

September 29, 1994

LICENSEE: YANKEE ATOMIC ELECTRIC COMPANY

FACILITY: YANKEE NUCLEAR POWER STATION

SUBJECT: MEETING SUMMARY - REACTOR VESSEL REMOVAL PROPOSALS

On Tuesday, September 27, 1994, at the NRC headquarters in Rockville, Maryland, the staff met with Yankee Atomic personnel. The licensee requested this meeting in order to inform the staff as to their updated plans for future removal of the reactor vessel. Two removal alternatives had been provided in the previously submitted Decommissioning Plan for Yankee Rowe; the licensee provided more details at this meeting. One alternative is to cut up the vessel into segments small enough to be shipped to a low-level radioactive waste disposal site in existing casks licensed to transport Class B waste. No waste disposal site is available to Yankee Atomic at the present time. The second method would remove the intact vessel with insulation from the containment directly into a specially designed storage/shipping cask. The loaded cask could be retained onsite until a waste disposal facility is available. Use of this cask to ship the vessel to a disposal site would require prior issuance of a Transportation Certificate of Compliance from the NRC. The licensee is still in the process of engineering design, ALARA studies and cost estimating, and will not make a final choice until after the analyses are complete.

Enclosure 1 is a handout presented by Yankee at this meeting and provides details of each alternative, a work schedule, and diagrams of the proposed cask. A list of attendees is included as Enclosure 2.

Original signed by:  
Morton B. Fairtile, Senior Project Manager  
Non-Power Reactors and Decommissioning  
Project Directorate  
Division of Project Support  
Office of Nuclear Reactor Regulation

Docket No. 50-029

Enclosures:  
As stated

cc w/enclosures:  
See next page

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PMagnanelli  
9/29/94

ONDD: PM MBF  
MFairtile  
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9/29/94

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

September 29, 1994

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*Morton B. Fairtile*

Morton B. Fairtile, Senior Project Manager  
Non-Power Reactors and Decommissioning  
Project Directorate  
Division of Project Support  
Office of Nuclear Reactor Regulation

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See next page

Ms. Jane M. Grant

Yankee Rowe  
Docket No. 50-029

cc:

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Mr. David Rodham, Director  
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Massachusetts Civil Defense Agency  
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P. O. Box 1496  
Framingham, Massachusetts 01701-03173

**REACTOR PRESSURE**

**VESSEL REMOVAL**

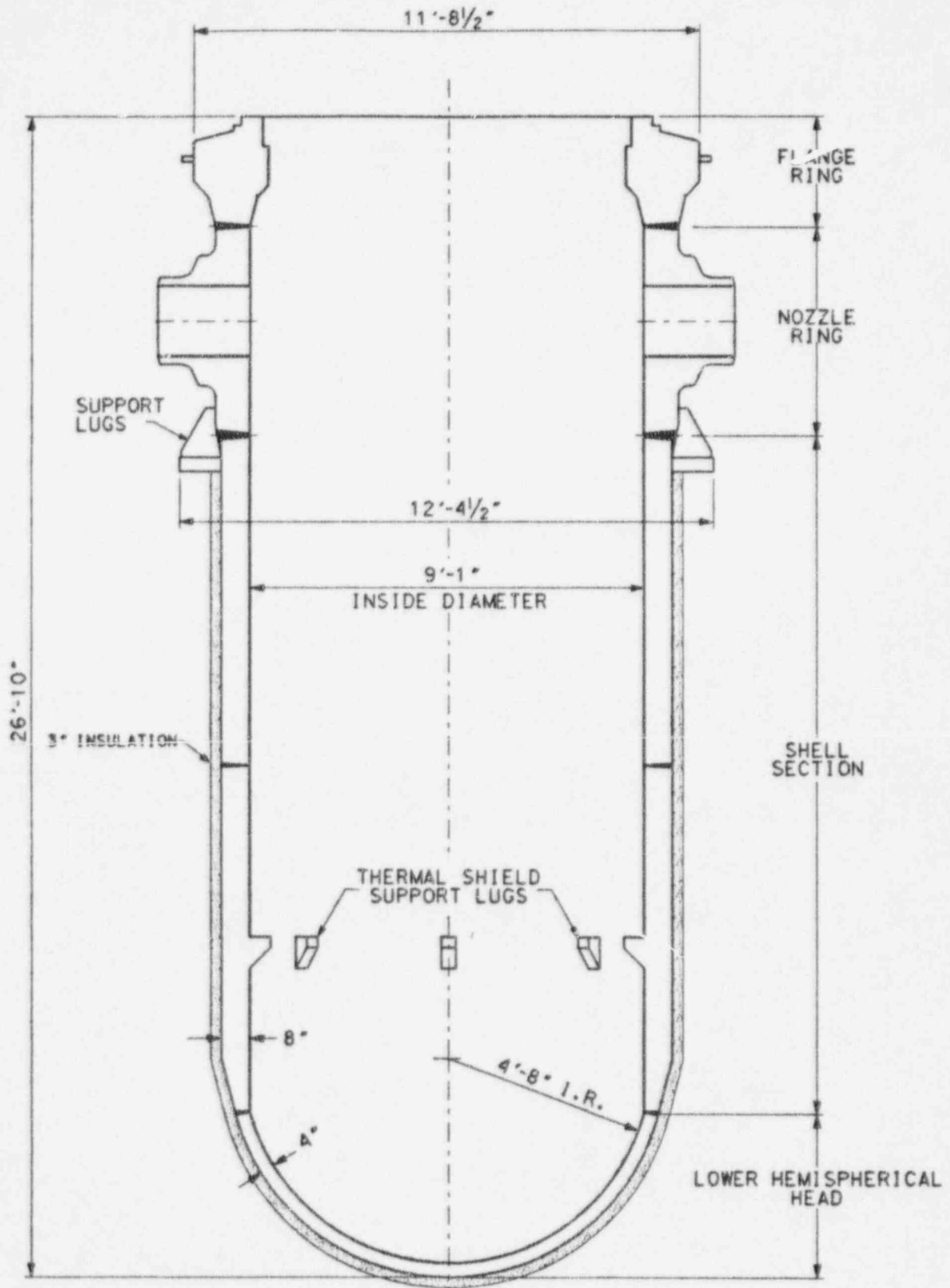
**AT YANKEE**

**SEPTEMBER 27, 1994**

- Overview of the Reactor Vessel
- Removal Options
- Preferred Option
- Engineering Activities for Preferred Option
- Schedule of Activities

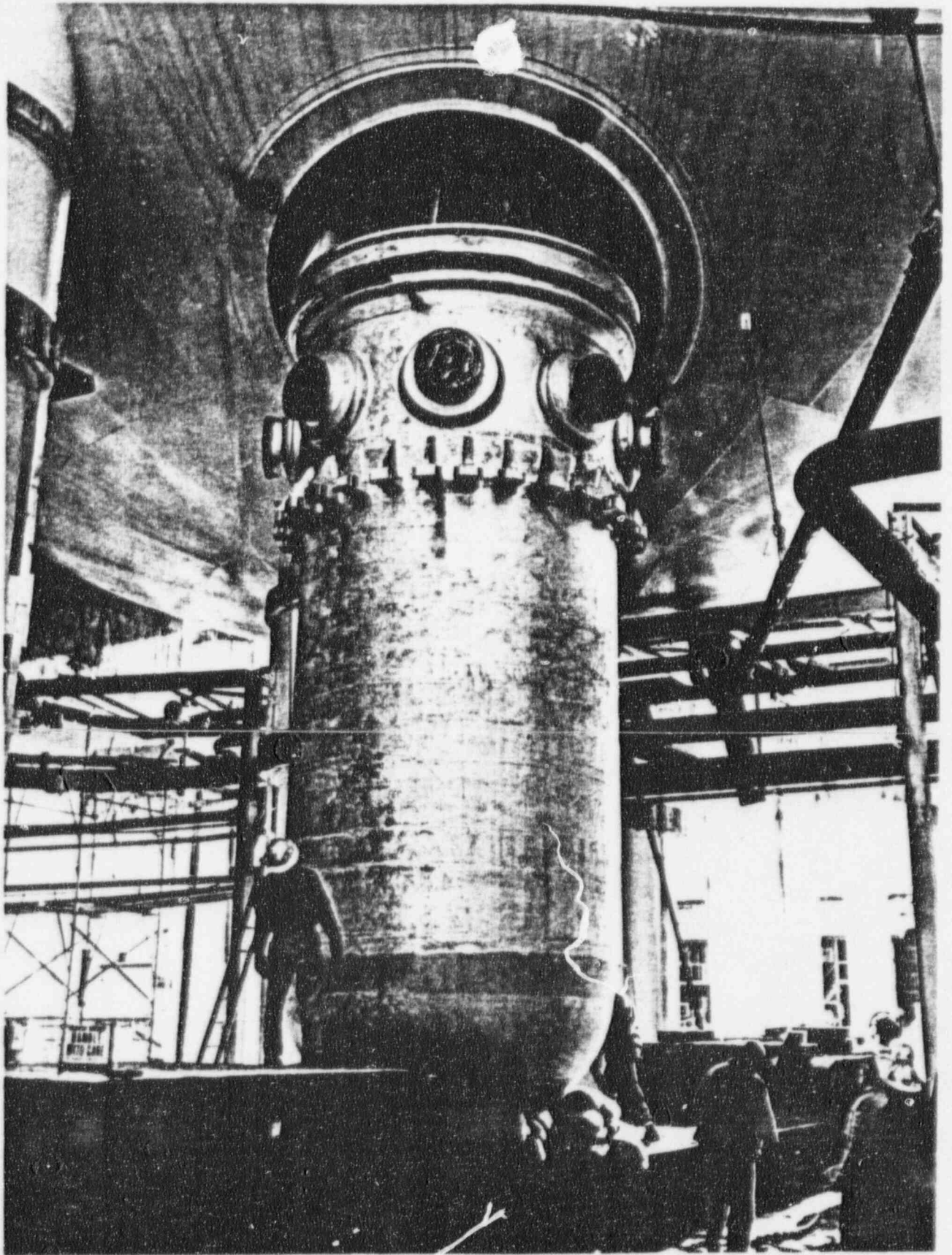
**NOTES:**

1. APPROXIMATE DRY WEIGHT: 150 TONS
2. REACTOR HEAD NOT SHOWN.



REACTOR PRESSURE VESSEL

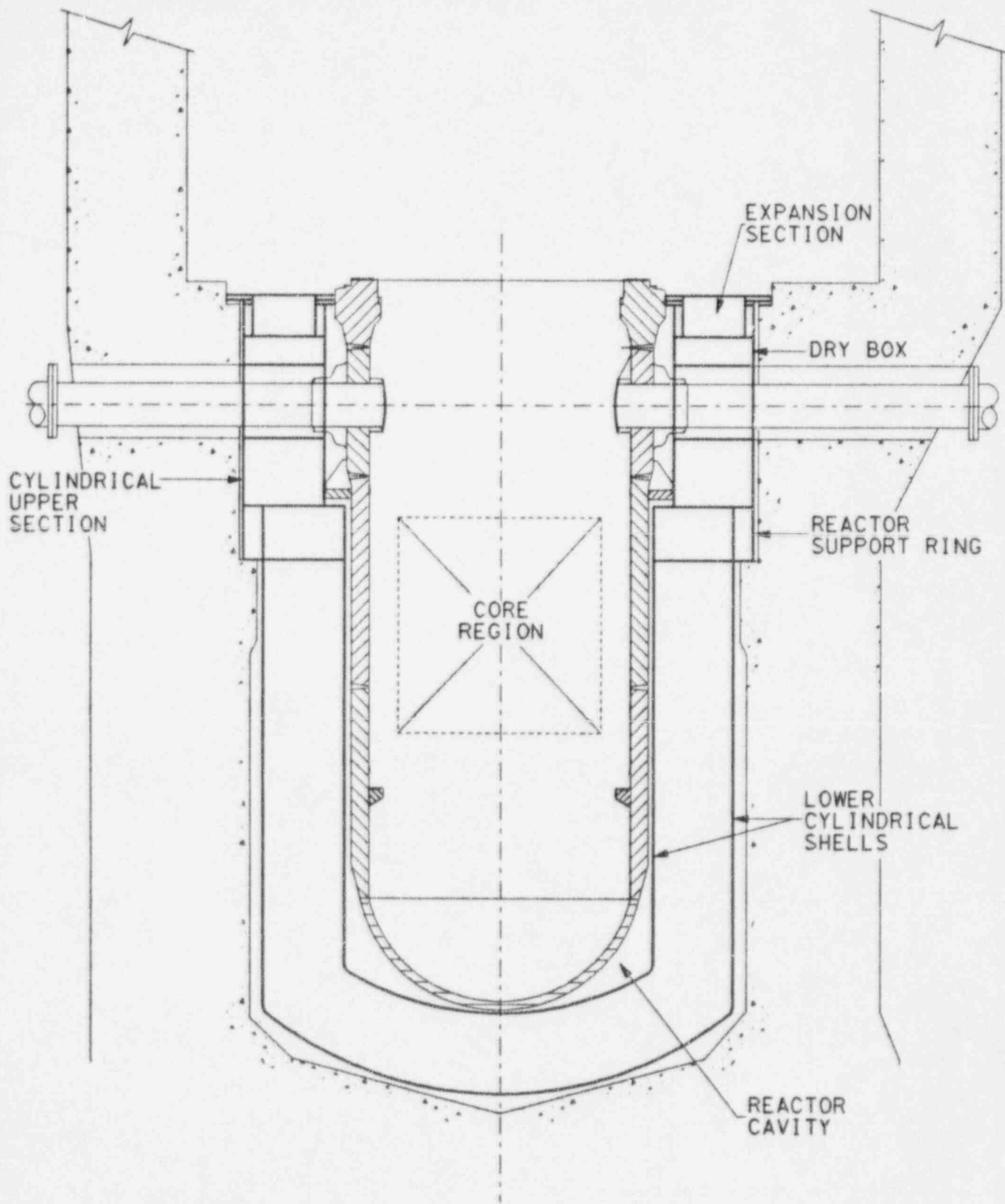
FIGURE 2.0-1



ROWE, MASSACHUSETTS  
FEBRUARY 8, 1942

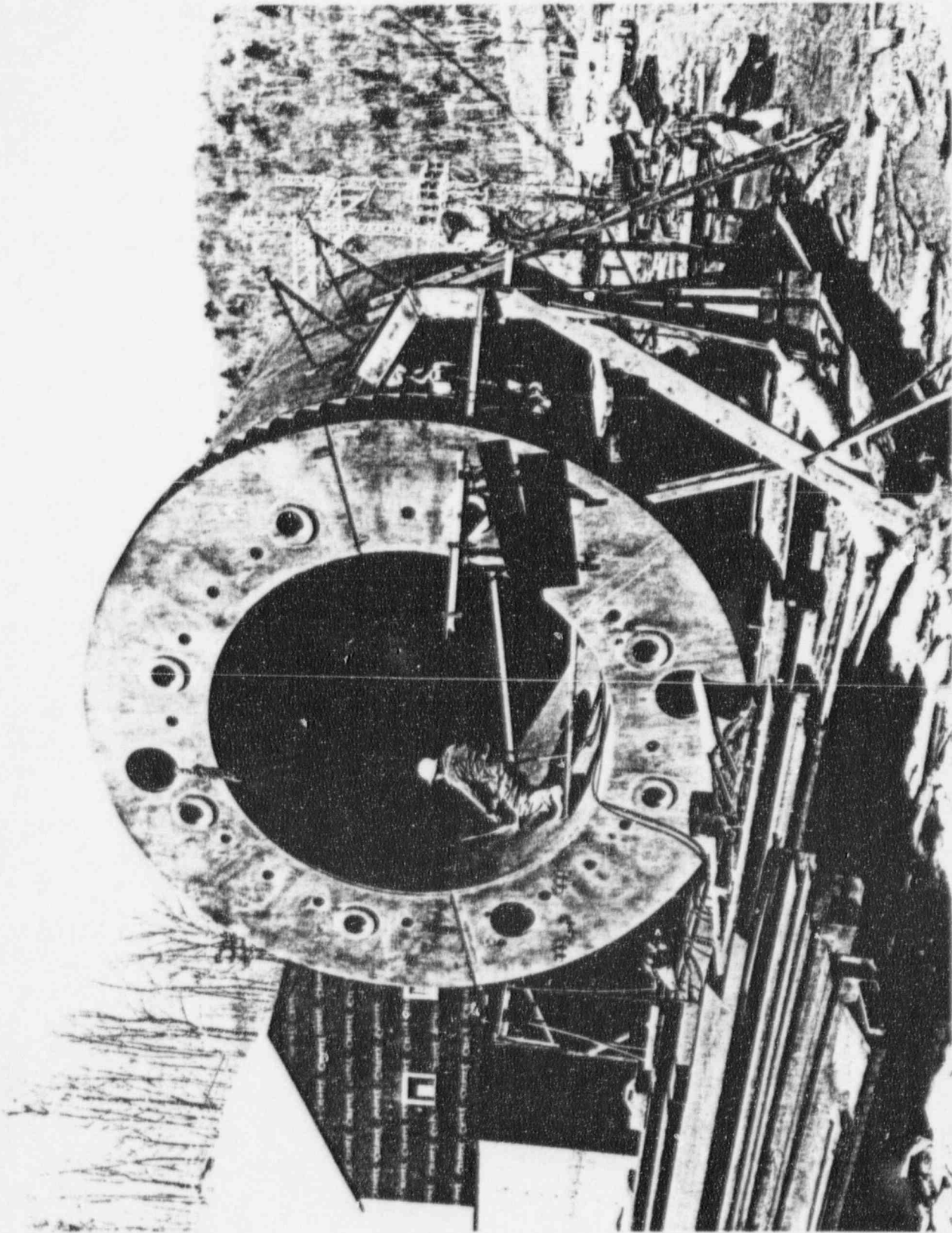
#55767

J.O. #9896 YANKEE ATOMIC ELECTRIC COMPANY  
UNLOADING REACTOR



NEUTRON SHIELD TANK

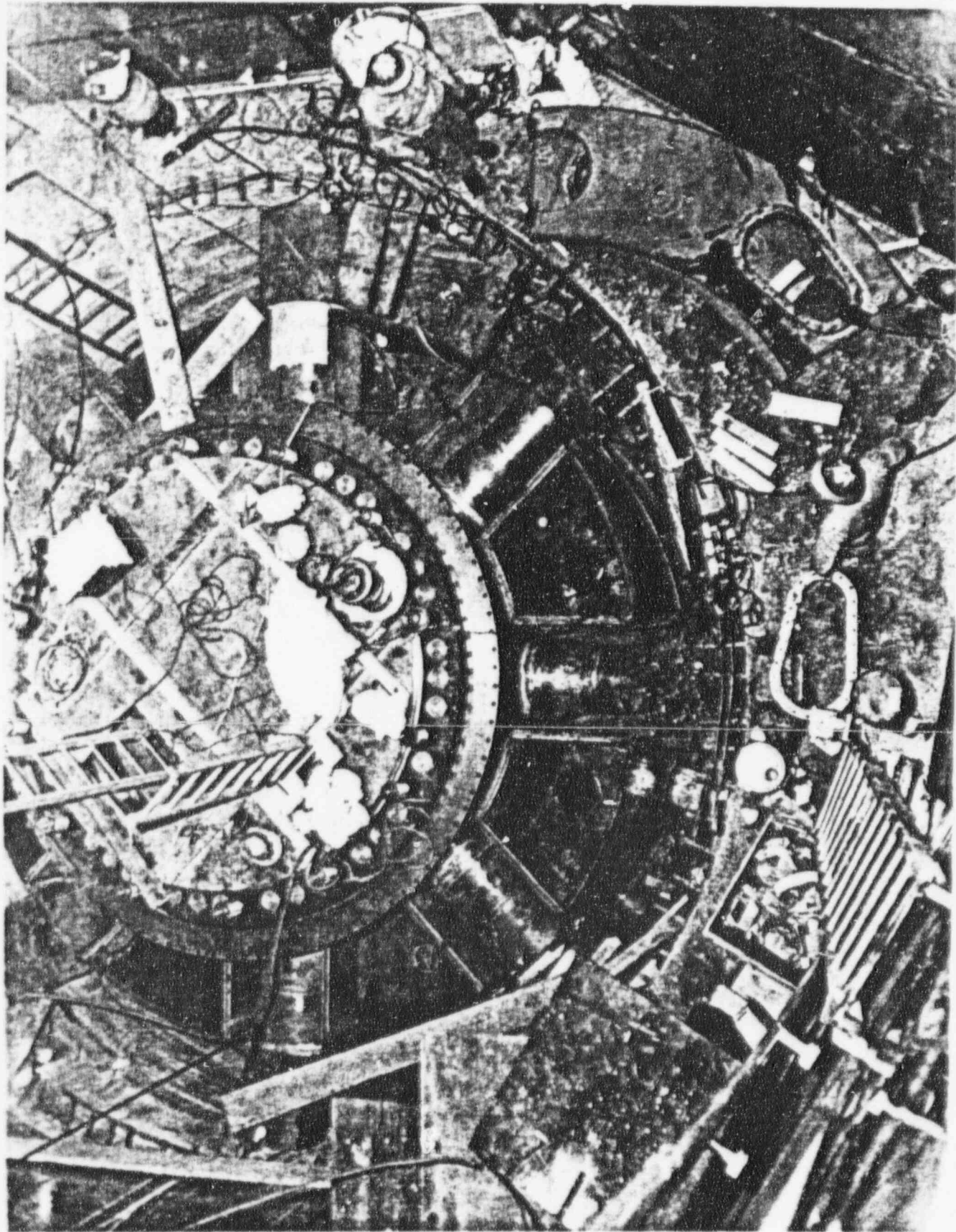
FIGURE 2.0-2



J.O. #9699 YANKEE ATOMIC ELECTRIC COMPANY  
NEUTRON SHIELD TANK ASSEMBLY

#55411

ROME, MASSACHUSETTS  
APRIL 3, 1959



J.O. #9699 YANKEE ATOMIC ELECTRIC COMPANY  
SHIELD TANK EJECTION AT NOZZLE SECTION  
OF REACTOR

#55804

FOWLE, MASSACHUSETTS  
MARCH 15, 1960

# REACTOR PRESSURE VESSEL (RPV) REMOVAL OPTIONS

## SEGMENTATION

- Performed Underwater
- Flooded Reactor Cavity
- Requires Upper Neutron Shield Tank and Some Main Coolant Piping Removal
- Four Major Sections
  - Flange Ring
  - Nozzle Ring - Further Segmented
  - Hemispherical Head
  - 12 Foot Core Region Cylinder - Further Segmented
- Segmentation via Mechanical Cutting and Metal Disintegration Machining
- Standard Shipping Containers
- Asbestos Containing Insulation Increases Project Difficulty

**REACTOR PRESSURE VESSEL (RPV)  
REMOVAL OPTIONS  
(Continued)**

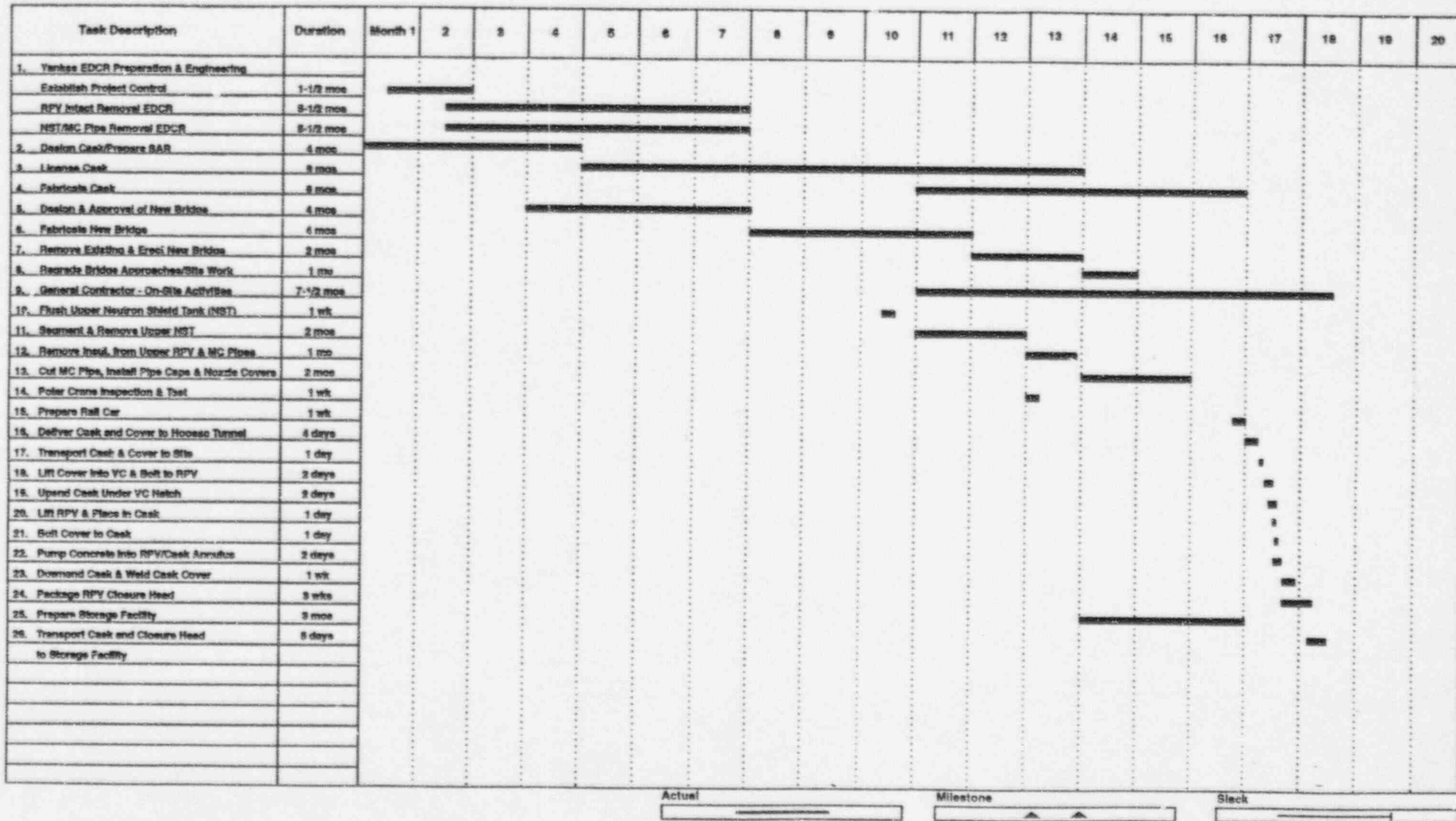
**INTACT REMOVAL**

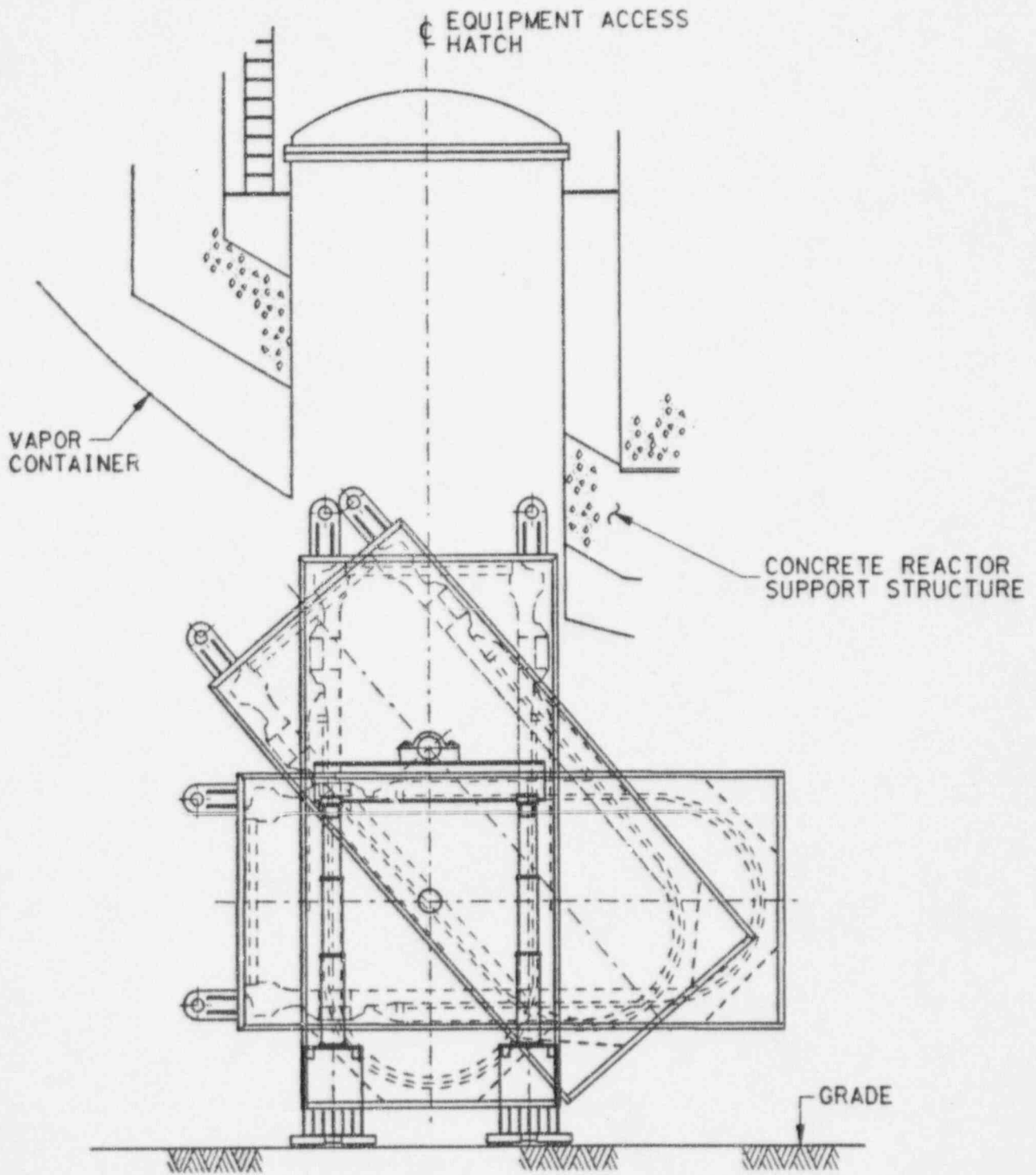
- Specific Activity of Vessel less Than 10CFR71 LSA Material Limits
- Transport Requires Certificate of Compliance for Exclusive Use Shipping Cask and Exemption From Accident Design Conditions
- Requires Upper Neutron Shield Tank and Some Main Coolant Piping Removal
- Uses Existing Polar Crane for Lift
- Fabricated Cask Positioned Under Equipment Hatch
- Nozzle and Flange Covers Welded
- RPV Cask Cover Bolted to RPV Flange
- RPV Lifted and Lowered into Cask
- Concrete Injected into Vessel and Cask/Vessel Annulus
- Requires Sherman Dam Bridge Replacement for Transport

## **INTACT REMOVAL IS PREFERRED OPTION**

- **Asbestos Removal Below Vessel Nozzles Not Required for Intact Removal**
- **Intact Removal is Lowest Dose Option**
- **Intact Removal Does Not Require Extensive Water Cleanup Systems**
- **Intact Removal Will Generate Less Dry Active Waste, No Liquid Waste and No Filter or Ion Exchange Media**
- **Intact Removal Uses Existing Plant Equipment Without Significant Modification**
- **Intact Removal is Least Cost Option**

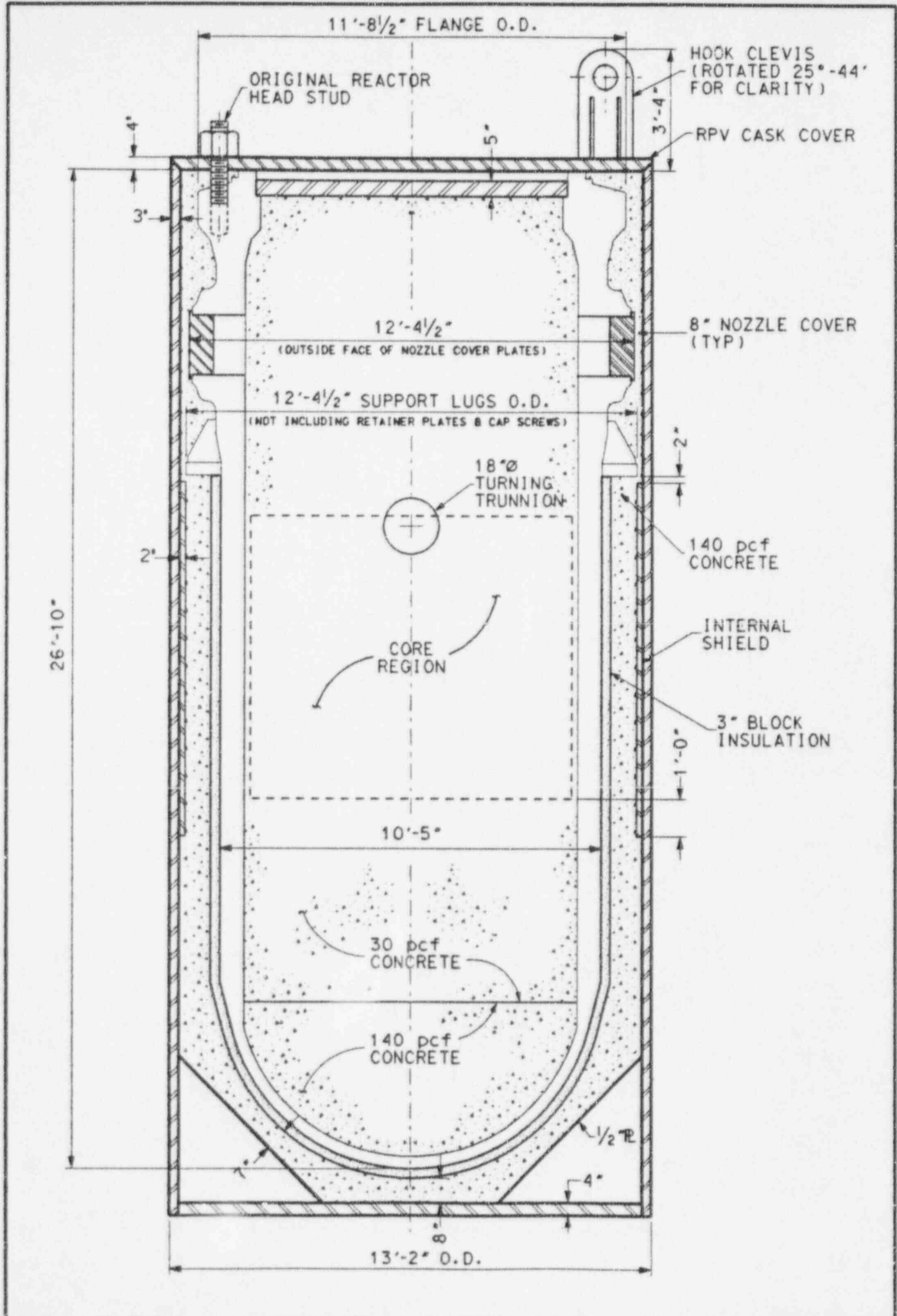
### SCHEDULE FOR INTACT RPV REMOVAL AND STORAGE

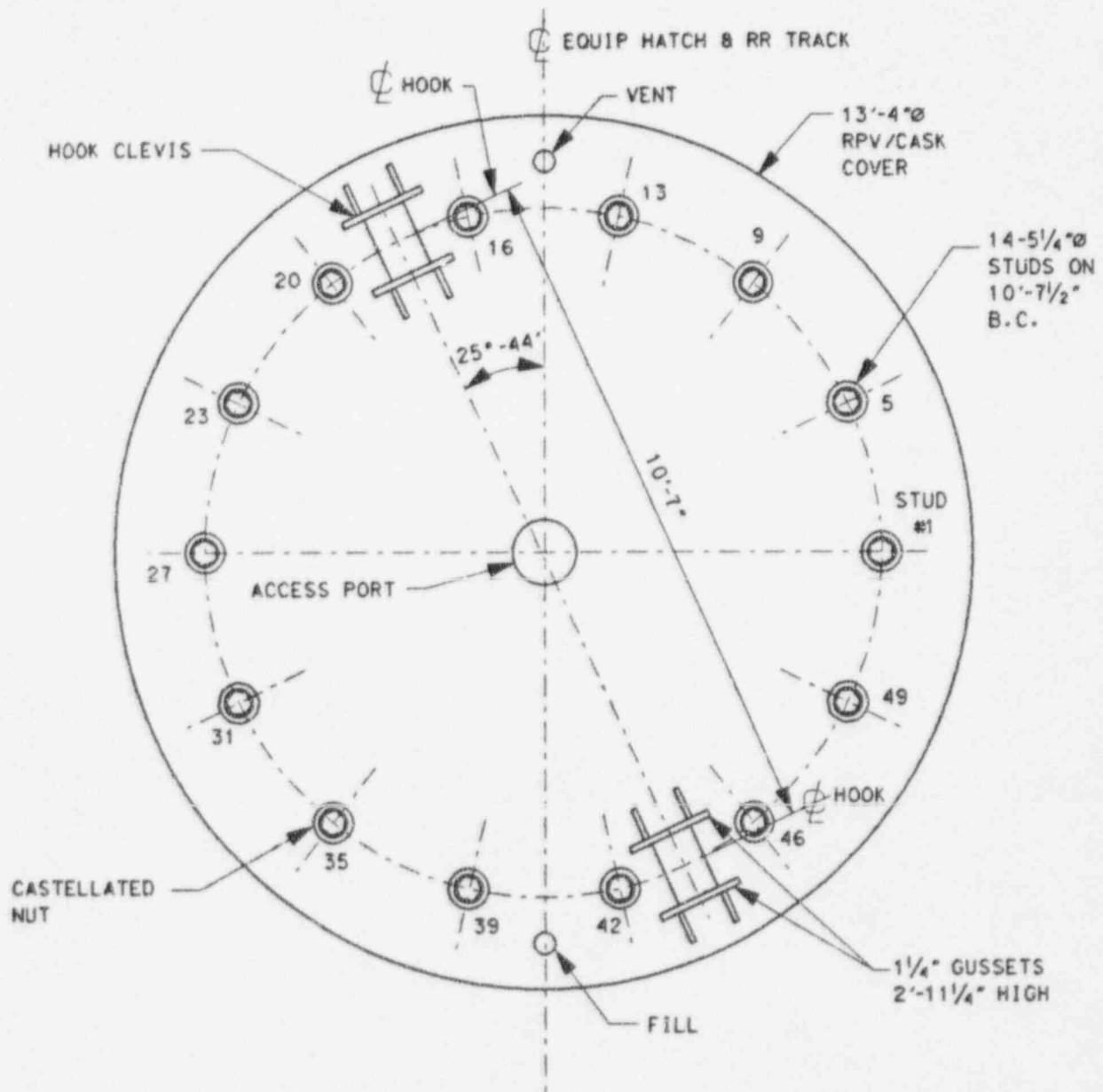
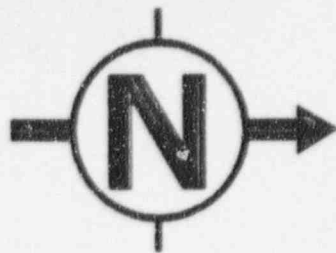




ELEVATION LOOKING SOUTH

SCALE:  $\frac{1}{8}'' = 1'-0''$





EXCLUSIVE USE SHIPPING CASK - COVER

FIGURE 3.3-2

September 27, 1994

## YANKEE ATOMIC ENERGY CO. MEETING - ROCKVILLE, MD.

<u>NAME</u>	<u>ORGANIZATION</u>
Mort Fairtile	NRC/NRR
Russell A. Mellor	YAEC/Project
Jay K. Thayer	YAEC/V.P. MGR. of OPS.
Malcolm Knapp	DWM/NMSS/NRC
John Austin	DWM/NMSS/NRC
Bob Bernero	NMSS
Sy Weiss	NRR
Andrew C. Kadak	Yankee Atomic
Jack D. Parrott	NRC/NMSS
Noel F. Dudley	ACRS
James H. Joyner	NRC/RI
Paul Gunter	NIRS
W. T. Russell	NRR