **1973 -- As Originally Licensed**
  - ACI-318-63/AISC-69/ASME Press. Vessel Code, 1968 ed.
  - Use of Transient Mass Distribution (TMD) model approved
  
- **1989 -- As Currently Licensed**
  - Same codes and TMD model apply
  - Shift from peak pressure to nodal differential pressure (psid)
  - Structural element margins unchanged

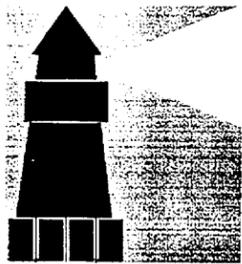


# Project Results: What Has NOT Changed

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- **Applicable Codes**
- **Subcompartment Design Stress Criteria Margins**
- **TMD Model**

***Code of Record and  
TMD Methodology Unchanged***



# Project Results:

## What HAS Changed

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### ➤ **TNID Inputs and Nodalization**

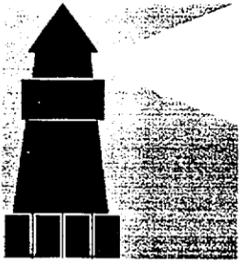
- Physical characteristics refined
- increased nodes

### ➤ **Concrete Strength**

- **FSAR:** Minimum compressive strength 3,500 psi at 28 days
- **Now:** Assume test-based 28-day compressive strength: 4,424 psi
  - Conservative relative to test results

### ➤ **Reinforcing Steel Material Specification**

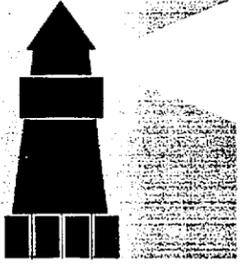
- **FSAR:** Minimum yield strength of 40,000 psi (40 ksi)
  - Vast majority of containment sub-structures continue to apply standard
- **Now:** Minimum Certified Material Test Report values for ice condenser end walls & missile shield (44/50 ksi)



# Project Results

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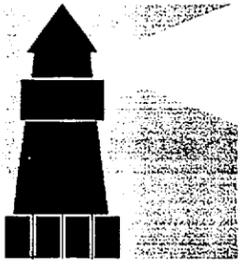
***Analyses Confirm  
Containment Structures Comply with  
Design Bases Requirements***



# Remaining Activities

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- **Close-out Project Paperwork**
- **Complete Third Party Reviews**
- **Complete Unit 2 Walkdowns**



# Conclusion

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- **Evaluation Phase of Project Complete**
- **Structures Have Necessary Design Margins**
- **Licensing Basis Changes Do Not Require Submittal**
- **Project Close-out Activities on Schedule**

***Analyses Confirmed  
Design Bases Compliance***