



H. B. Robinson Steam Electric Plant, Unit No. 2

Meeting with NRC to Discuss Refueling Outage 20

March 26, 2001



CP&L

A Progress Energy Company

Enclosure 2

Agenda

- Introduction.....John Moyer
- Schedule Overview.....Tim Cleary
- Outage Goals.....Tim Cleary
- Major Activities.....Tim Cleary
- Reactor Pressure Vessel
Inservice Inspection.....Dan Stoddard
- Closing Remarks.....John Moyer

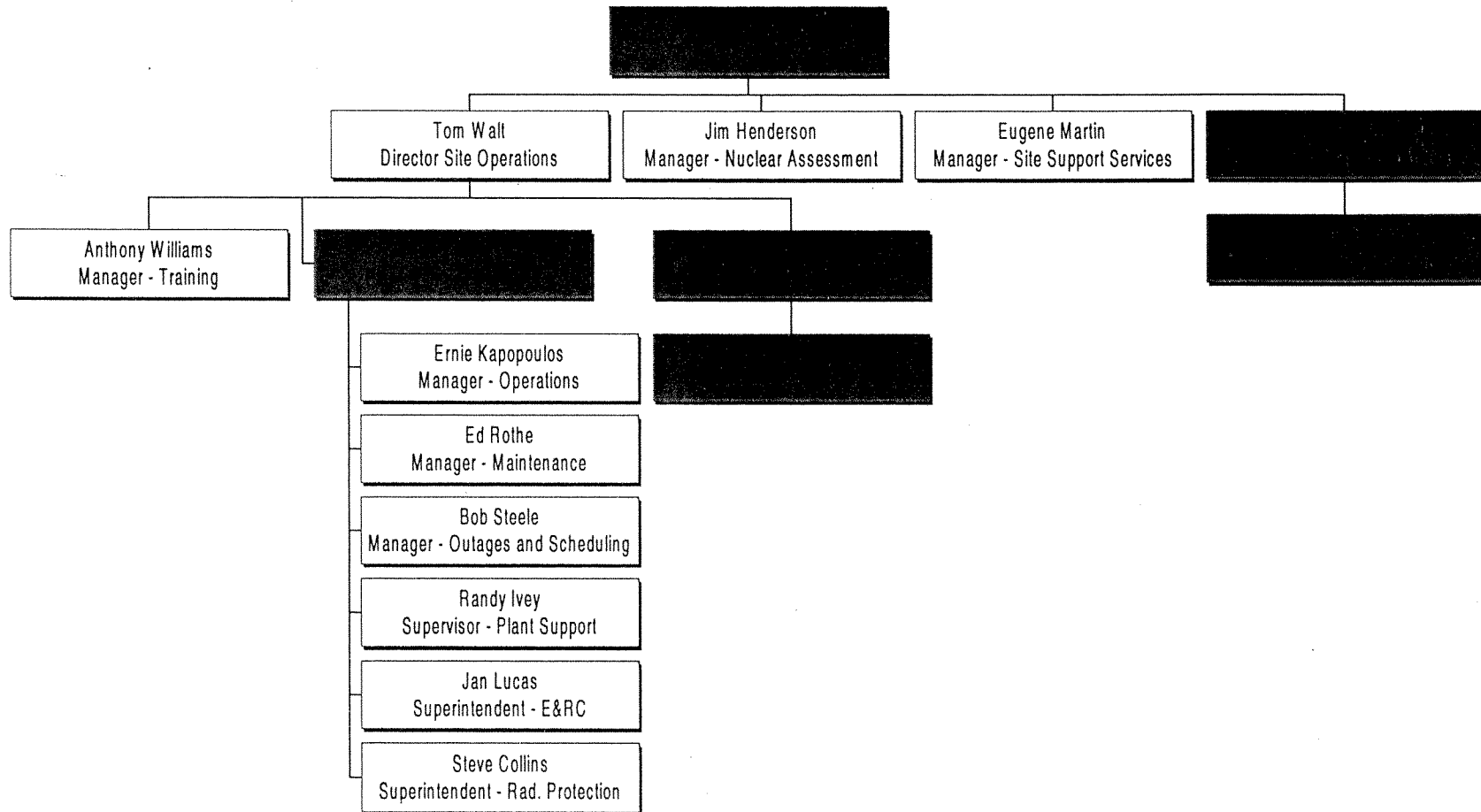
Introduction



- Purpose

- ▶ Introduce key Robinson Nuclear Plant (RNP) department managers
- ▶ Provide year 2000 results
- ▶ To discuss key Refueling Outage 20 (RO-20) activities, including Reactor Pressure Vessel (RPV) Inservice Inspection (ISI)


H. B. Robinson Plant, Unit No. 2 Key Department Managers



Year 2000 Results



| | |
|-------------------------------------|----------------|
| Capacity Factor | 103.96% |
| Forced Outage Rate | 0.38% |
| Radiation Dose | 8.4 Rem |
| Personnel Contaminations | 5 |
| Maintenance Backlog | 176 |



Tim Cleary

Plant General Manager

Schedule Overview

- Current RO-20 Critical Path is ~34 Days

- Major Milestones

| | |
|---------------------|------|
| ▶ Unit Off Line | 4/7 |
| ▶ Mode 5 | 4/7 |
| ▶ Core Offloaded | 4/16 |
| ▶ RPV ISI Completed | 4/22 |
| ▶ Core Reloaded | 4/30 |
| ▶ Mode 4 | 5/7 |
| ▶ Unit On Line | 5/10 |
| ▶ 100% Power | 5/14 |



Outage Goals

| | |
|--------------------------|----------------|
| Human Performance Events | ≤ 2 Events |
| OSHA Recordable Injuries | ≤ 4 Events |
| Radiation Exposure | ≤ 100 Rem |
| Duration (Business Plan) | ≤ 37 Days |
| Budget (Business Plan) | ≤ \$18 Million |

Major Activities



- Steam Generator Inspections
- Reactor Protection Relay Replacements
- Turbine Project
- Component Cooling Water (CCW) Heat Exchanger Service Water Piping Upgrade
- RPV Inservice Inspection

Major Activities (Cont'd)

- Fuel Transfer System Upgrade
- 1 Reactor Coolant Pump (RCP) Motor, 2 RCP Seal Replacements
- RCP Oil Level Monitoring Enhancement
- Condenser Tube Leak Repair
- Secondary Piping Replacement (Flow Accelerated Corrosion Program)
- Rod Position Indication Upgrade

Major Activities (Cont'd)

- Steam Generator Inspections
 - ▶ Eddy current examination (B and C)
 - ▶ Sludge lancing (A, B, and C)
 - ◆ In-bundle using “CECIL” for collar scale removal
 - ▶ Tube support plate visual inspection

Major Activities (Cont'd)

- Reactor Protection Relay Replacements
 - ▶ Replacements based on operating experience and aging management concerns (297 relays)
 - ◆ No safety or operability concerns
 - ▶ Dedicated team of CP&L Technicians
 - ◆ Emphasis on human performance
 - ◆ Shop expectations established
 - ◆ Utilizing RO-19 lessons learned
 - ▶ Tested for operability prior to Mode 4

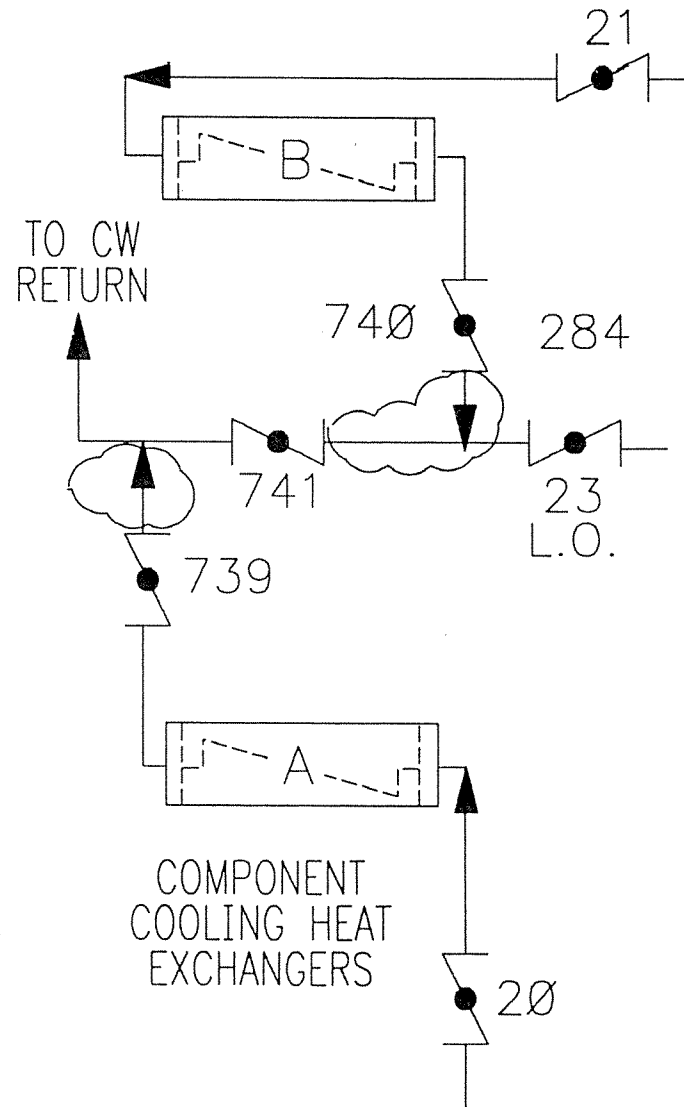


Major Activities (Cont'd)



- Turbine Project
 - ▶ Low pressure turbine inspections
 - ▶ Lube oil cooler cleaning
 - ▶ Turbine EH oil system upgrade
 - ◆ Fatigue failure in June 2000 resulted in non-isolable leak
 - ▼ Manual reactor trip initiated by Operators
 - ▼ Only Licensee Event Report in 2000
 - ◆ Replacing control piping, fittings, and tubing

Simplified Diagram of CCW Heat Exchanger Service Water Piping Upgrade



Dan Stoddard

Manager - Engineering

RPV Inservice Inspection



- Final Period of Ten-Year ISI Interval
- Significant RPV Inspections Scheduled for RO-20
- Incorporating Lessons Learned from V.C. Summer

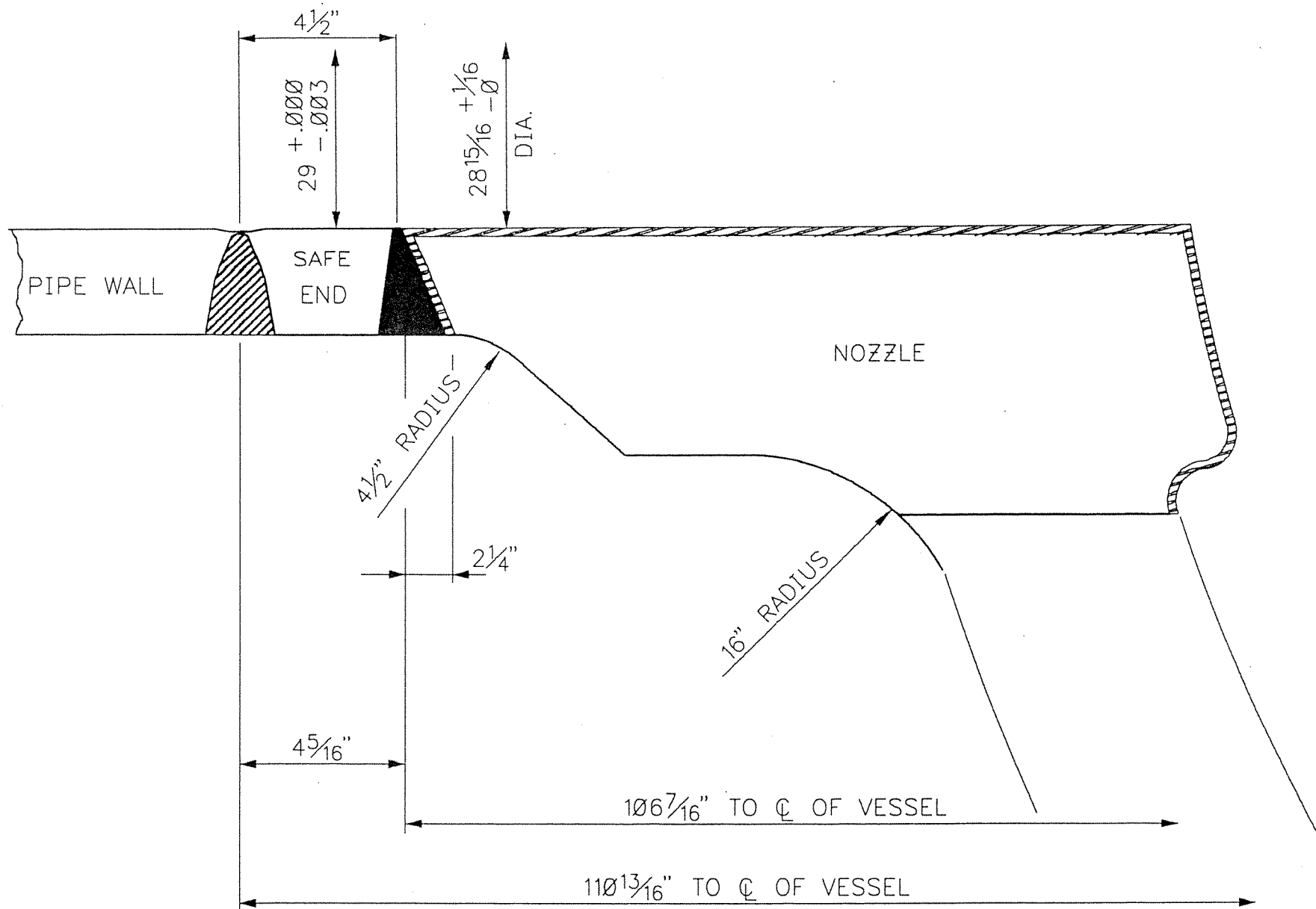
V.C. Summer Lessons Learned

- Team of Plant and Corporate Personnel Formed to Address Implications for Robinson
 - ▶ Materials issues
 - ▶ Inspection techniques
 - ▶ Industry issues
 - ▶ Operational considerations and contingencies

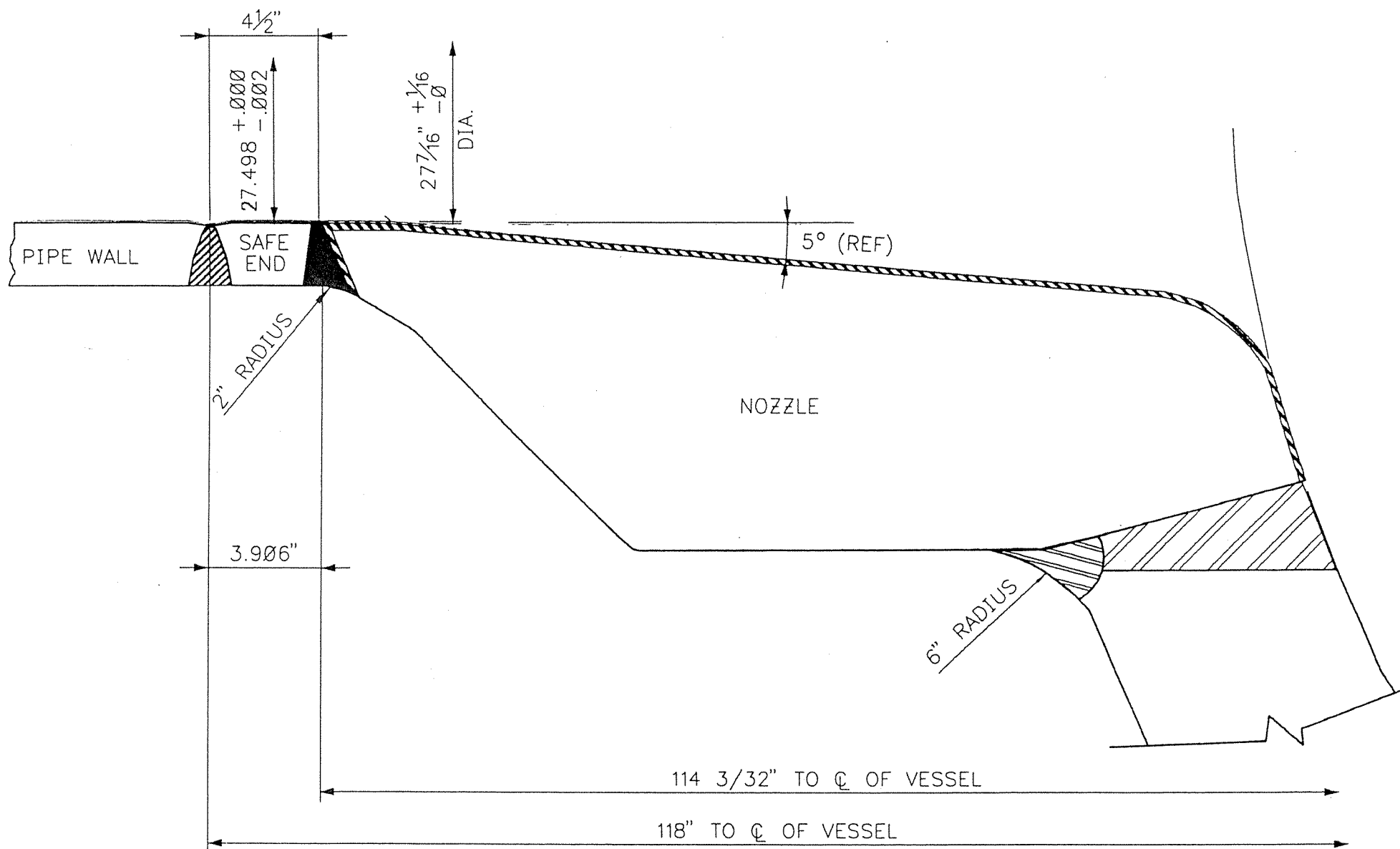
V.C. Summer Lessons Learned (Cont'd)

- Materials Issues

- ▶ Robinson vessel has stainless “safe-ends” welded to reactor vessel nozzles
- ▶ Nozzle-to-safe ends were shop welded and heat treated with vessel; safe end-to-piping field weld is stainless-to-stainless
 - ◆ Reduced susceptibility to similar failure
- ▶ Inconel alloys used in reactor coolant system (RCS) have been identified for awareness during walkdowns/inspections



HOT LEG NOZZLE ASSEMBLY



COLD LEG NOZZLE ASSEMBLY

V.C. Summer Lessons Learned (Cont'd)

- Inspection Techniques
 - ▶ Reviewed previous inspection history
 - ▶ Evaluated weld accessibility
 - ▶ Worked with industry (PWR Materials Reliability Program) to identify best available techniques
 - ◆ Ultrasonic testing (UT) determined to be the best available and only viable, qualified volumetric inspection technique

V.C. Summer Lessons Learned (Cont'd)

- Inspection Techniques (Cont'd)
 - Observed qualification of vendor UT technique
 - ◆ Electric Power Research Institute (EPRI) concurrence using performance demonstration
 - ◆ Identified and compensated for areas of potential lift-off
 - ◆ Optimized transducers for maximum coverage
 - Providing enhanced guidance for boric acid walkdowns/inspections
 - Developed bounding flaw analysis

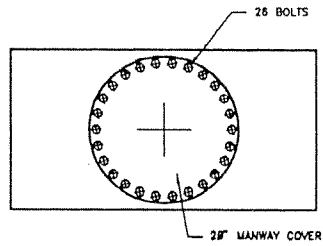
V.C. Summer Lessons Learned (Cont'd)



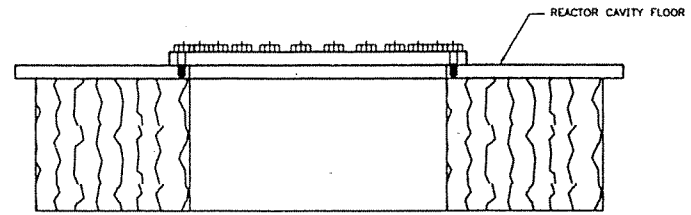
- Inspection Techniques (Cont'd)

- Inspection Plan

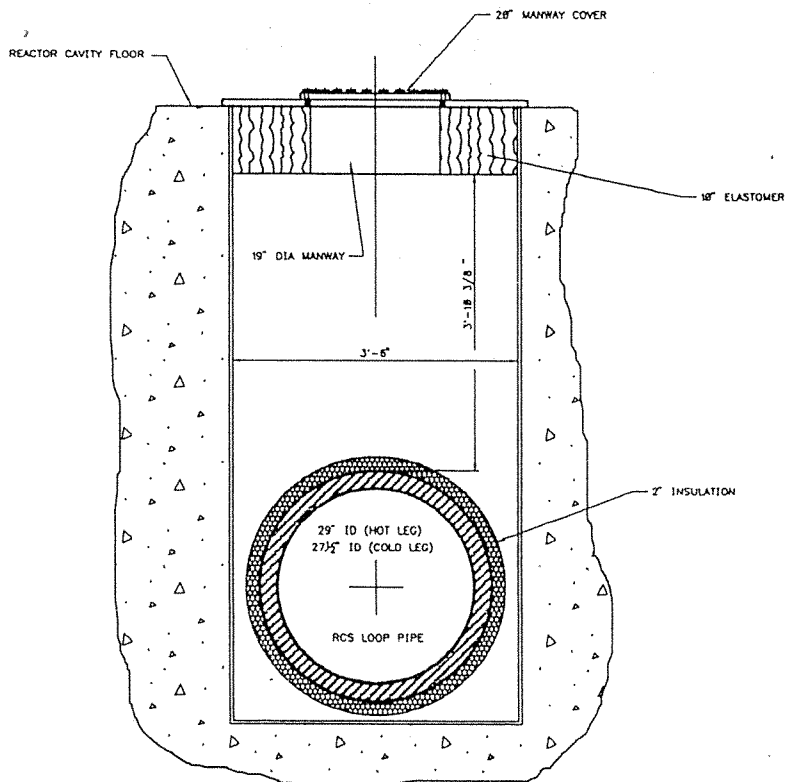
- ◆ Inner diameter UT on all nozzle welds
 - ◆ Outer diameter VT-2 visual examination on accessible areas of nozzle-to-safe end welds
 - ▼ Relief Request No. 32



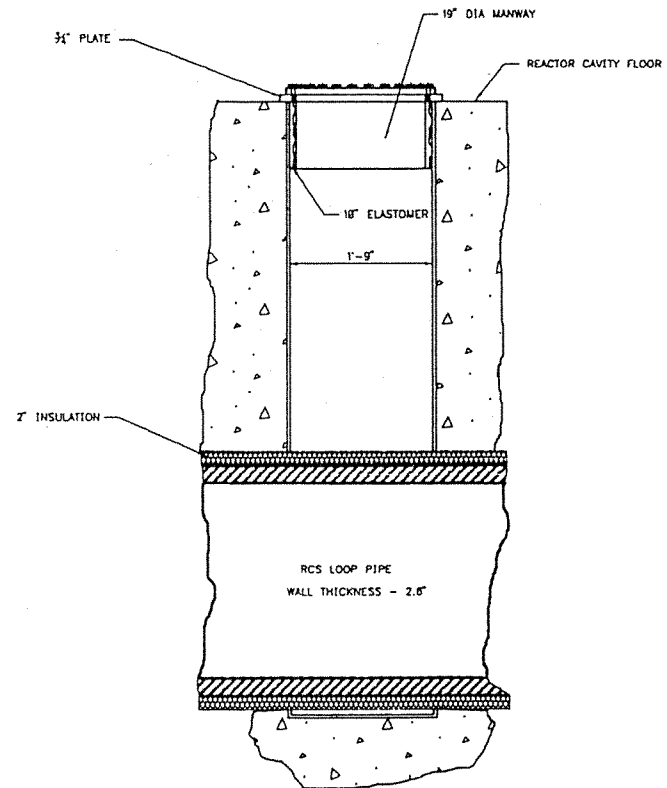
PLAN VIEW



ENLARGED END VIEW
20" MANWAY COVER, PLATE, AND ELASTOMER



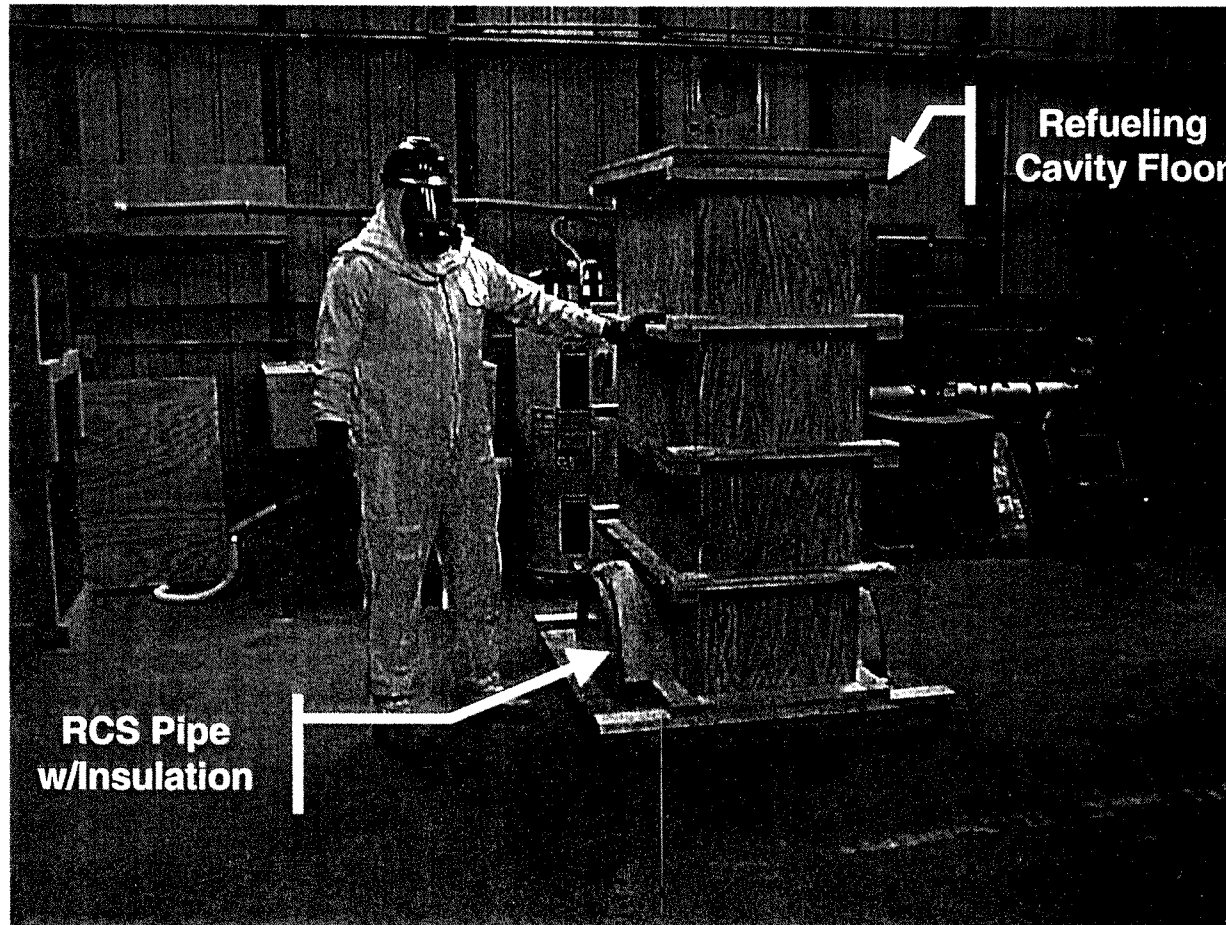
END VIEW



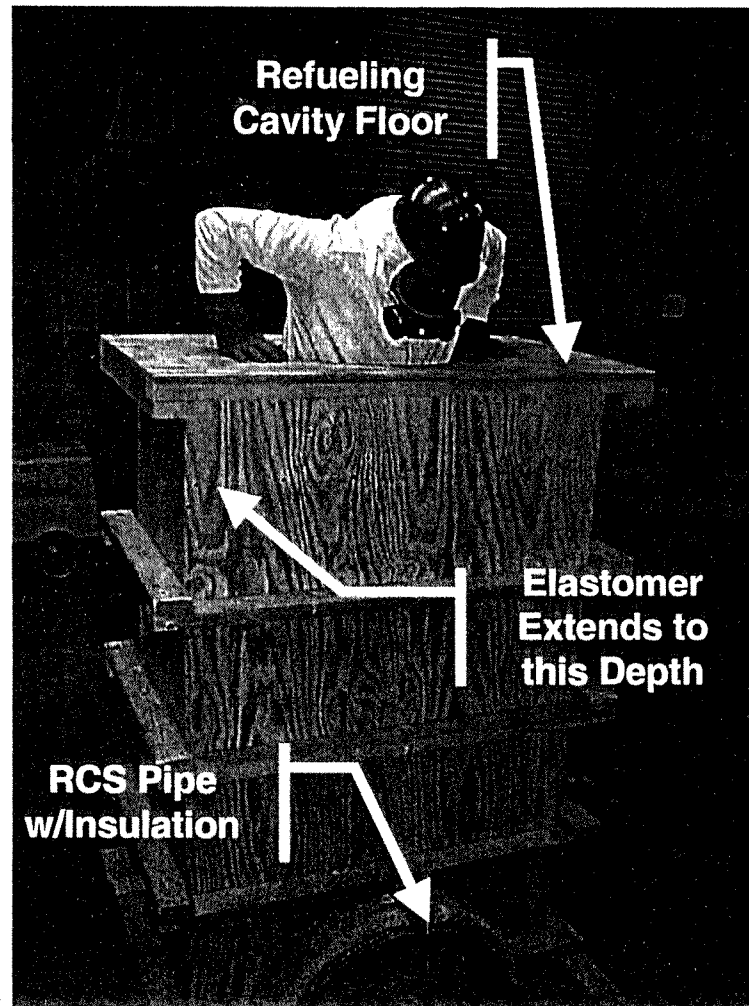
SIDE VIEW



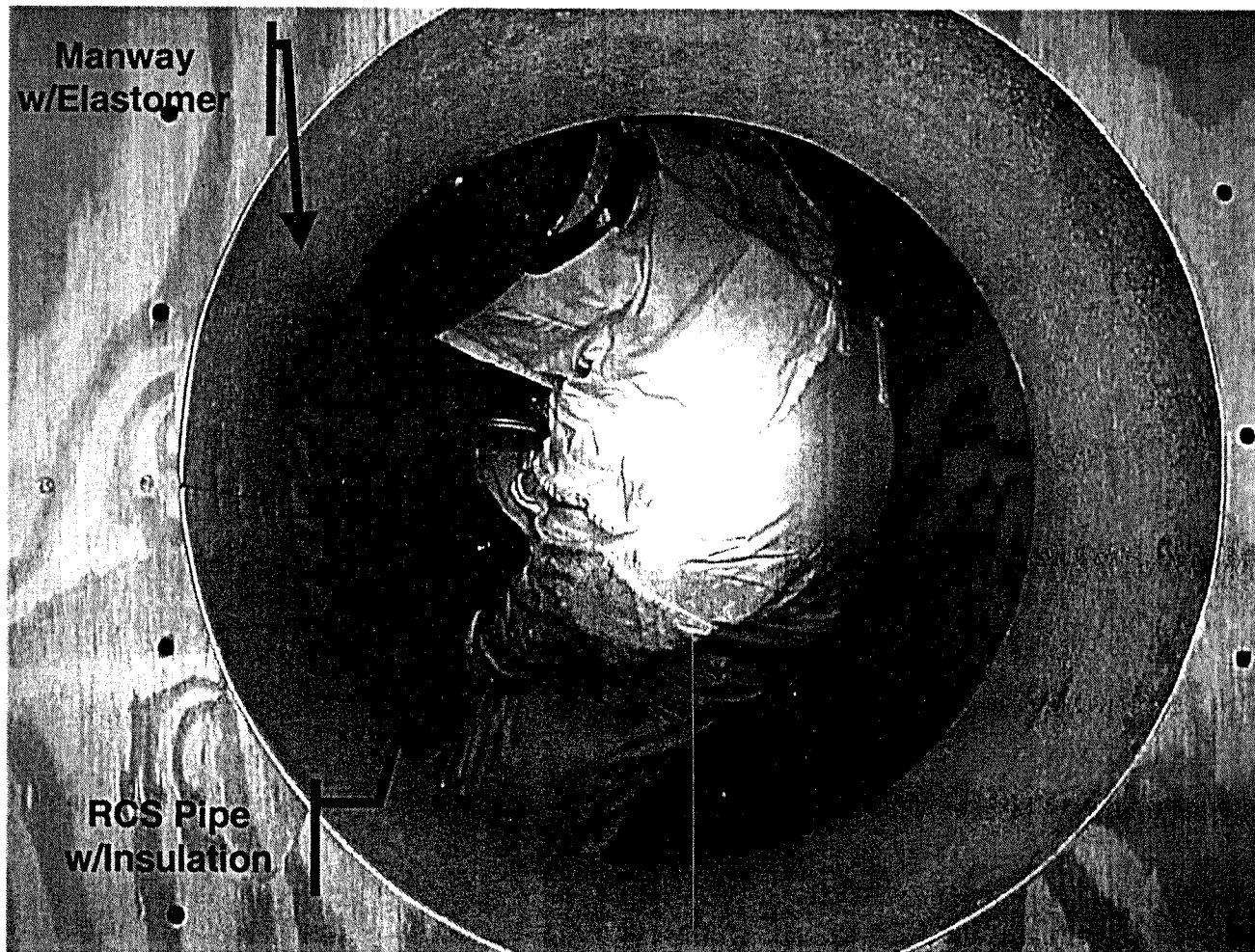
Access Area Mock-Up



Access Area Mock-Up



Access Area Mock-Up



V.C. Summer Lessons Learned (Cont'd)

- Industry Issues

- ▶ Working closely with PWR Materials Reliability Program and plants with spring Ten-Year Inservice Inspections
- ▶ Reviewing available industry operating experience and technical information

V.C. Summer Lessons Learned (Cont'd)

- Operational Considerations and Contingencies
 - Operations and Chemistry sensitivity
 - Walkdown/inspection sensitivity
 - Contingency plans to evaluate and act upon findings (boric acid deposits, etc.)

Closing Remarks