Reactor Decommissioning Program Lessons-Learned

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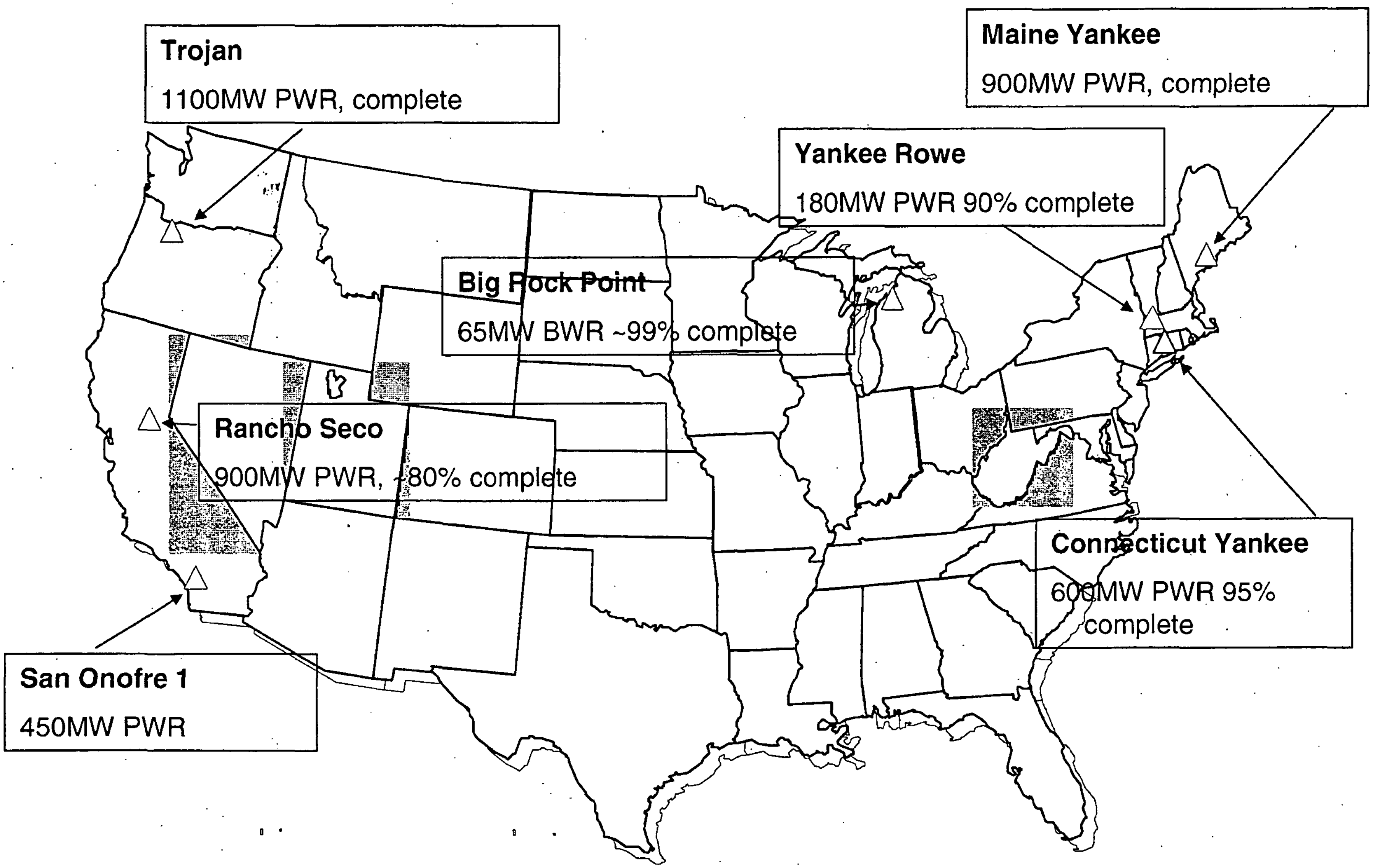
Industry Program

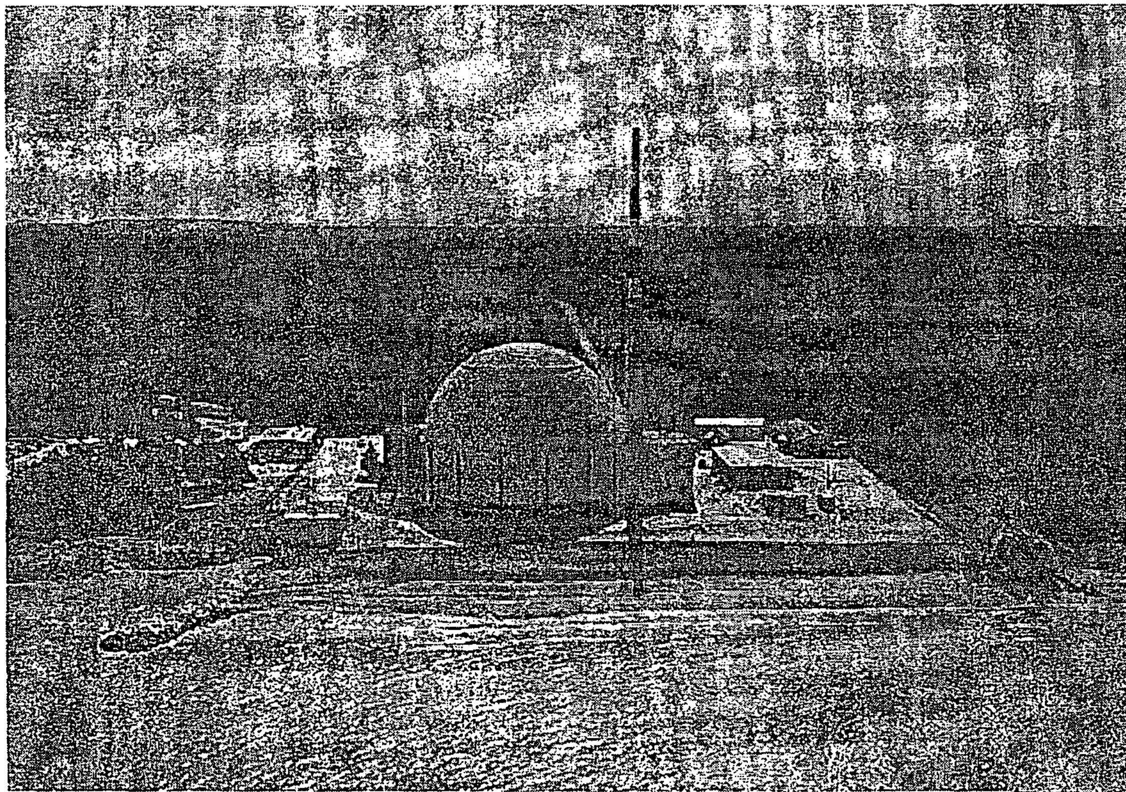
- EPRI
  - Document experience and lessons-learned
  - Technology development & transfer
  - On-site assessment and technical support
- NEI
  - Executive oversight & policy development
  - Interface with NRC, EPA and Congress
  - Resolve generic economic & regulatory issues

Currently for Power Plants in USA

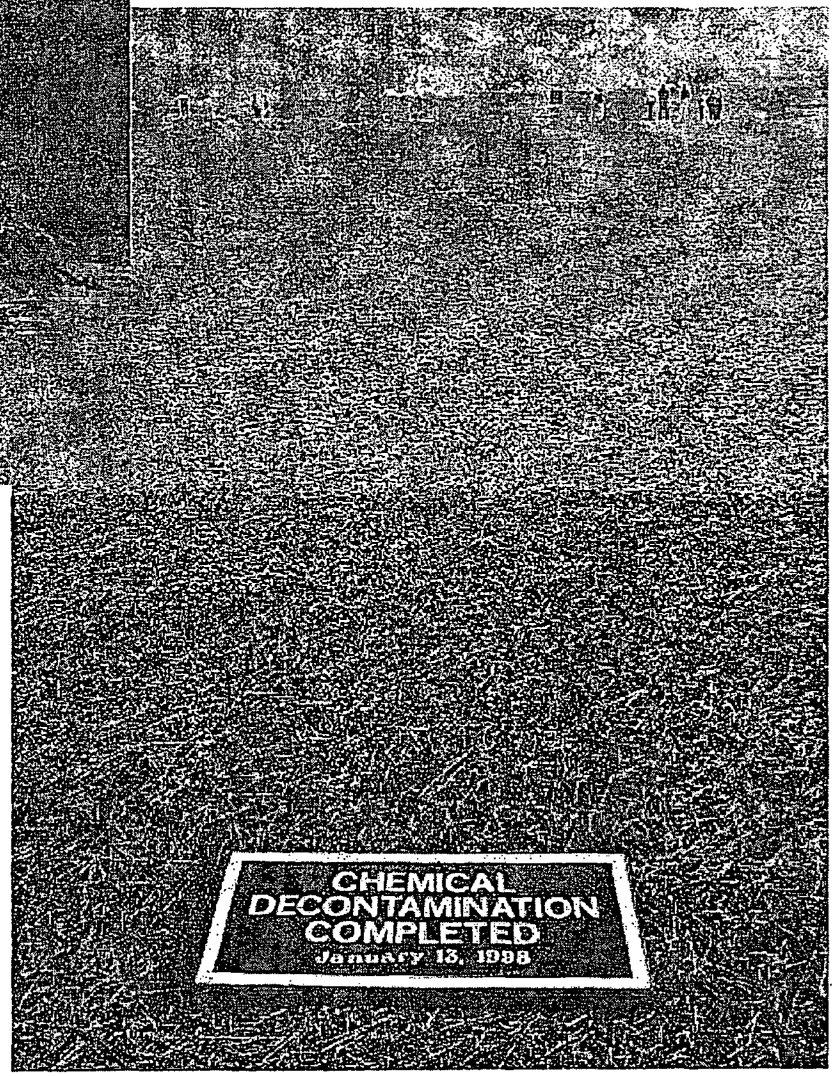
- **Decommissioning of closed units proceeding well**
  - 2 plants have terminated their licenses
  - significant progress at other plants
  - transfer of fuel to dry storage completed
  - funding appears to be adequate in most cases
  - completion of several plant projects in next 1-2 years
- **Remaining issues**
  - Final site characterization
  - License termination and site release
  - Materials clearance
  - Groundwater contamination/ soil remediation

7 US Plants in Progress - fuel in dry storage



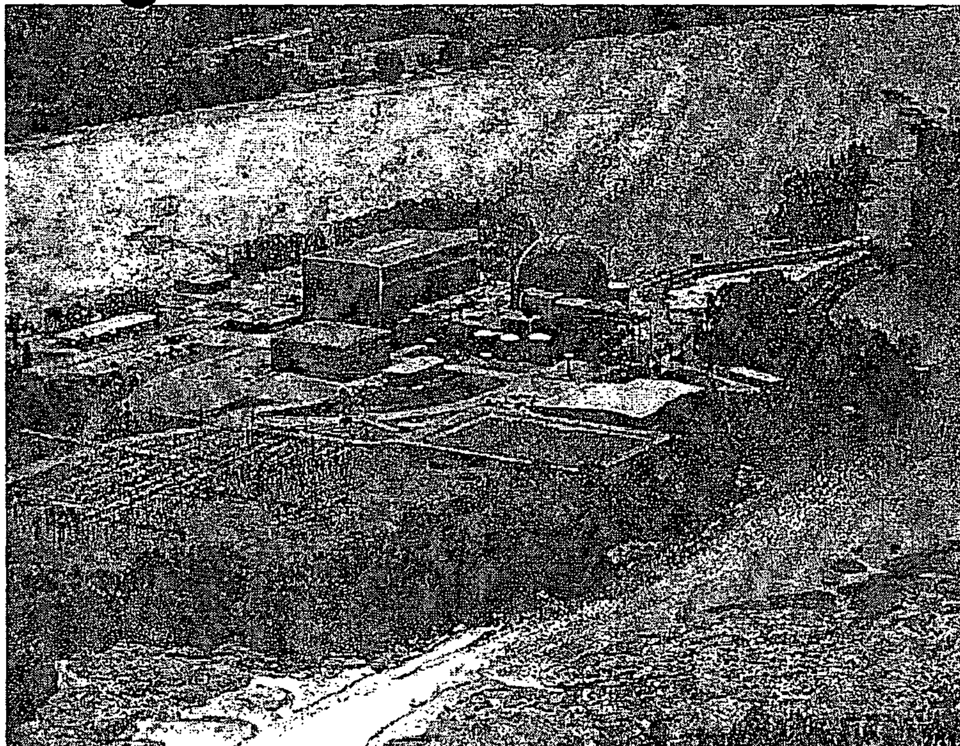


Big Rock Point

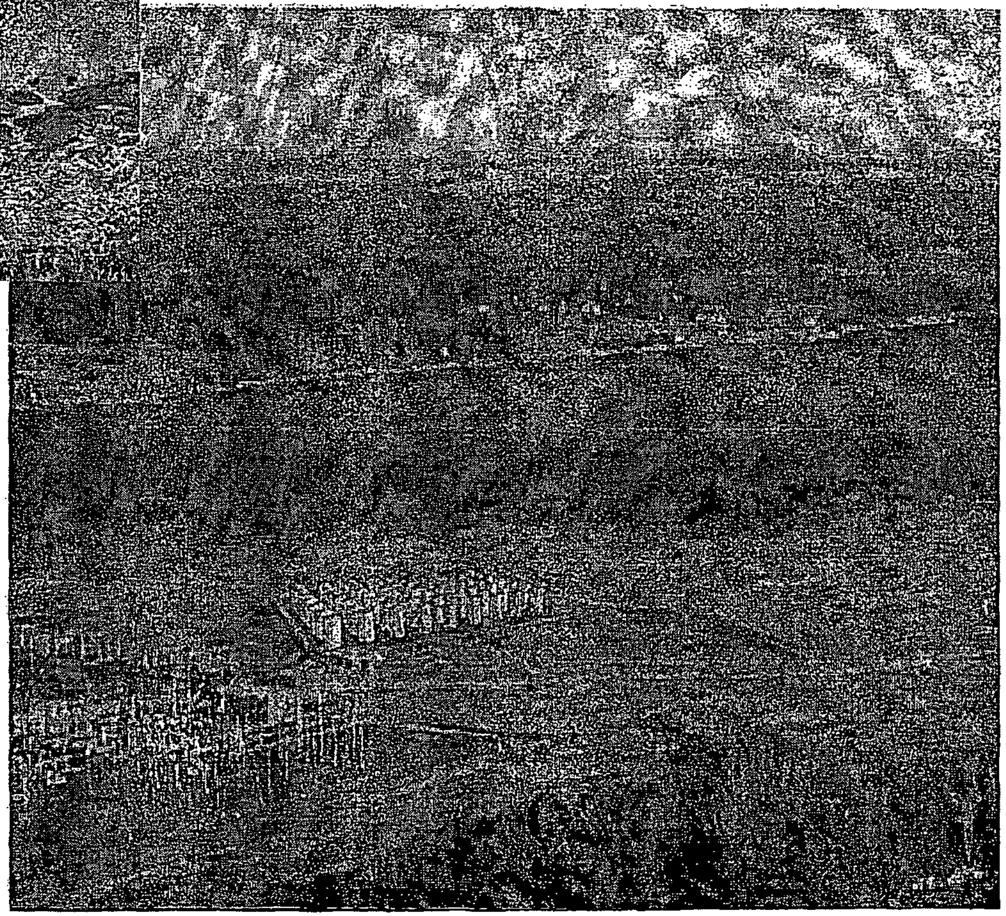


Key EPRI Interactions:

- 2 Technical Workshops
  - -Hazardous Waste Remediation
  - -LTP and Final Site Release
- Full System Decon with EPRI DFD process

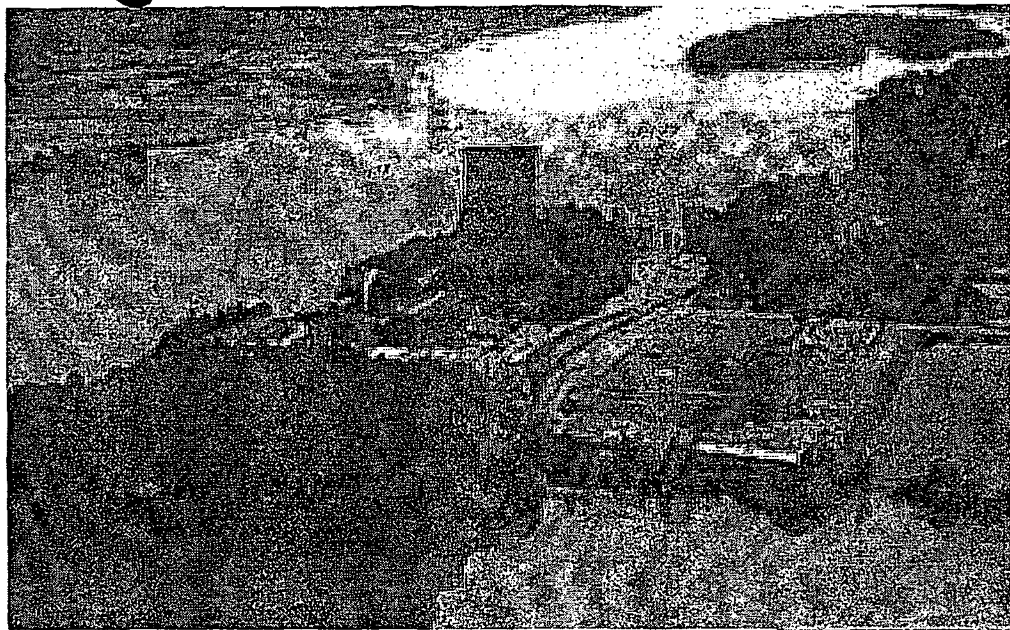


Maine Yankee

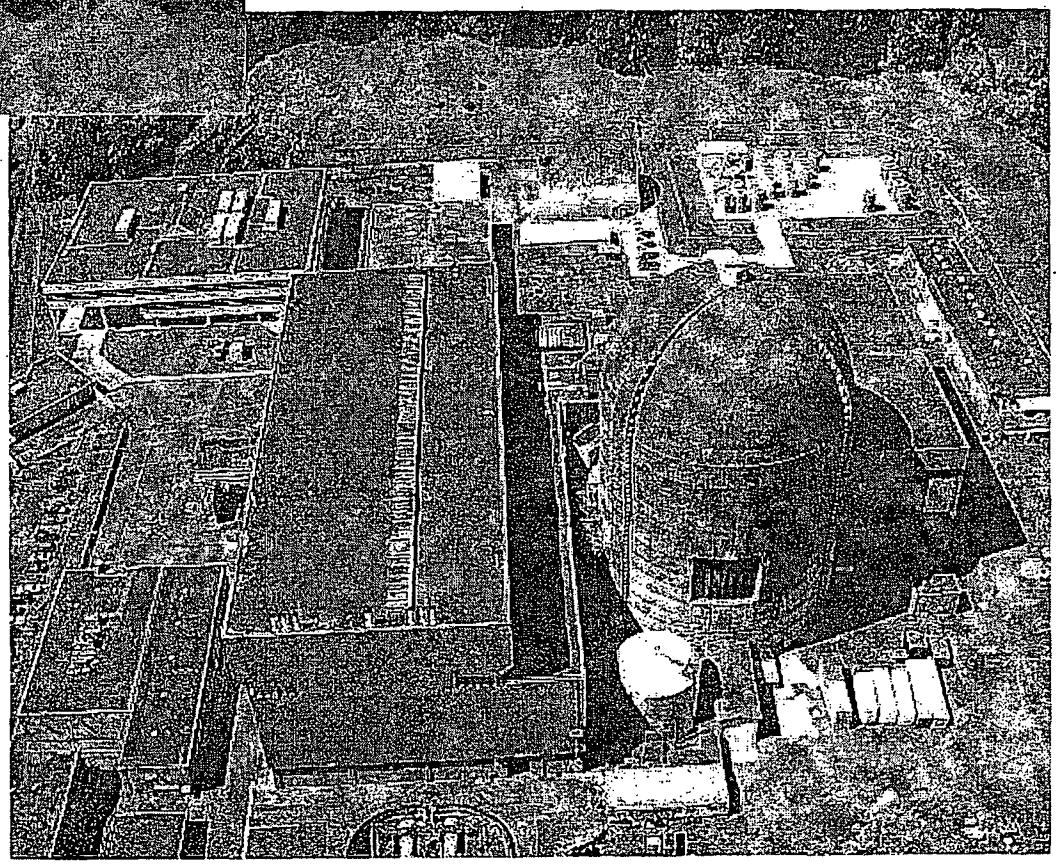


Key EPRI Interactions:

- Technical Workshops
  - -Radiation Exposure Control
  - -Final Status Survey
- Full System Decon with EPRI DFD process
- Experience Summary Report

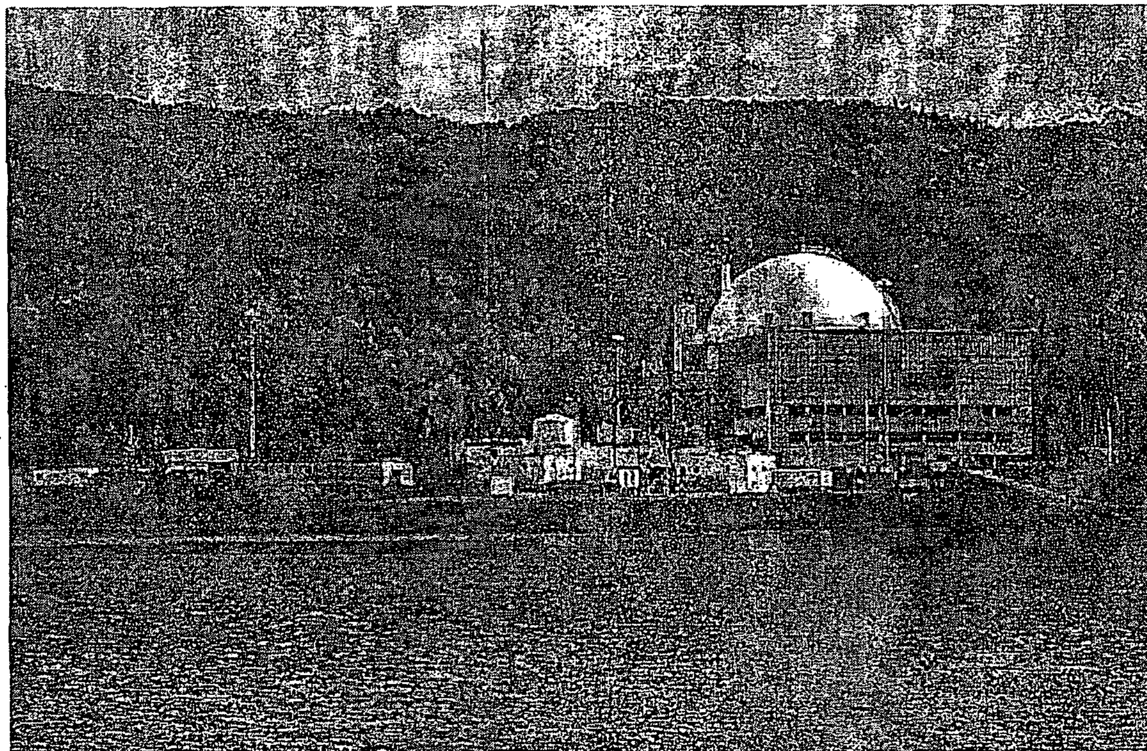


Trojan

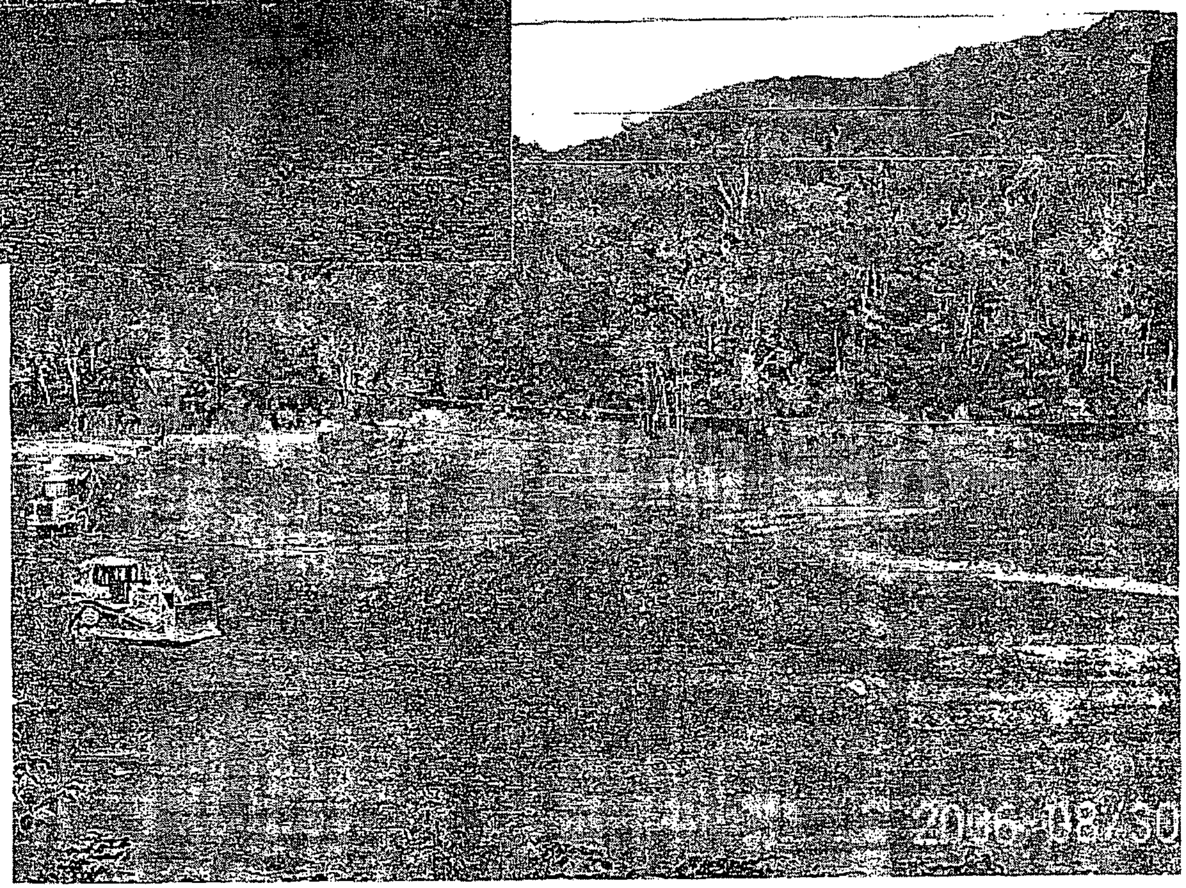


Key EPRI Interactions:

- Technical Workshop
  - Embedded Piping Removal
- Evaluation of Decommissioning Strategy
- SFP Cleanup and Cooling Report

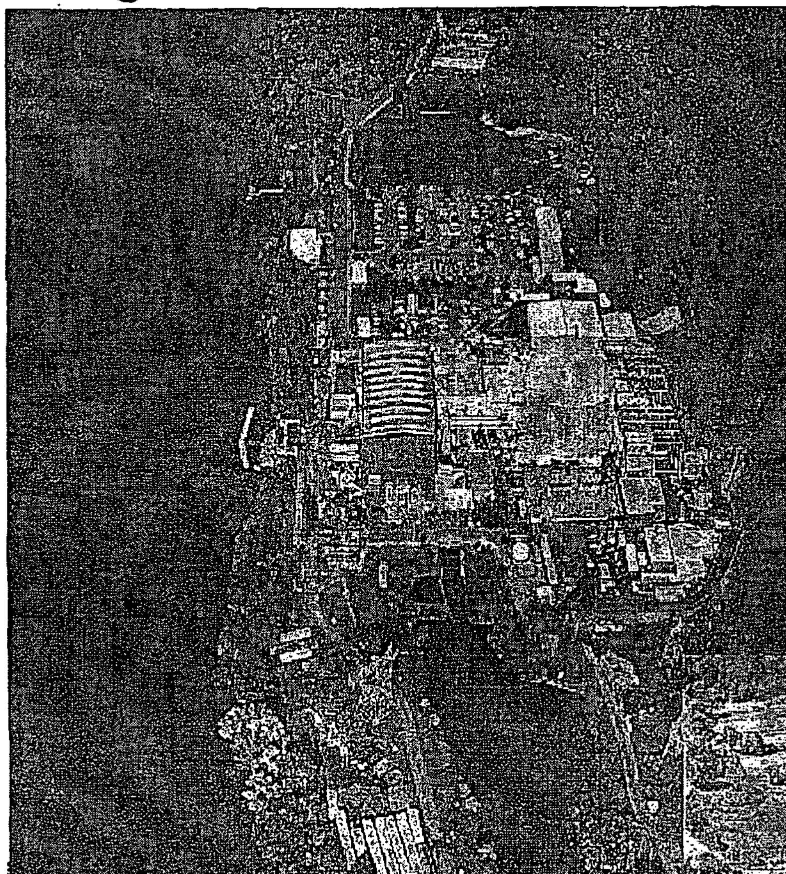


Yankee Rowe

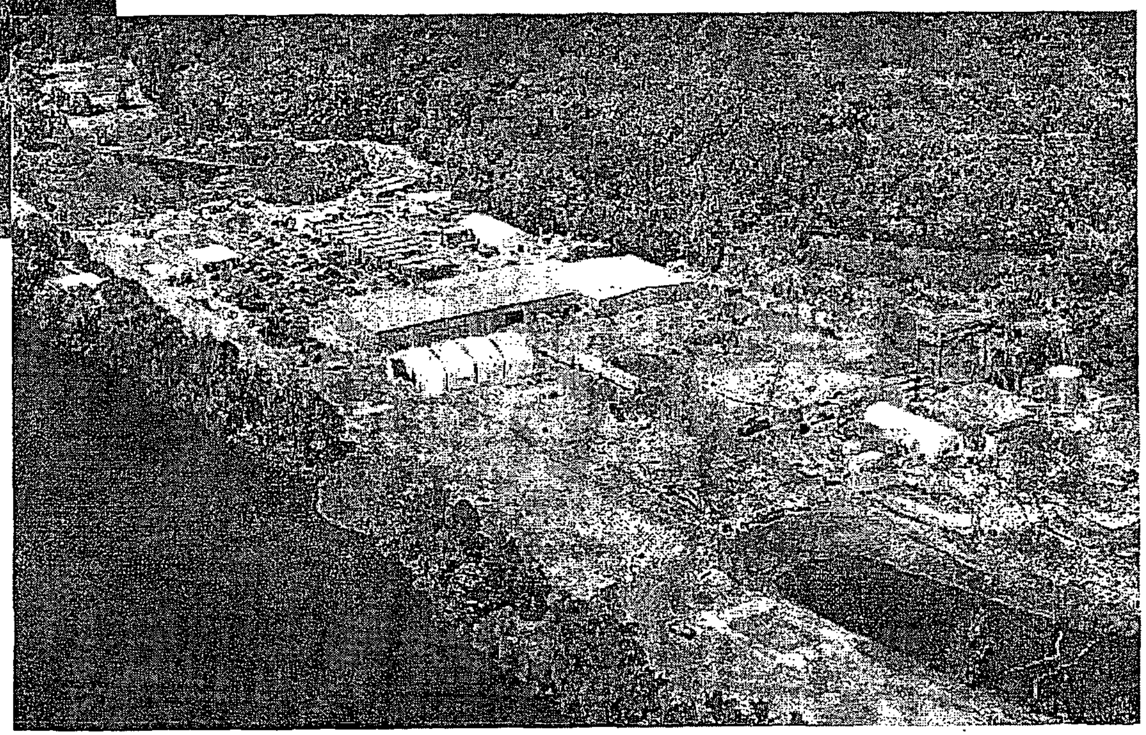


Key EPRI Interactions:

- Technical Workshop
  - -Concrete Removal
- Groundwater Experience Report

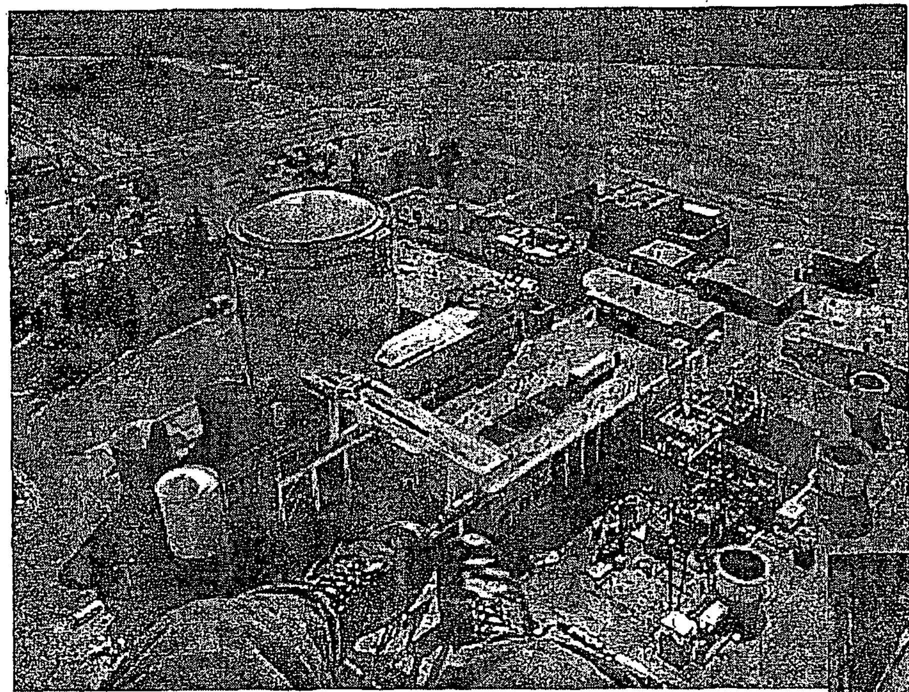


Connecticut Yankee

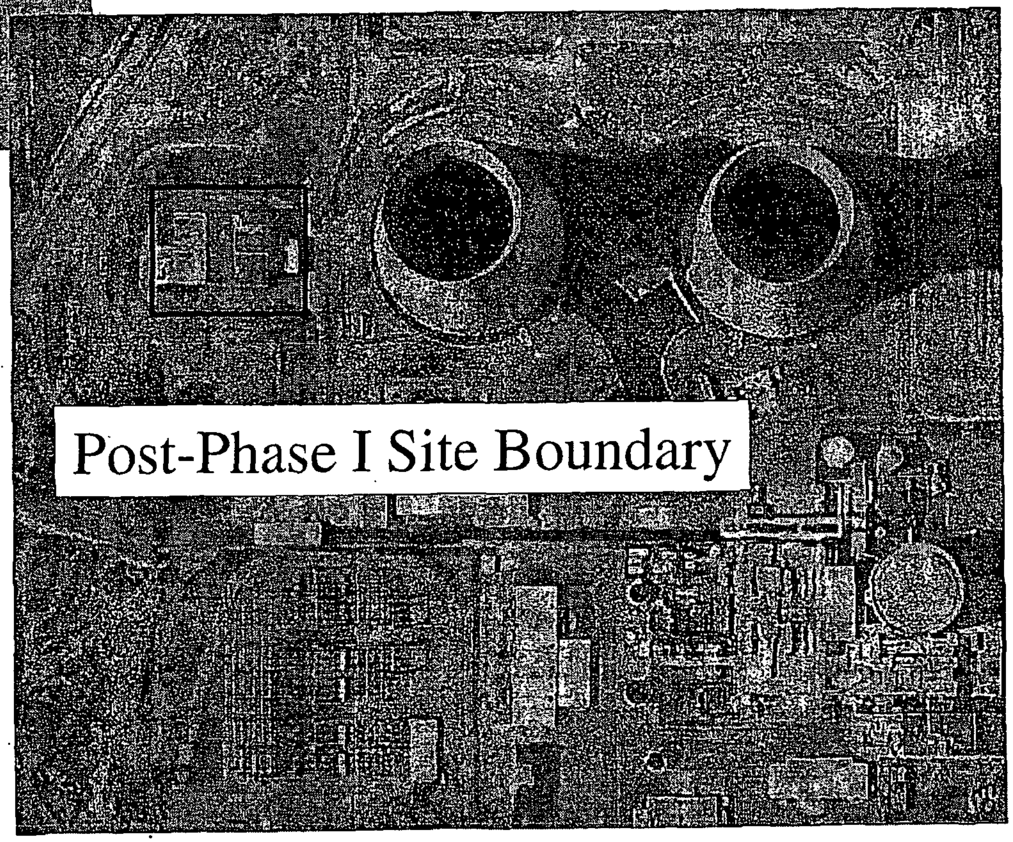


Key EPRI Interactions:

- Technical Workshops
  - -Final Site Survey and LTP
  - -Groundwater Management
- Experience Summary Report



Rancho Seco



Key EPRI Interactions:

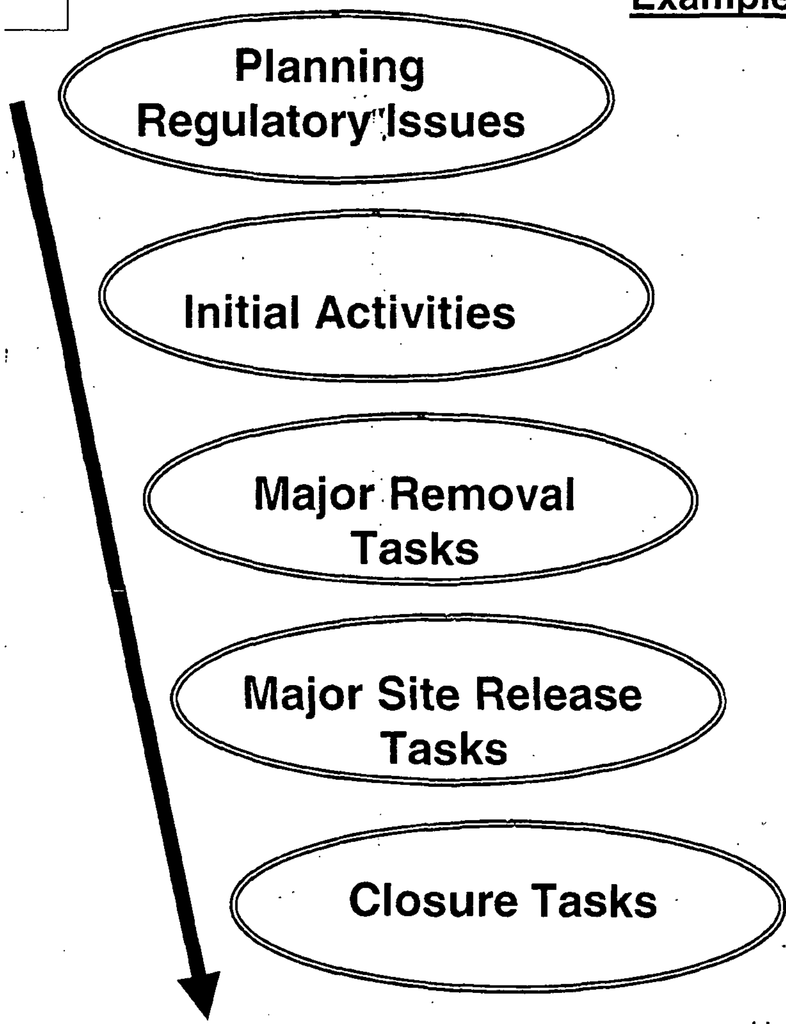
- Technical Workshop
  - LLW Management
- ALARA Evaluation for Reactor Internals Segmentation
- Experience Summary Report
- Decommissioning strategy peer review team

Technology Transfer Focus of EPRI Program Continues Internationally

- **Growing membership internationally in the EPRI Program**
  - UKAEA- Scotland, British Energy, BNG- UK
  - EdF- France, SOGIN- Italy, JAPC- Japan, TaiPower-Taiwan
  - UNESA (All Spanish Utilities), ENRESA, & Iberinco- Spain
- US technical and regulatory experiences are invaluable to ALL members
- New technologies/experiences being transferred to U.S. as well

EPRI Collaboration

Reducing the Costs and Risks of Decommissioning Nuclear Facilities



Examples: EPRI Reports/Software Available to Members

Pre-planning Manual
License Termination Plan

Site Characterization**
Site Release Modeling and Characterization
Optimization of Radioactive Waste Management*

Reactor Primary System Decontamination**
Removal of Graphite Cores**
Reactor Vessel Internals Segmentation
Removal of Major Components and Structures

Site Survey and Final Release**
Site Groundwater Characterization Studies**
Demolition of Major Structures
Disposal of site materials (concrete, soil)

Final Site Survey**
License Termination

** Technical Topics Available for Site-specific Evaluations

Lessons-Learned - Decommissioning

- Paradigm shifts (operation-shutdown-deconstruction-disposal)
- Internal and external stakeholders
- Applicable agencies and standards
- Historical site review
- Site characterization
- Groundwater modeling and monitoring
- Decontamination for decommissioning
- Reactor vessel/large component disposal
- Soil and groundwater remediation
- Low-level waste management options
- Final site survey

Lessons Learned – New Plants (Examples)

- AE/Construction considerations
  - Design and construction documentation
  - On-site construction practices
  - Hydro-geological characteriaztion
- NSSS Design Considerations
  - Sumps
  - Structures and outside areas
  - Spent fuel pool and transfer canal
  - Piping
  - Tanks
  - Site water management
  - Discharge lines