

Yankee Rowe Decommissioning

**Richard M. Kacich
President, Yankee Atomic Electric Co.**

*Nuclear Regulatory Commission
August 31, 2004*

Purpose of Visit

- ▮ Status update on Yankee decommissioning process
- ▮ Identify current and remaining regulatory issues
- ▮ Dialogue/feedback from NRC

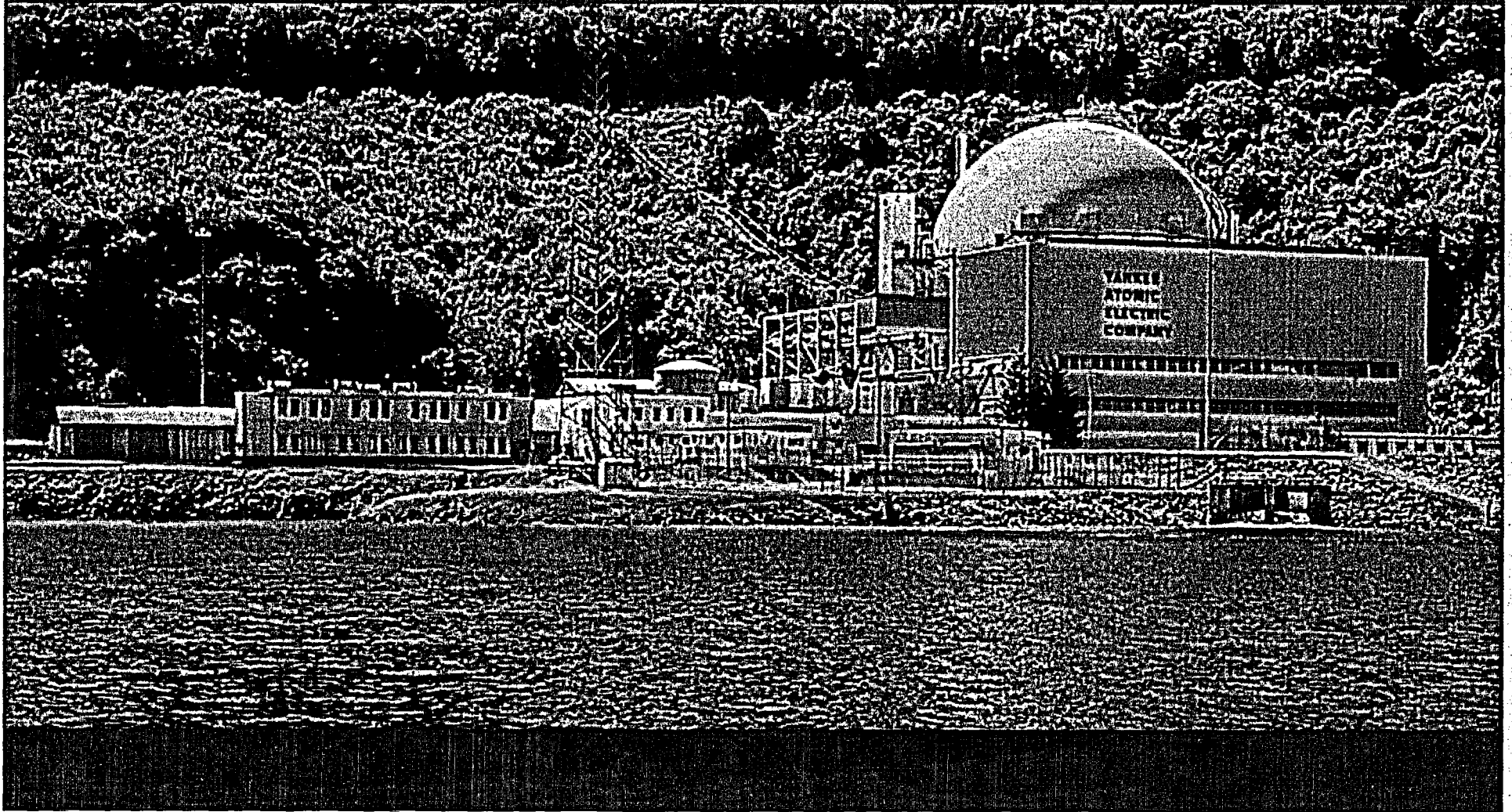
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Yankee Rowe Was a Nuclear Pioneer

- ▮ In 1954, 11 New England utilities formed YAEC as part of Pres. Eisenhower "Atoms for Peace" program
- ▮ Yankee was a four loop, 185 MWe, PWR that began construction in 1958, and was completed in 1960
 - was third U.S. nuclear plant, and first in New England
 - cost \$39 million to build
- ▮ Began commercial operation in 1961 and was expected to operate for only six years
- ▮ Operated for over three decades, producing 44 billion kilowatt hours
- ▮ Permanently shutdown in 1992

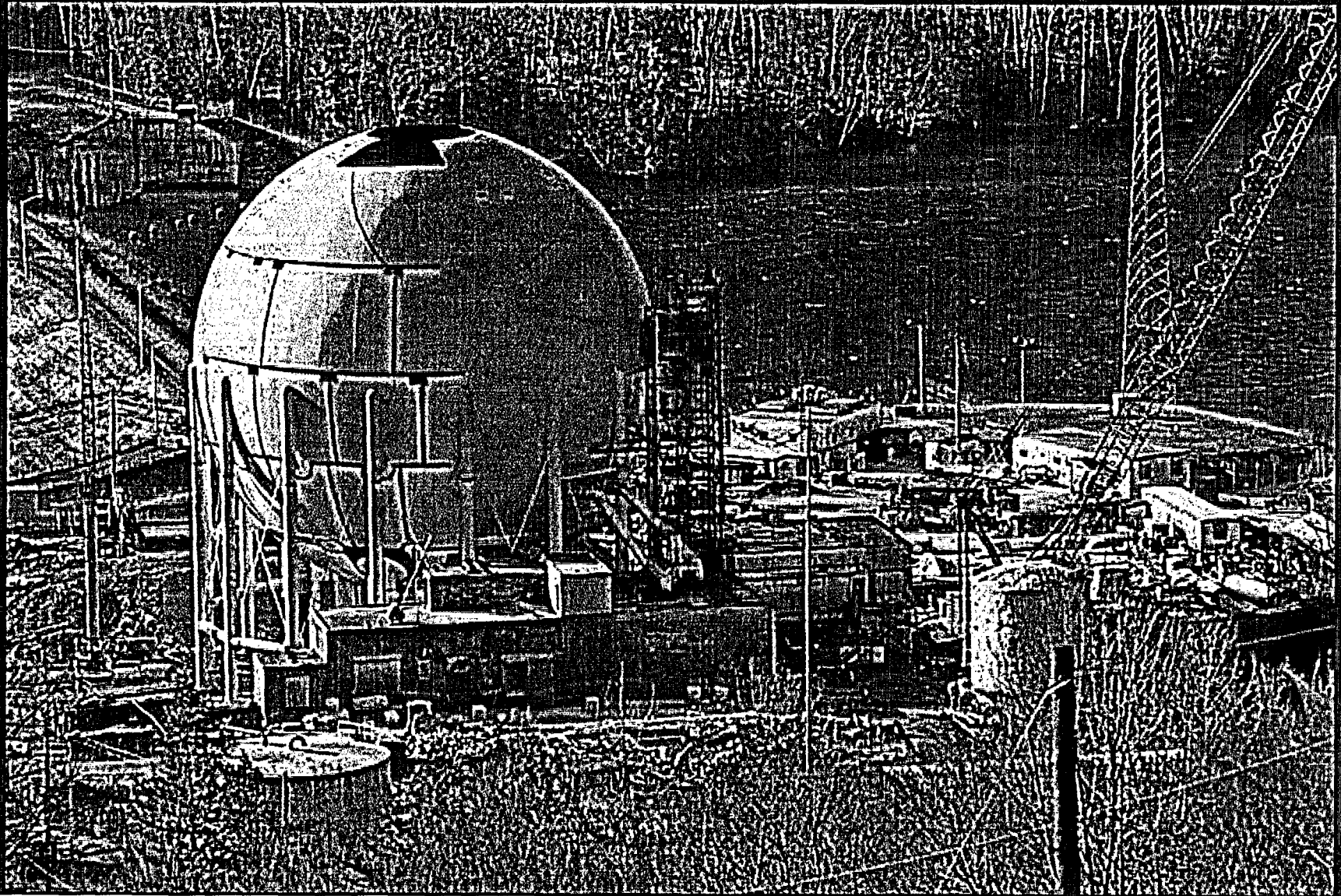
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Yankee Nuclear Power Station As An Operating Plant

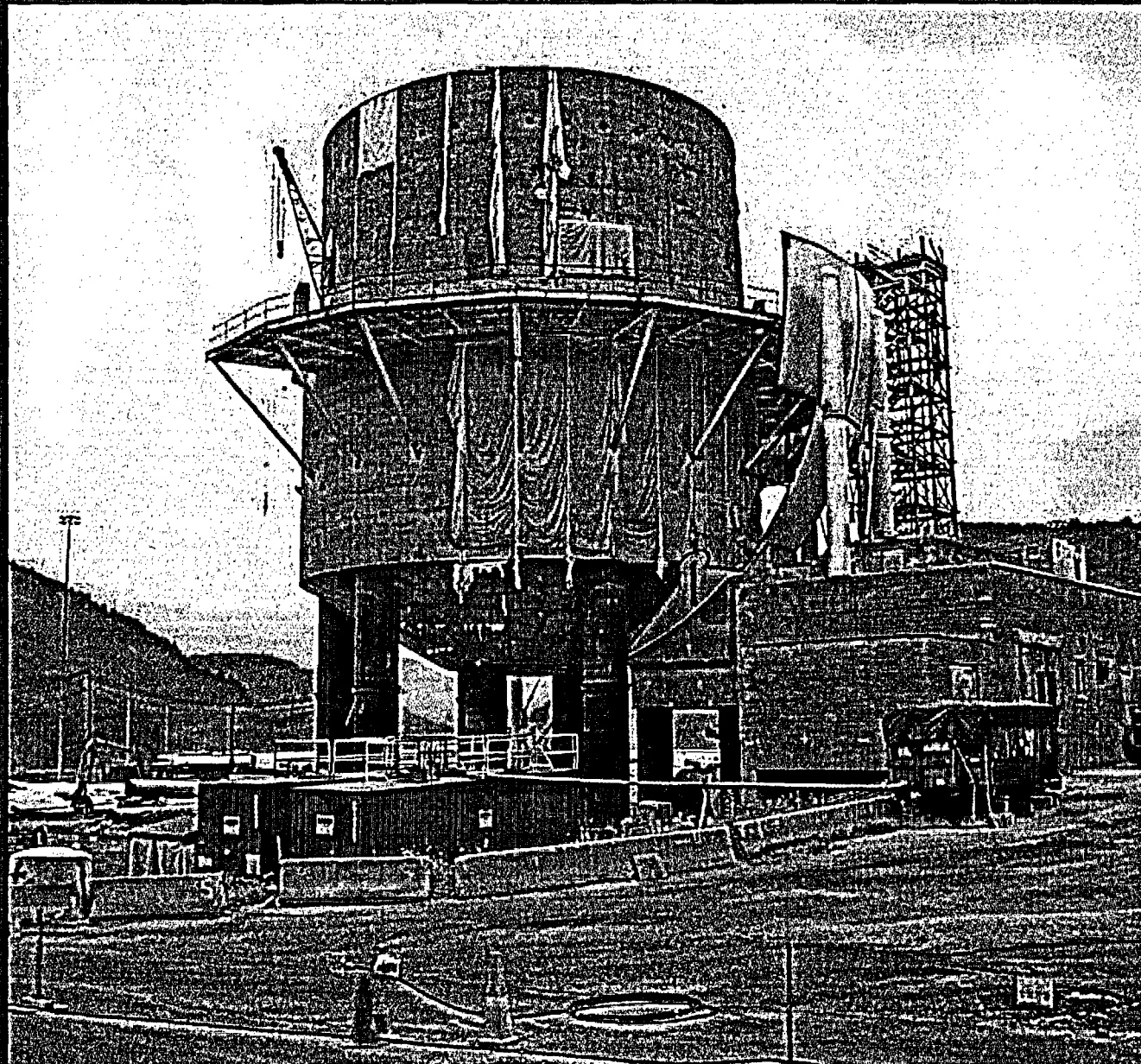


Site Profile - April 2004

During Commissioner Merrifield Visit



Containment Profile - August 2004



Decommissioning Activities are Progressing Well

- † Dose at 53% of the GEIS dose of 1,115 PersonRem
 - 585.9 Rem at 12/31/03
 - 587.2 Rem at end of 2nd Qtr. 2004
 - 596.0 Projection at Project Completion
- † One lost time accident (LTA) in 3.5 years (1.5 million work hours)
- † 12-month rolling recordable incident rate of 2.8 events per 200,000 hours compares favorably with industry averages
- † Over 60% of the waste removed from the site
- † Project is about 86% complete

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Revised Project Completion Strategy

- † Change in strategy due to shipping accidents, and opportunity for cost savings
- † Two approaches being pursued:
 - surveying and demolition of structures suitable for use as site fill
 - releasing grade level pads and foundations for direct in-place burial with appropriate drainage per MA DEP
- † Will avoid disposing of at least 40 million pounds of waste and 1,100 shipments to disposal facilities, at a saving of about \$7M
- † All materials will meet NRC LTP and MA DEP requirements

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Future Major Milestones (completion dates)

- ‡ Containment Removal – 9/04
- ‡ Dismantle PAB – 11/04
- ‡ Spent Fuel Building Demolition – 12/04
- ‡ Demolish Reactor Support Structure – 3/05
- ‡ **NRC Approves LTP – 1st Qtr. 2005**
- ‡ **NRC Approves partial site release of non-impacted land area – 1st Qtr. 2005**
- ‡ Physical Demolition Complete – 6/05
- ‡ Site Final Grading Complete – 8/05
- ‡ Final Status Survey Complete – 10/05

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Timely Regulatory Approvals are Critical Path

- ‡ Site Closure Project Plan issued in 2003
- ‡ License Termination Plan submitted in Nov. 2003
- ‡ State regulations call for cumulative risk below 1×10^{-5} and groundwater at drinking water std.
- ‡ Extensive interaction with Mass. DEP to achieve aggressive environmental standards
- ‡ State radiological remediation standard is 10 mrem/yr

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Regulatory Permitting Process is Complex and Multifaceted

Table 1
Non-radiological Regulatory Summary

Regulatory Program	Agency	Demolition Outside of Wetland Resource Areas	Demolition in Wetland Resource Areas	Shoreline Structure Removal ¹	Sediment Remediation in Sherman Pond	Sediment Remediation in West Storm Drain	Soil and/or Groundwater Remediation	Landfill Closure	Hazardous Waste Storage Areas	Septic System Closure	Final Site Grading
Massachusetts Environmental Policy Act (301 CMR 11)	EOEA	NA	ENF and/or EIR (Wetlands)	ENF and/or EIR (Wetlands)	ENF and/or EIR (Wetlands)	ENF and/or EIR (Wetlands)	NA	ENF and/or EIR (Wetlands)	NA	NA	NA
Wetlands Protection Act (310 CMR 10)	DEP/Rowe Conservation Commission	RFDA or NOI	NOI	NOI	NOI	NOI	NA	RFDA or NOI	NA	NA	RFDA or NOI
Massachusetts Clean Water Act (314 CMR 9)	DEP	NA	NA	401 WQC	401 WQC	NA	NA	NA	NA	NA	NA
Clean Water Act - Section 404 (33 CFR 320)	ACOE	NA	NA	PGP or IP	PGP or IP	NA	NA	NA	NA	NA	NA
Solid Waste Regulations (310 CMR 19)	DEP	NA	NA	NA	NA	NA	NA	CAAA and CAD	NA	NA	NA
Massachusetts Contingency Plan (310 CMR 40)	DEP	RAM Plan	RAM Plan	NA	Phase IV RIP	Phase IV RIP	Phase IV RIP	NA	NA	NA	NA
Toxic Substances Control Act (40 CFR 761)	EPA	NA	NA	NA	Risk-Based Disposal Approval	Risk-Based Disposal Approval	Risk-Based Disposal Approval	NA	NA	NA	NA
Conservation of Power and Water Resources (18 CFR)	FERC	NA	Compliance Review or FERC License Amendment	Compliance Review or FERC License Amendment	Compliance Review or FERC License Amendment	NA	NA	NA	NA	NA	Compliance Review or FERC License Amendment
National Pollution Discharge Elimination System (NPDES) (40 CFR 122)	EPA/DEP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Resource Conservation and Recovery Act/Hazardous Waste Management Act (40 CFR 260/310 CMR 30)	DEP	NA	NA	NA	NA	NA	NA	NA	Closure	NA	NA
Title 5 - On-site Sewage Treatment and Disposal (310 CMR 15)	DEP	NA	NA	NA	NA	NA	NA	NA	NA	Inspection, Closure	NA

¹ Activities will occur on property not owned by Yankee. Activity will require coordination with property owner (PG&E).

² Assumes no filling within wetland buffer zone.

	- High likelihood of regulatory agency approval or permit required
	- More detailed information, meeting with agency required, or work scope not defined required
	- No action required

ACOE - Army Corps of Engineers
CAAA - Corrective Action Alternatives Analysis
CAD - Corrective Action Design

DEP - Massachusetts Department of Environmental Protection
EIR - Environmental Impact Report
ENF - Environmental Notification Form
EOEA - Executive Office of Environmental Affairs
EPA - U.S. Environmental Protection Agency
FERC - Federal Energy Regulatory Commission

IP - Individual Permit
NA - Not Applicable
NOI - Notice of Intent

RAM - Release Abatement Measure
RIP - Remedy Implementation Plan

Required regulatory approvals and permits

The NRC Has Taken Actions Essential To Timely Project Completion

- ┆ Timely exemption issued to complete fuel transfer to the ISFSI
- ┆ Frequent stakeholder engagement at Community Advisory Board and Franklin Regional Council of Governments' meetings
- ┆ Acceptance Review of LTP/Issuance of RAI
- ┆ Timely use of the ORISE confirmatory process
- ┆ Relief from requirement for 24/7 State Police presence

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Continued Timely NRC Involvement Remains Critical to Project Completion

- ┆ Timely approval of License Termination Plan
- ┆ ORISE and Region 1 engagement in FSS activities
- ┆ Timely approval of partial site releases
- ┆ Policy level decision making on liability insurance requirements

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LTP Approval by NRC is a Key Component to Project Completion

- ‡ Application filed in November 2003
- ‡ RAI issued in June - Response sent August 2004
- ‡ Public meeting held on June 24, 2004
 - Tritium in groundwater was biggest concern
- ‡ CAN notified NRC of its intent to intervene in the LTP process – August 2004
- ‡ Targeted LTP schedule for NRC approval is <50% of previous industry best. Expected in 1st Qtr 2005

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- ‡ Final Status Survey Complete – 10/05
- ‡ LTP/ASLB proceeding – 2006?

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Total Decommissioning Expenses (1993 - 2022) are estimated at \$636M

- ▮ Originally budgeted for \$235 million in 1992\$
- ▮ \$446 million spent through July 2004
- ▮ \$82 million projected cost from 8/04 – 12/05
- ▮ Trust fund balance as of 7/31/04 – \$39.6 million
- ▮ \$108 million for ISFSI operation (2006- 2022)
- ▮ Assumes DOE removes fuel from site beginning in 2020

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Project Performance and Stakeholder Outreach

Physical Work is on Track For Completion by June 2005

- ▮ Above Ground Demolition complete: Service Bldg. And Annex, Turbine Bldg., Yard Crane And Support, Fuel Transfer Bldg., Safe Shutdown Bldg., Waste Disposal Compactor Bldg., Radwaste Warehouse, Radwaste Evaporator Bldg., Control Structure, And Auxiliary Bay Primary Water Storage Tank.
- ▮ Demolition in progress: Vapor Containment, Primary Auxiliary Bldg., Spent Fuel Building, Screenwell and Discharge Structure.
- ▮ Demolition not yet started: Ion Exchange Pit, Reactor Support Structure, Misc. Tanks, Sherman Pond Remediation, and Below Grade Demolition.

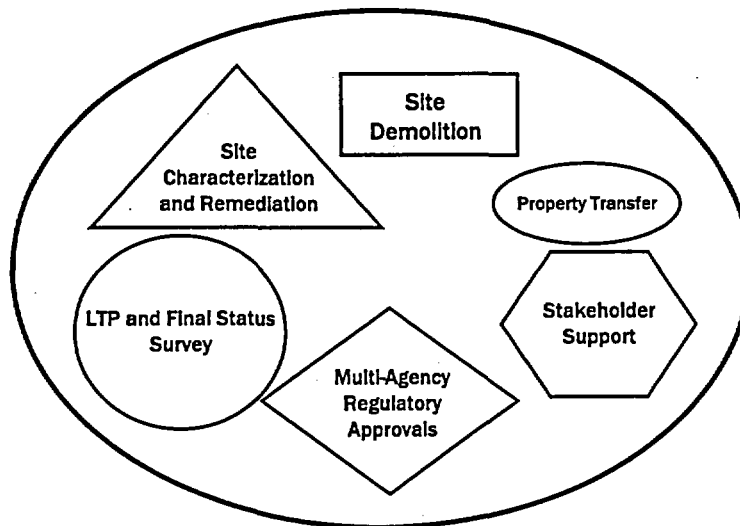
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Waste Management is a Key Performance Indicator

- ▮ Total project waste is 82 million pounds
- ▮ Over 50 million pounds shipped through end of July 2004
- ▮ Waste shipping rate reduced as a result of revised strategy to retain material on site for fill and grading

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Site closure requires the successful completion of several inter-related efforts



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The Stakeholder Outreach Campaign Is Extensive

- Stakeholder Meetings
 - Local (CAB, FRCOG, Town of Rowe, Neighboring Towns, USGen NE)
 - State (DEP, EOE, MA AG's Office, VT ANR)
 - Federal (NRC, EPA, ACOE)
- Site Closure Project Plan Updates
- Site Closure Website: www.yankee.com
- Site Closure Summary Brochure
- Public Information Repository
 - Greenfield Community College

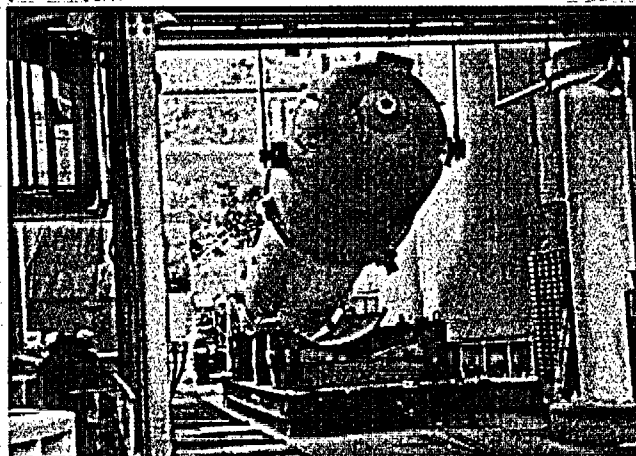
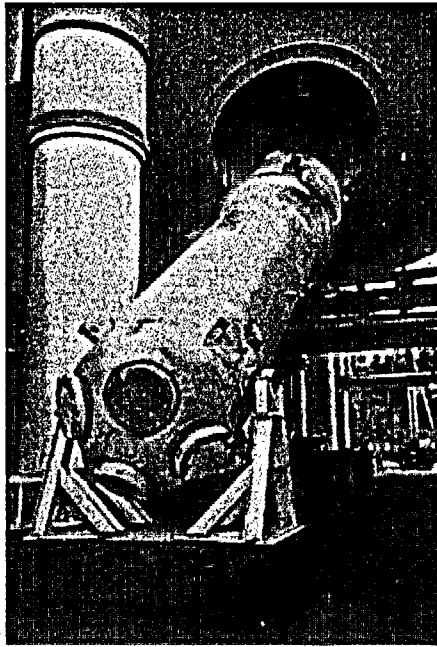
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Inter-Agency Consultations Have Proven Vital

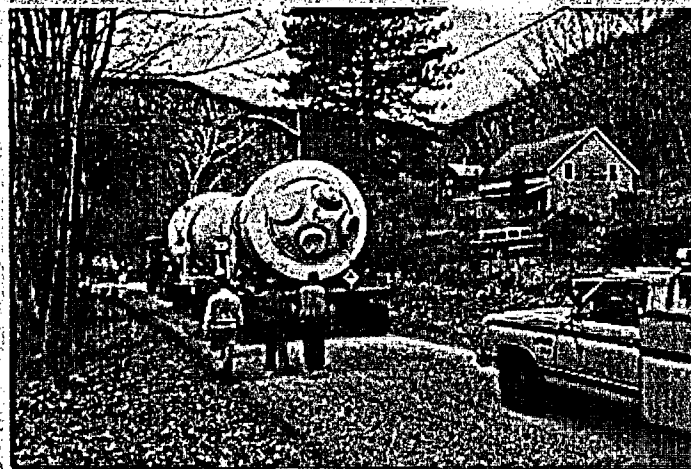
- ‡ NRC
- ‡ EPA
- ‡ U.S. Fish and Wildlife
- ‡ National Marine Fisheries
- ‡ Army Corps of Engineers
- ‡ Executive Office of Environmental Affairs
- ‡ DEP
 - Wetlands/Waterways
 - 401 Water Quality Certifications
 - Coastal Zone Management
- ‡ MA Department of Fisheries & Wildlife
- ‡ MA Natural Heritage & Endangered Species Program
- ‡ MA Historical Commission

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Demolition Progress

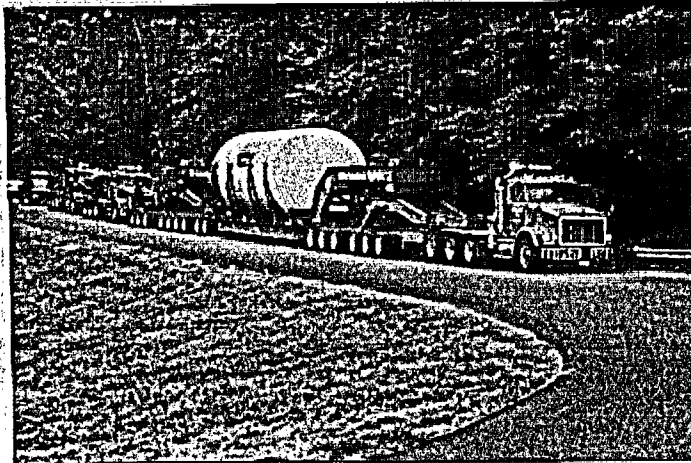


**Steam Generator Removal From
Vapor Container - 1993**



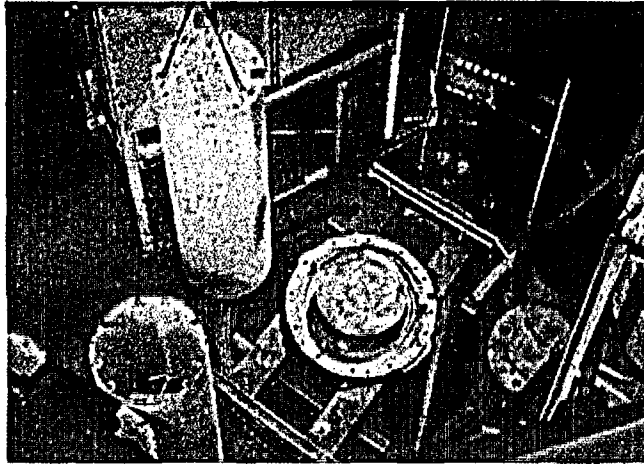
1993

Steam Generator Leaving Plant



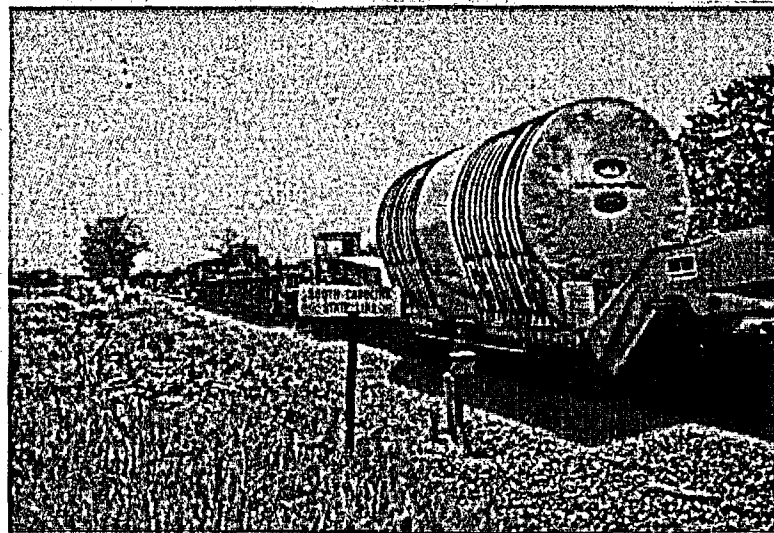
1997

Vessel Cask Transport Entering Plant



1996

Shipping Cask for Reactor Internals



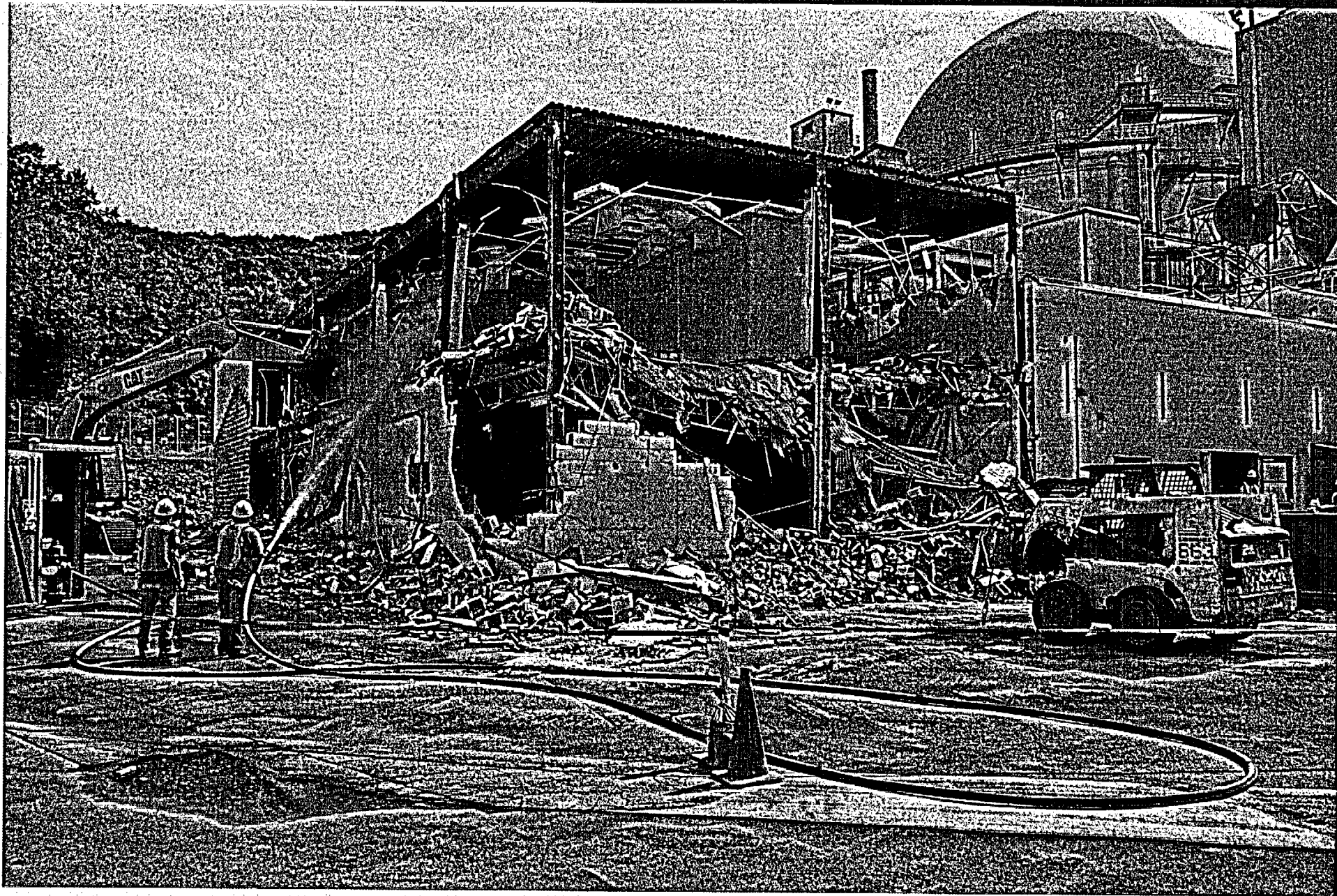
1997

Reactor Vessel en route to Barnwell

Sixteen Loaded Casks (15 Fuel and 1 GTCC Waste)



Annex Building Demolition



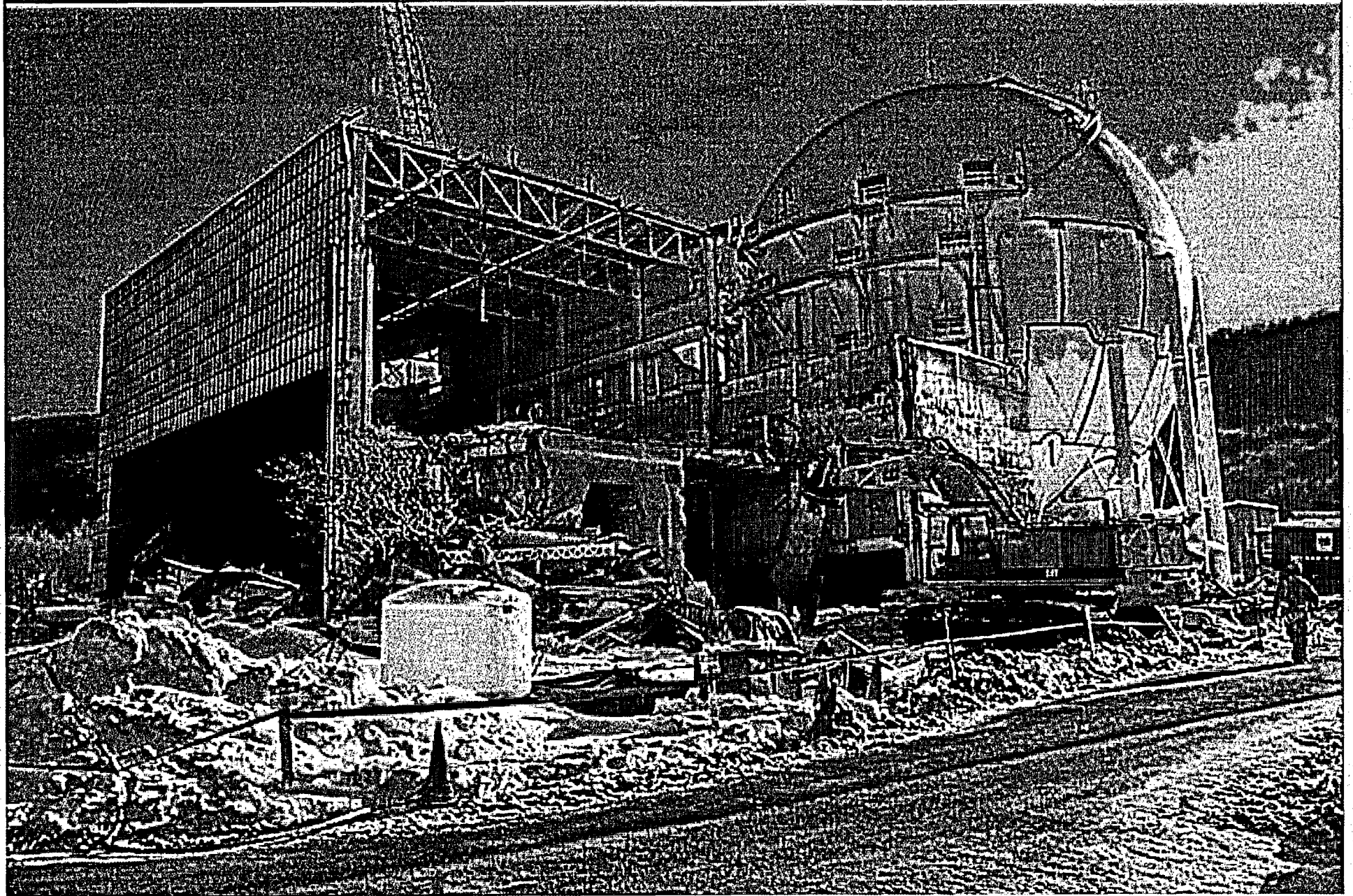
Annex Building Demolition



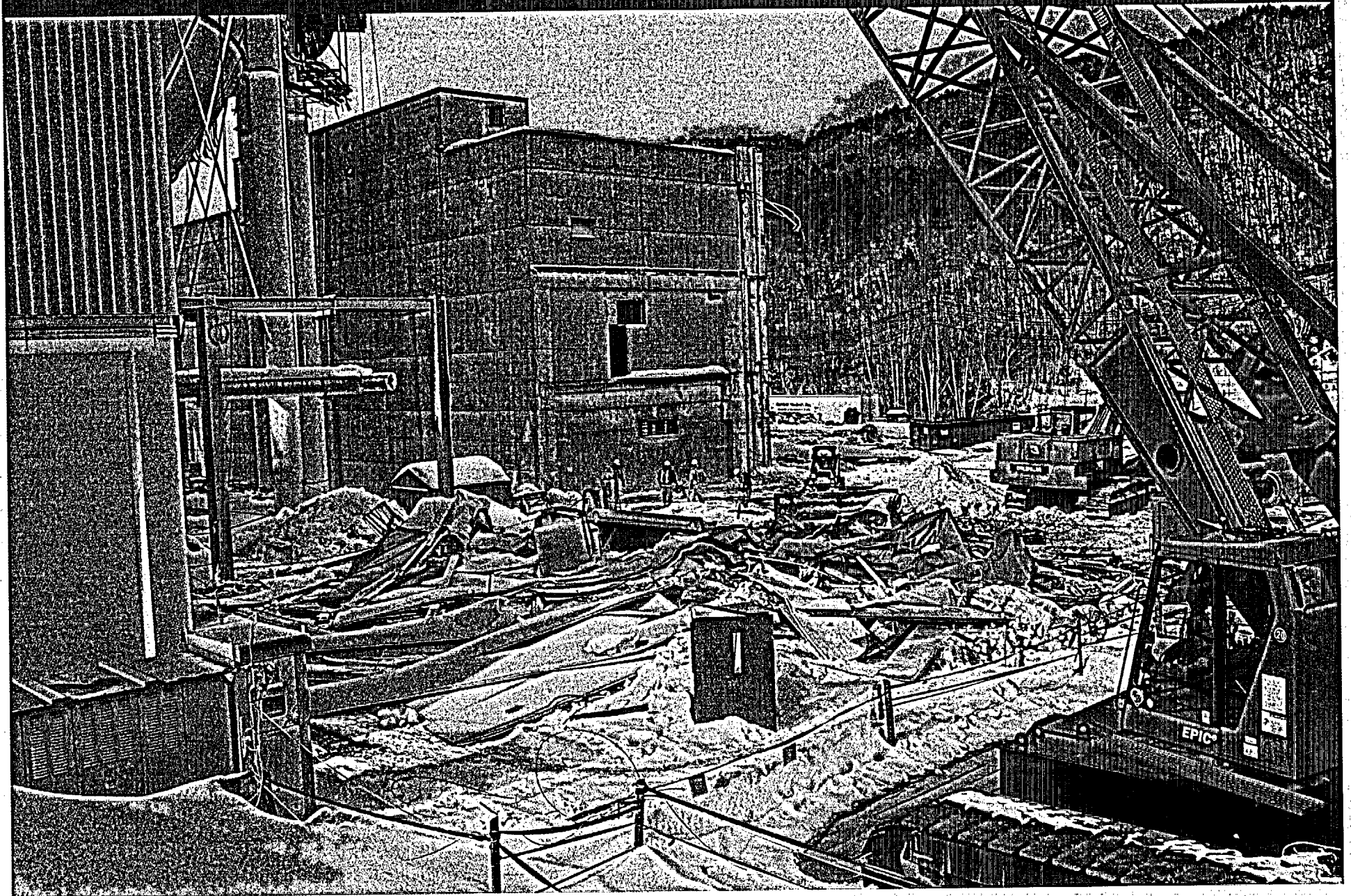
Turbine Building Demolition



Turbine Building - December 2003



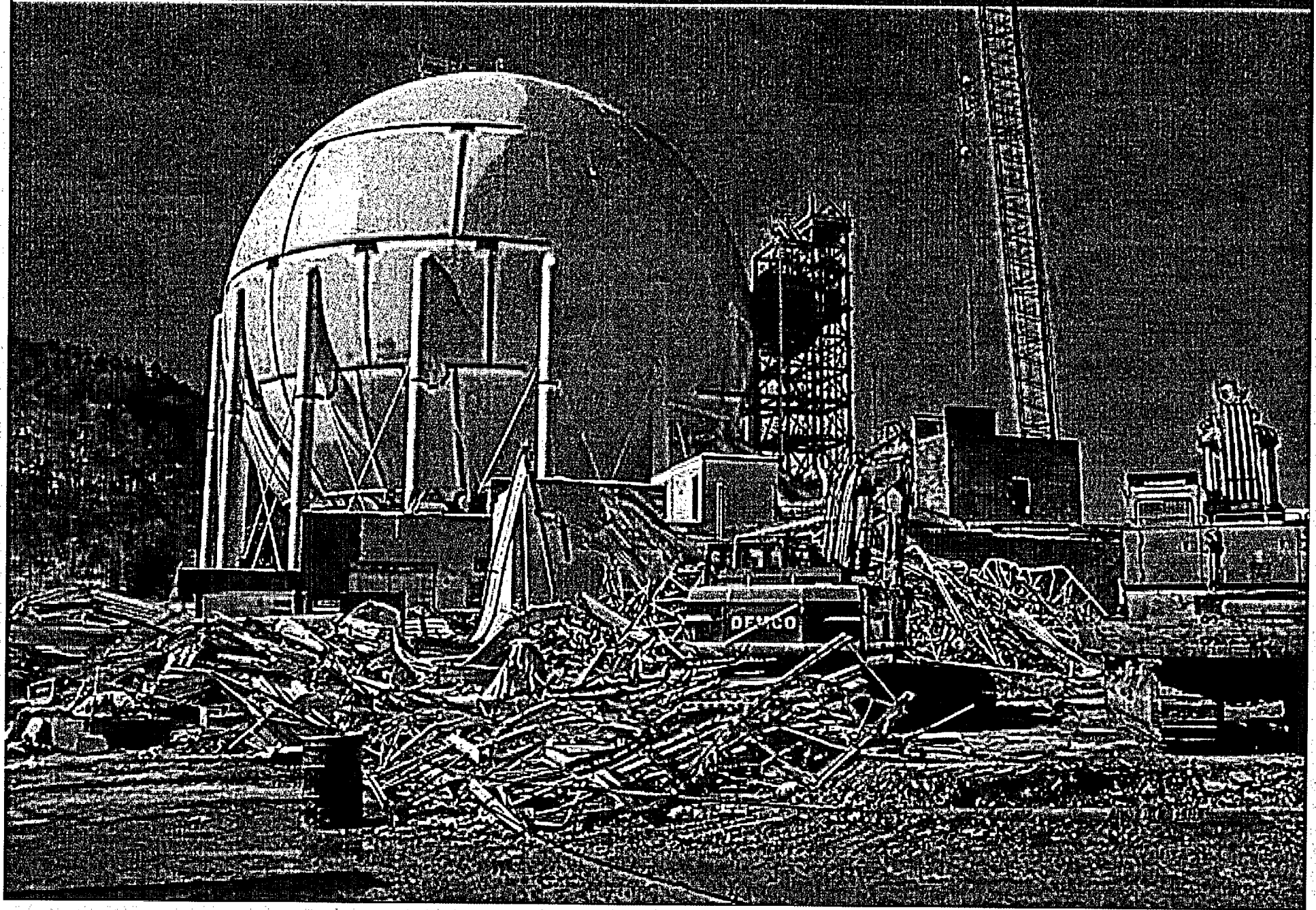
Fuel Transfer Enclosure Building Demolition



Safe Shutdown Building Demolition



Demolition of Radwaste Warehouse



PC1000 Demolishes the Turbine Aux. Bldg.



VC Catwalk Removal



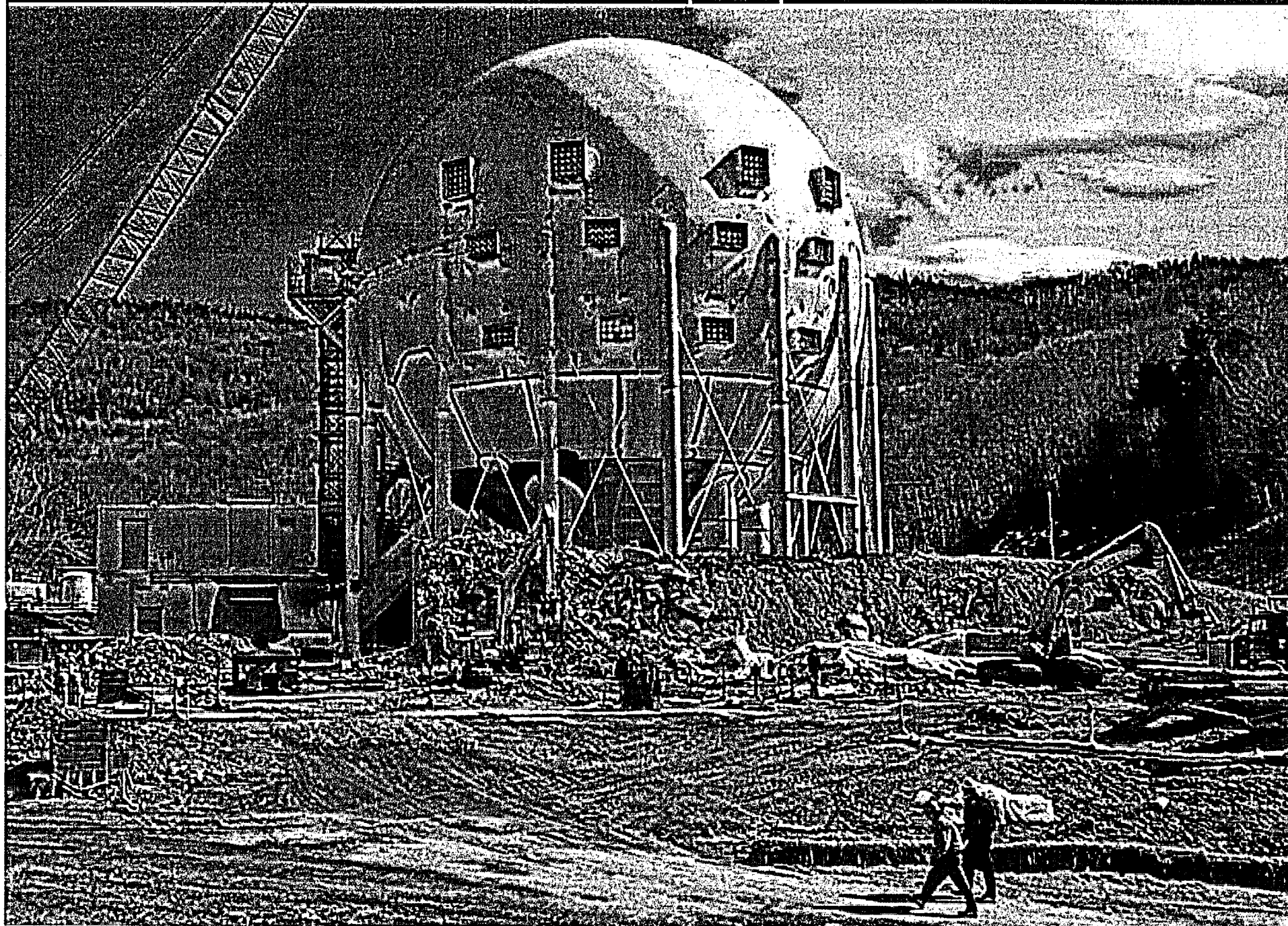
First Cut of the Vapor Container



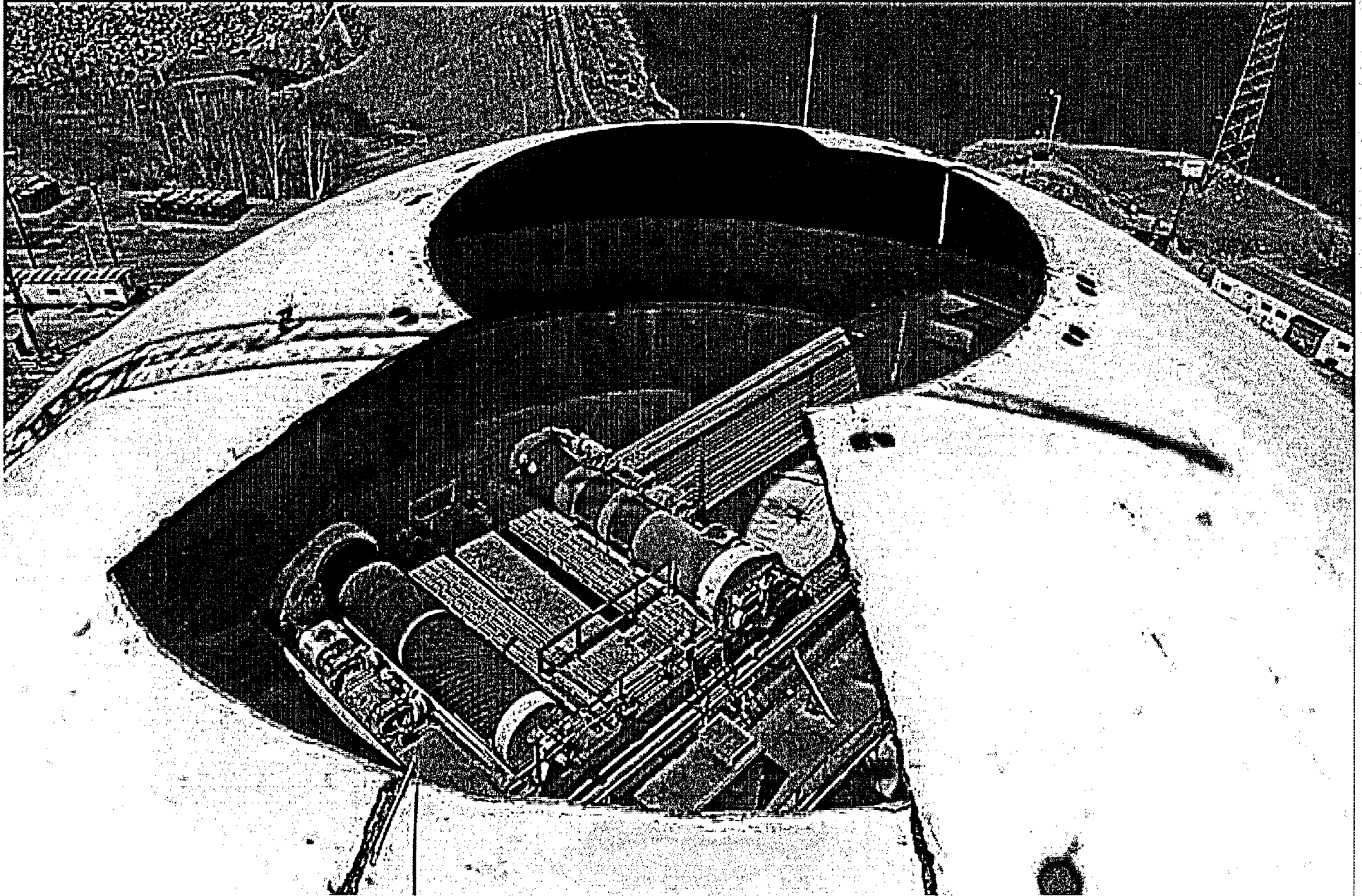
Removal of First Course of the VC



Control Room Clean-up - April 2004



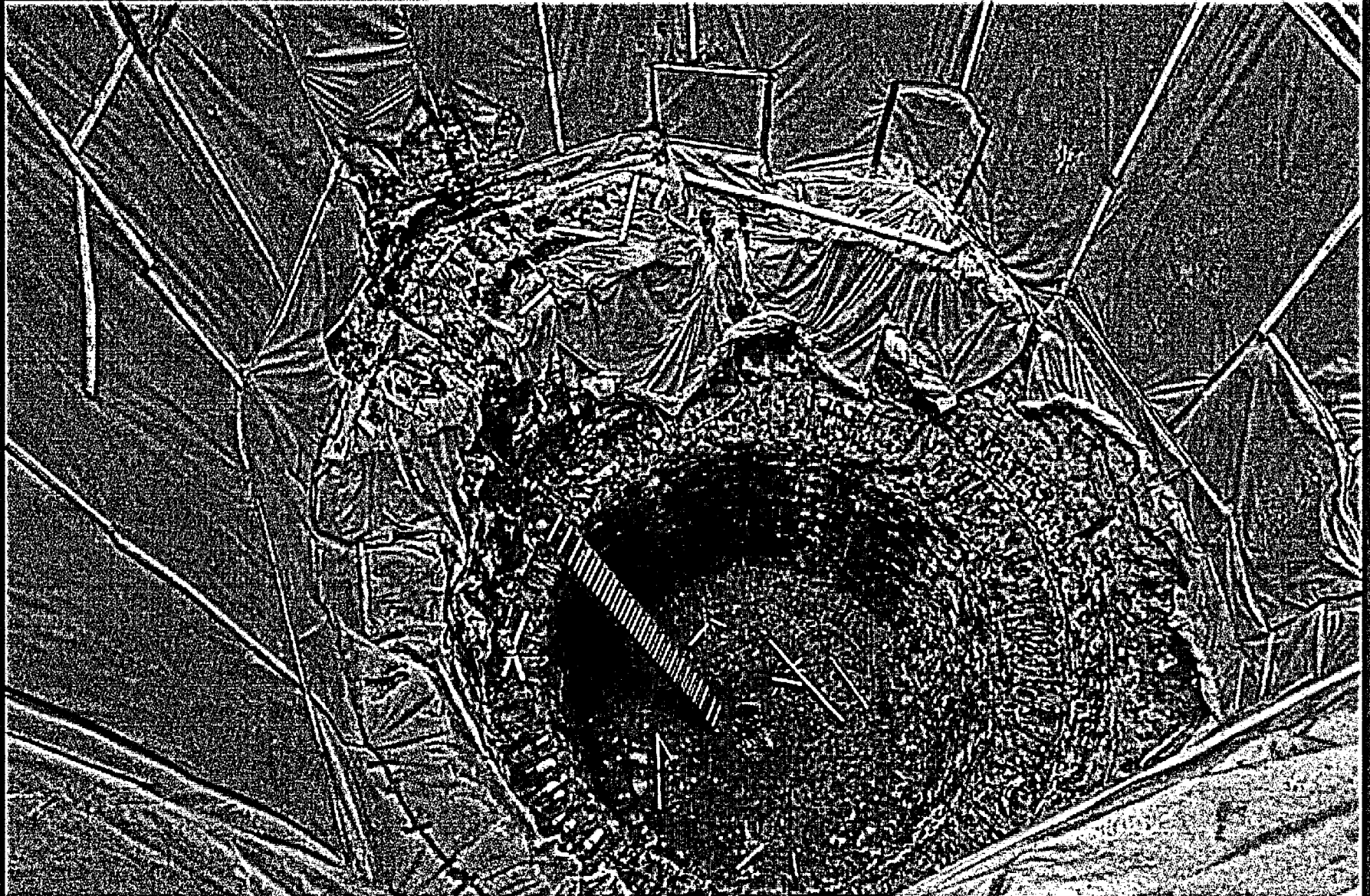
VC Shell Cuts Expose the Polar Crane



Containment Charging Floor 4/04



Reactor Cavity - April 2004



Warehouse Demolition - April 2004



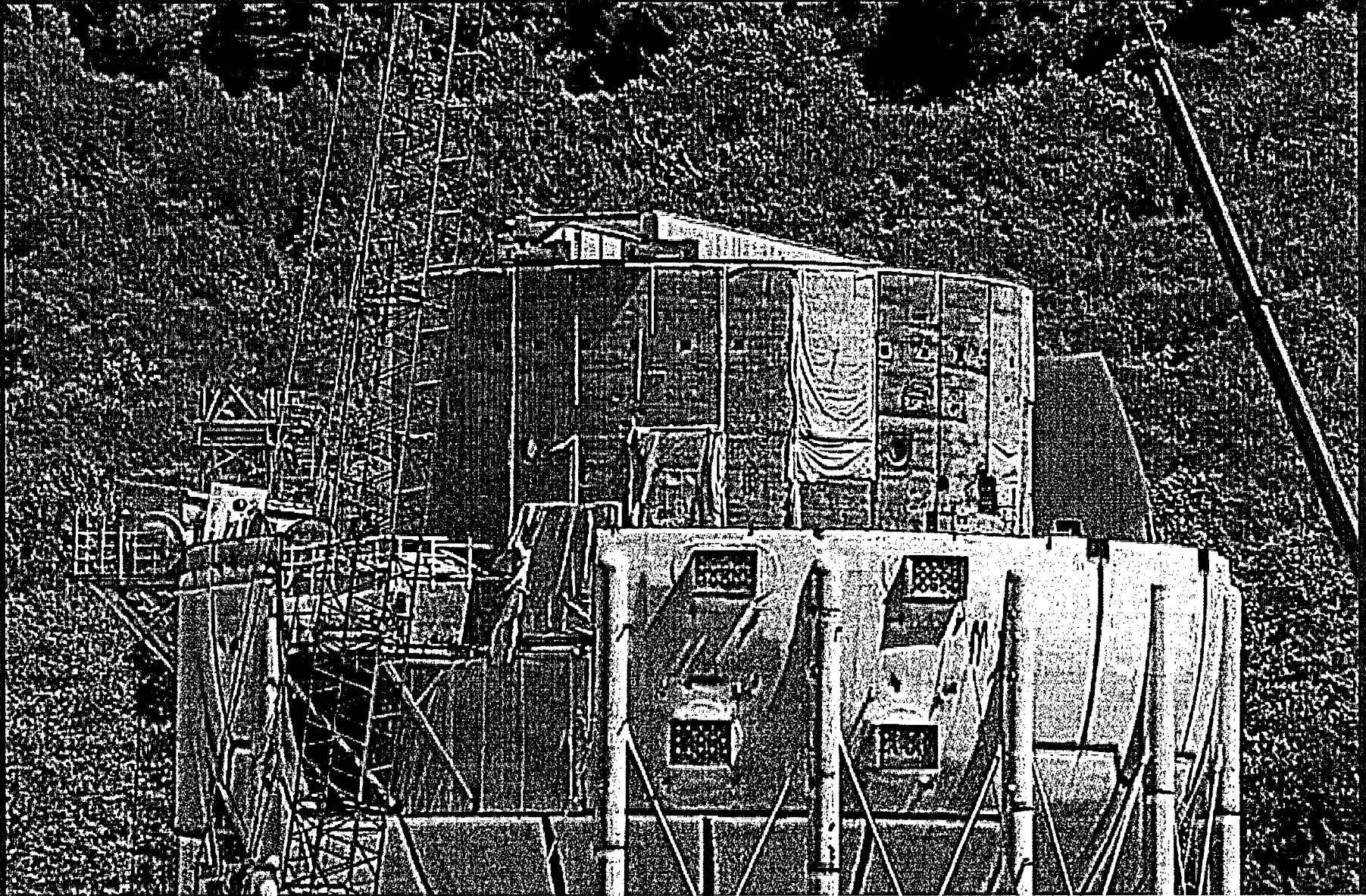
May 2004



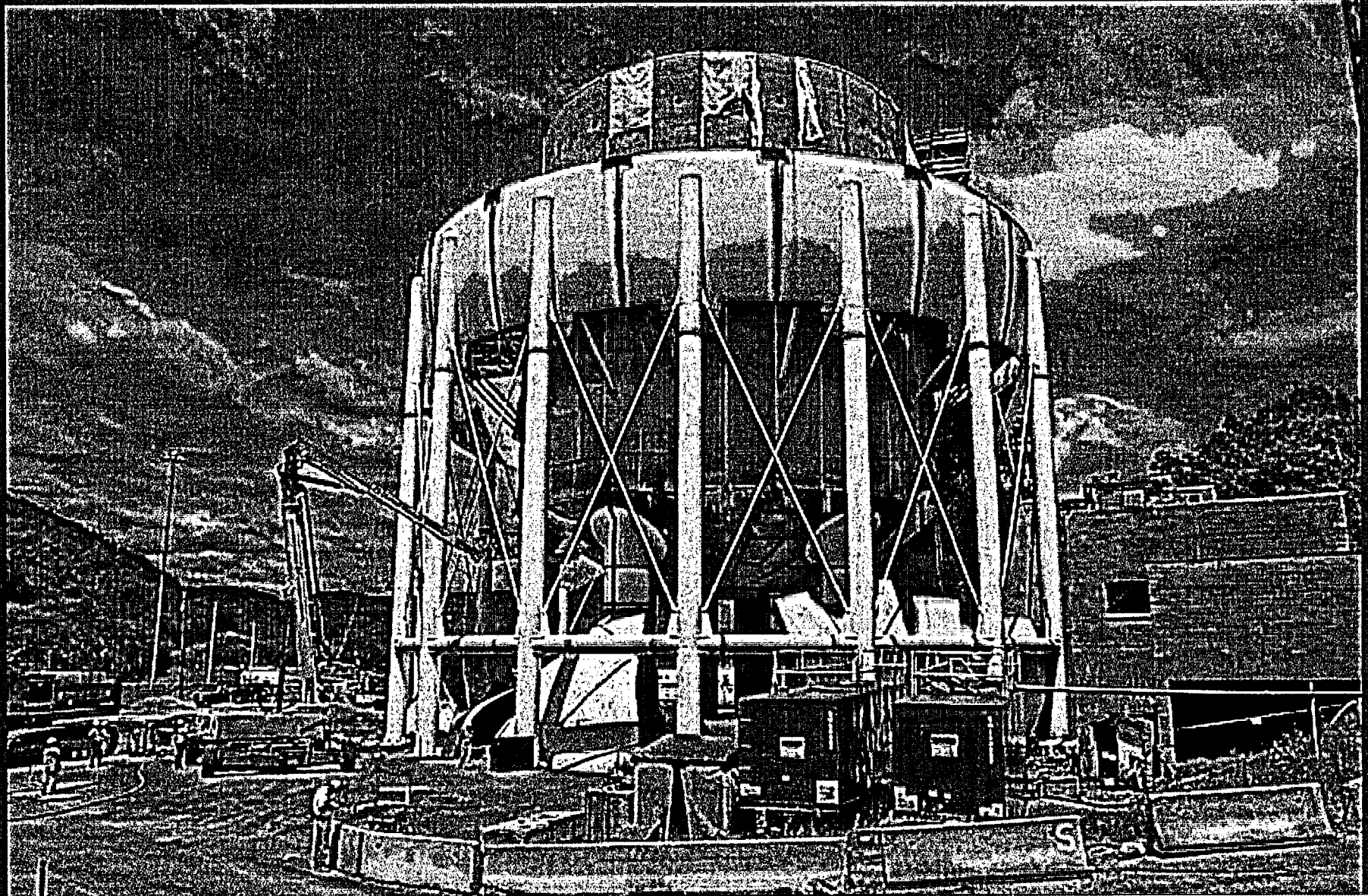
Plate Removal - May 2004



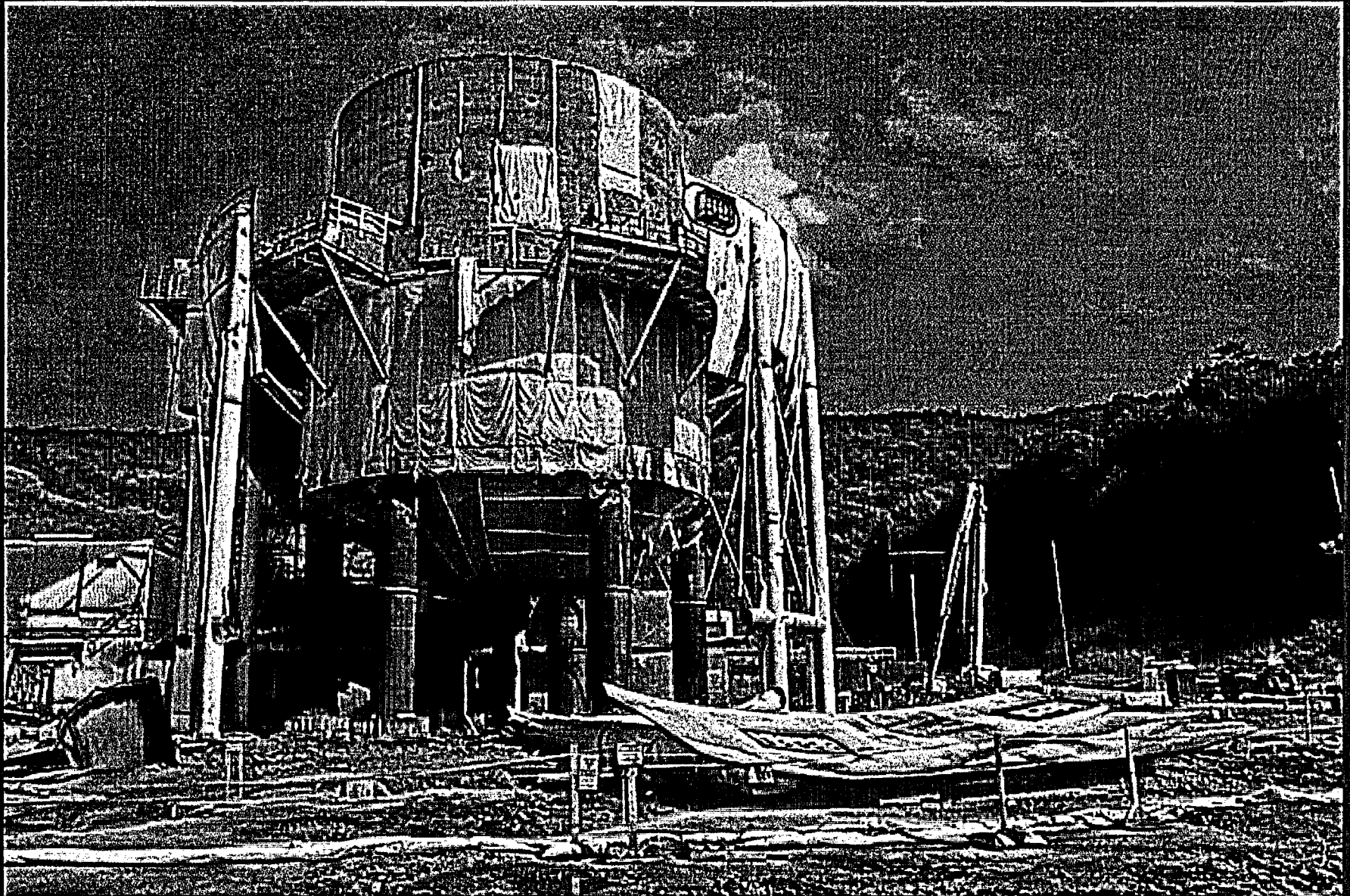
Polar Crane Removed - June 2004



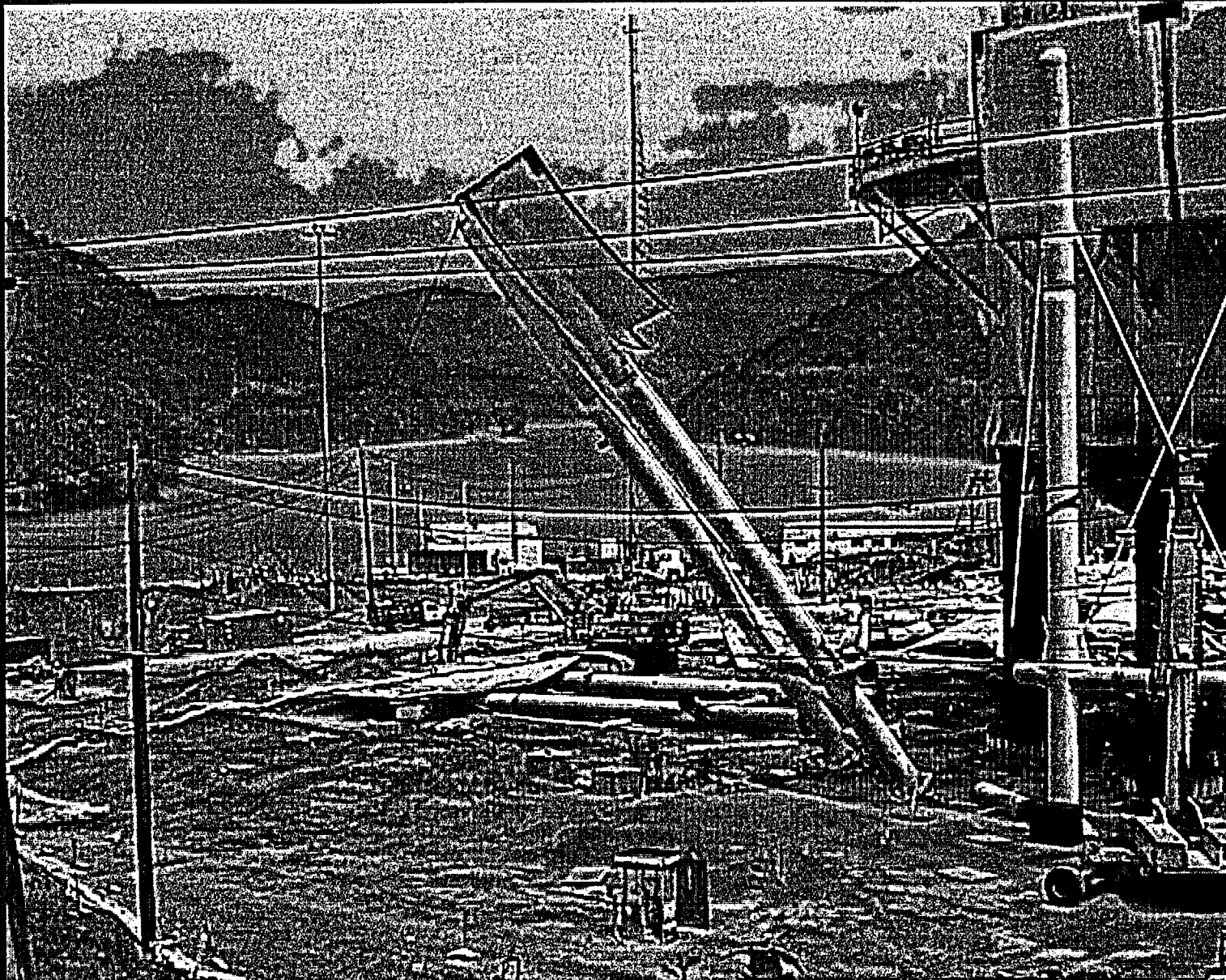
VC Equator Remaining - July 2004



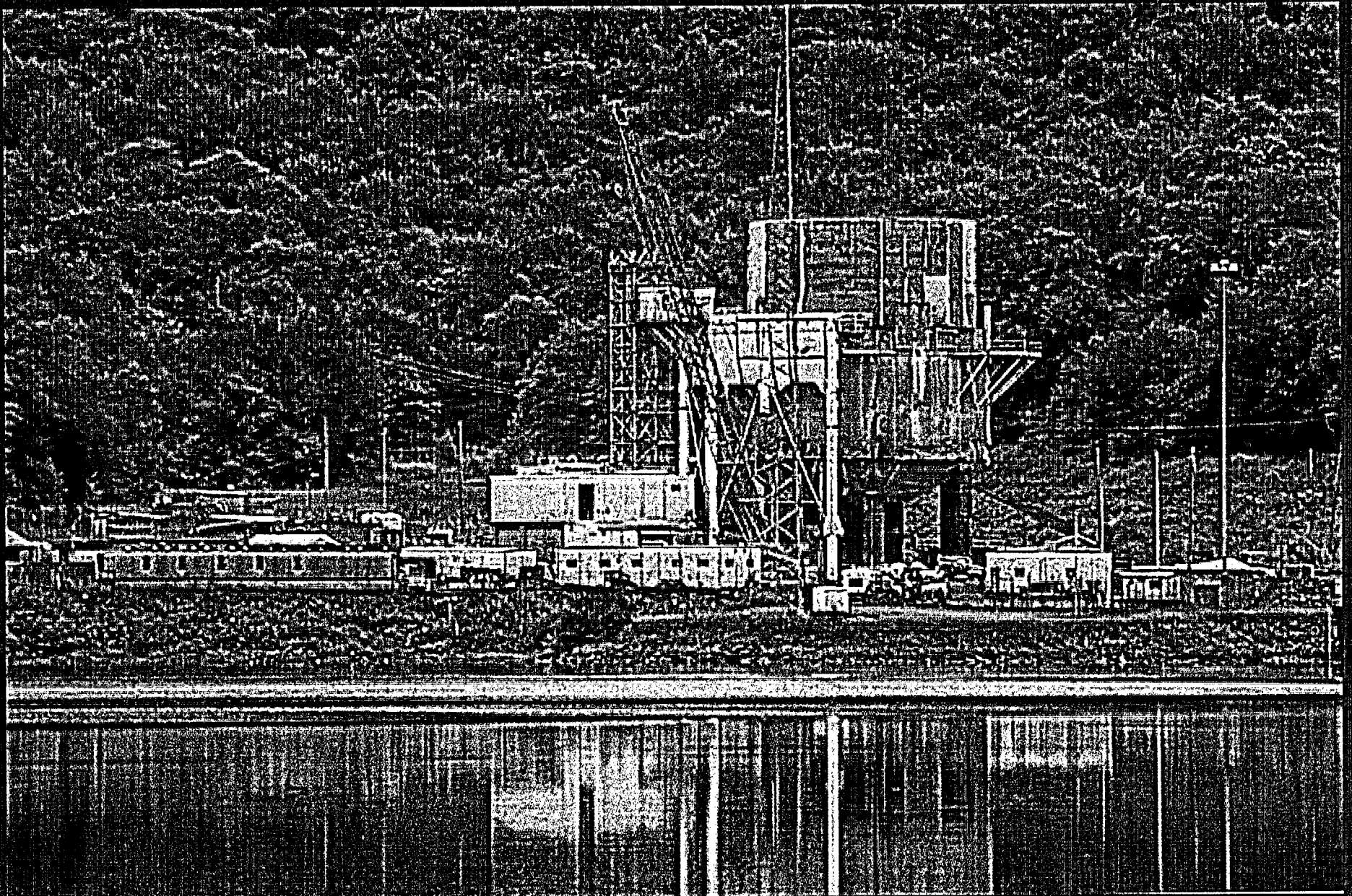
First Support Legs Cut - July 2004



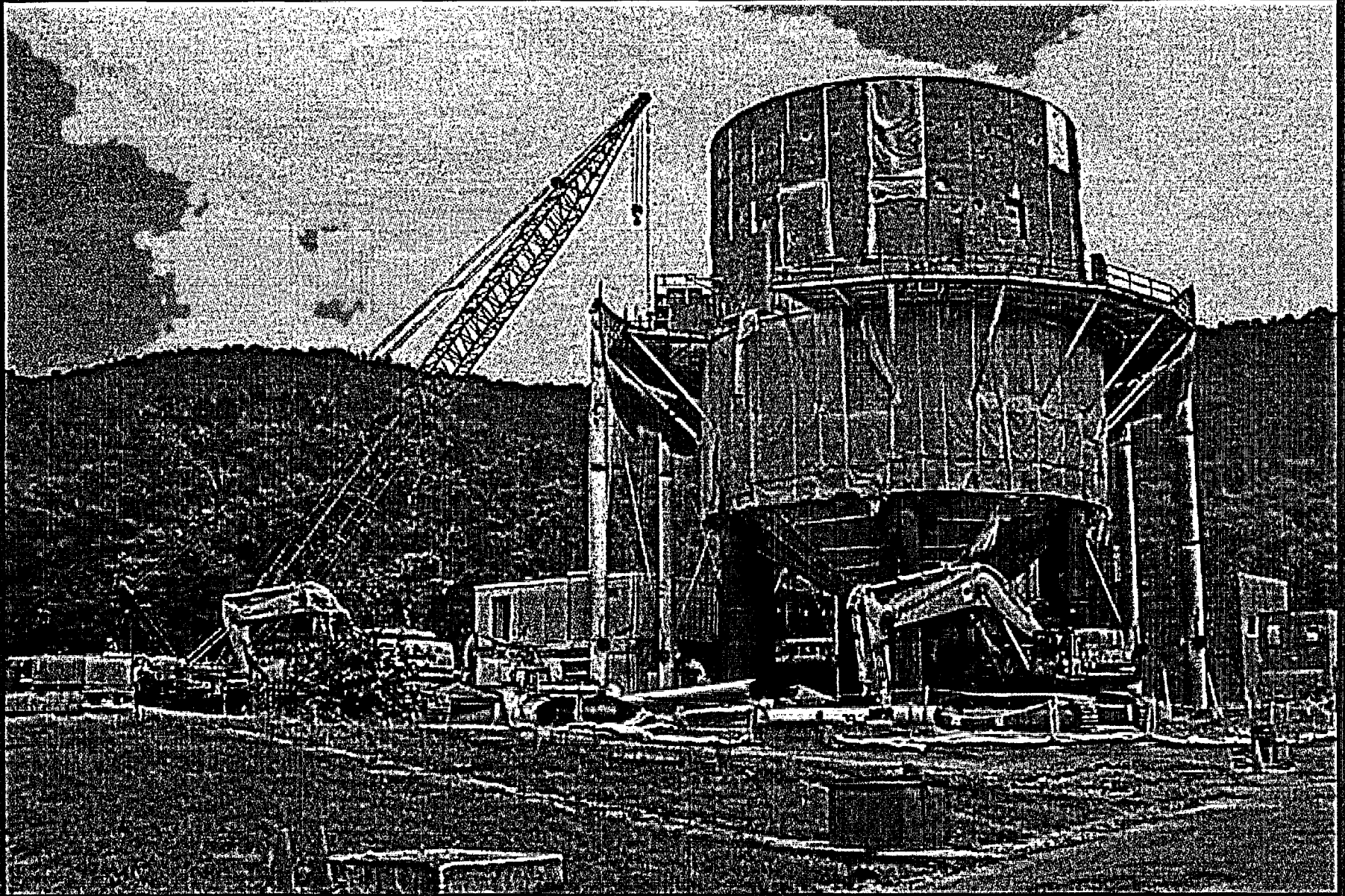
VC Equator Demolition - July 2004



View From Across Pond - August 2004



VC Equator Dismantled - August 2004



Projection of Yankee Rowe in Fall 2005



End State



Projected Schedule For Future NRC Approvals

- License Termination Plan approved – 1st Qtr. 2005
- ORISE confirmatory surveys: 9/04 – Fall 2005
- Approval of Partial Site Release of non-impacted and impacted land areas – 3/2005, 4th Qtr. 2005
- Approval of insurance exemption – late 2004
- Timely completion of ASLB proceeding