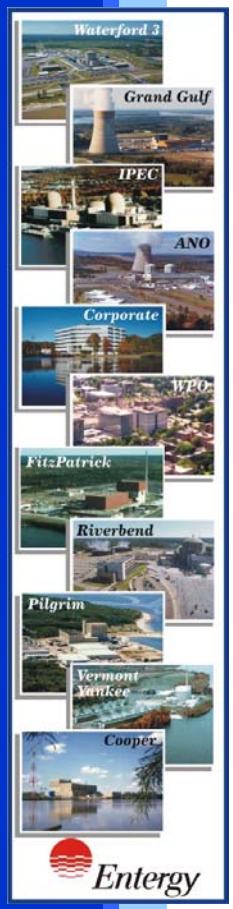
James A. FitzPatrick Nuclear Power Plant

ACRS License Renewal Subcommittee Presentation
September 5, 2007

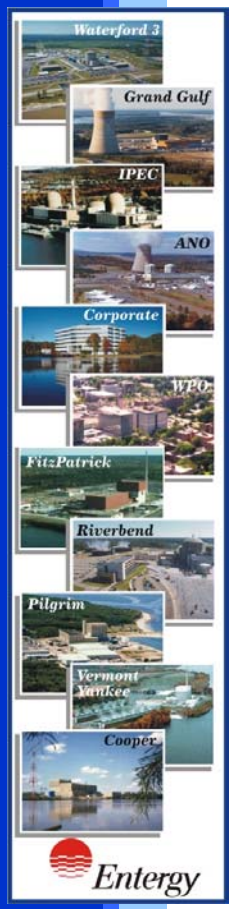
James A. FitzPatrick
Personnel in Attendance



Brian Finn	Site NSA Director
John McCann	Director of Licensing, White Plains
Garry Young	Manager, License Renewal
Steve Bono	Director of Engineering
Joe Pechacek	Manager, Programs & Components
James Costedio	Licensing Manager
Alan Cox	Technical Manager
Rick Plasse	Licensing Lead
Larry Leiter	Technical Lead
Tom Moskalyk	Structural Lead
Arturo Smith	Class 1 Mechanical Lead

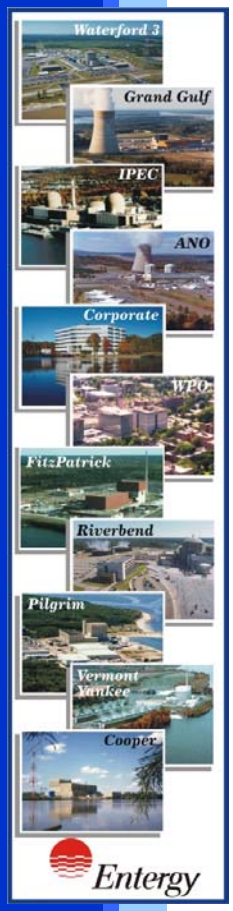
Technical Support Personnel

Agenda



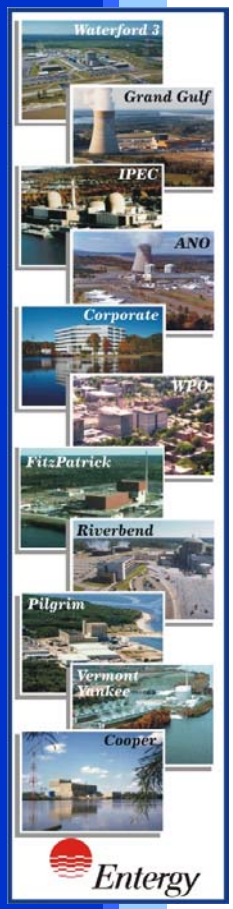
- James A. FitzPatrick Site Description
- Current Status
- James A. FitzPatrick Licensing History & Highlights
- License Renewal Project
- Cost-Beneficial SAMAs
- Presentation Topics
  - Drywell and Torus Monitoring
  - Torus Repair
- Questions

JAFNPP Site Description



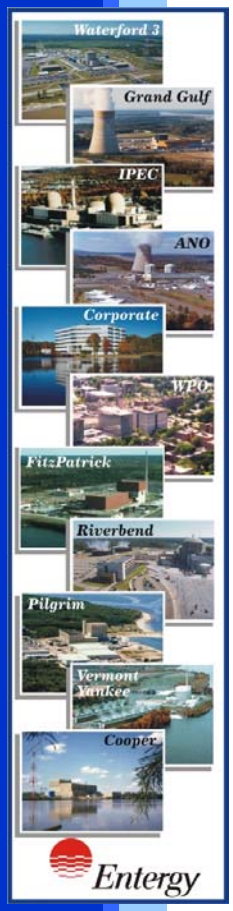
- General Electric (NSSS & TG), Stone & Webster (AE and Constructor)
- BWR-4, Mark I Containment
- 2536 MWt Thermal Power; ~ 881 MWe
- Once through cooling from Lake Ontario
- Staff Complement: approximately 650

JAFNPP Plant Status



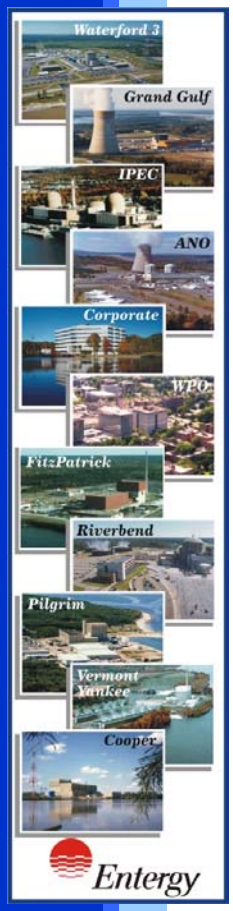
- Startup from RFO 17 - November 4, 2006
- Current Plant Status
- Next outage Sept 2008

Licensing History



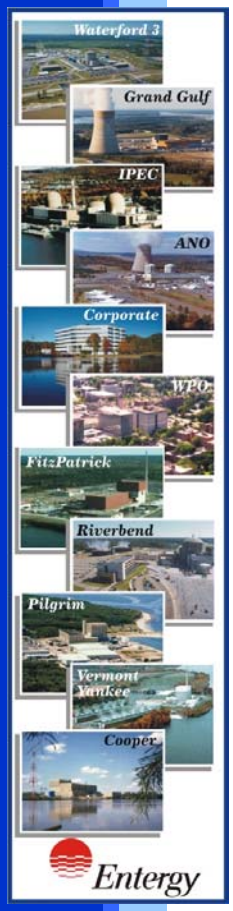
Construction Permit	May 20, 1970
Operating License	October 17, 1974
Commercial Operation	July 28, 1975
Uprated Power License (4%)	December 6, 1996
License Transfer to Entergy	November 21, 2000
LR Application Submitted	July 31, 2006
Operating License Expires	October 17, 2014

Major Improvements



1978-1983	Mark I Containment Modifications
1988	Hydrogen Water Chemistry
1989	Zinc Injection
1990	Power Uprate Equipment Upgrades
1998	ECCS Suction Strainers Replaced
1999	Noble Metals Application
2004	LP Turbine Rotor Replacement
2004	Noble Metals Application 2
2006	HP Turbine Rotor Replacement
2006	Offgas Condenser Replacement
2006	HPCI Discharge Exhaust Sparger Added

Future Improvements

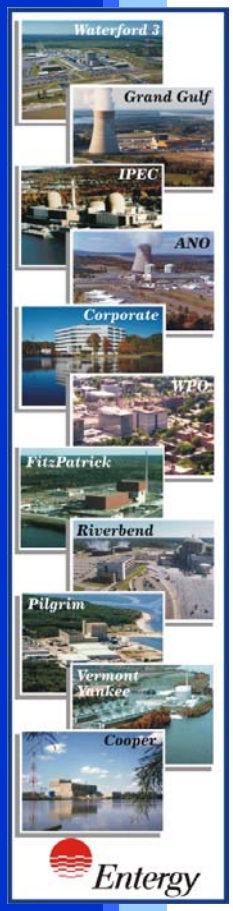


2008 Main Transformer Replacement

2008 Core Spray Motor Replacement

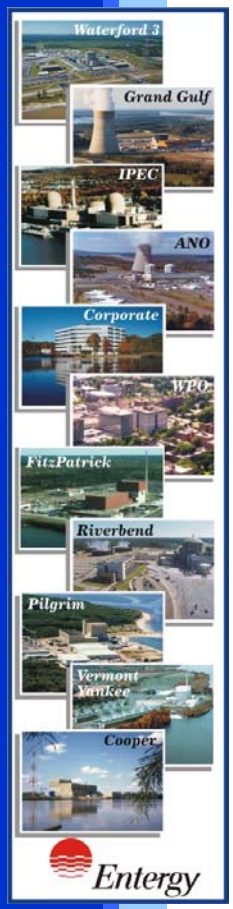
2008 345KV Breaker Replacement

JAFNPP License Renewal Project



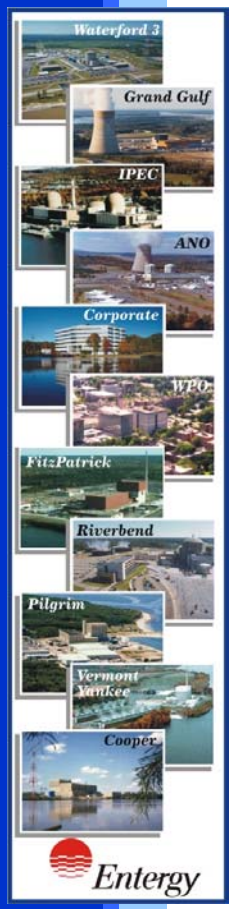
- LRA Prepared by experienced, multi-discipline Entergy team (utilized corporate and on-site resources)
- Incorporated lessons learned from previous applications
- Peer review conducted
- LRA internal reviews (Safety Review Committees and QA)
- All comments resolved prior to submittal

JAFNPP License Renewal Project



- License Renewal Commitments
  - Refined during audit/inspection process
  - Tracked by Entergy commitment tracking and engineering work tracking systems
- 36 Aging Management Programs
  - 17 Programs in Place w/o Enhancements
  - 9 Programs will be Enhanced
  - 10 New Programs
- GALL Consistancy
  - 10 Consistent
  - 20 Consistent with exceptions / enhancements
  - 6 Plant Specific

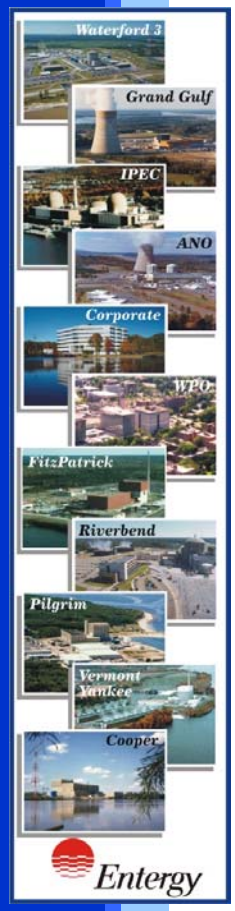
JAFNPP License Renewal Project



Program Implementation Plan

- Develop fleet approach for Entergy plants that have submitted an LRA
- Develop schedule using industry experience

JAFNPP License Renewal Project

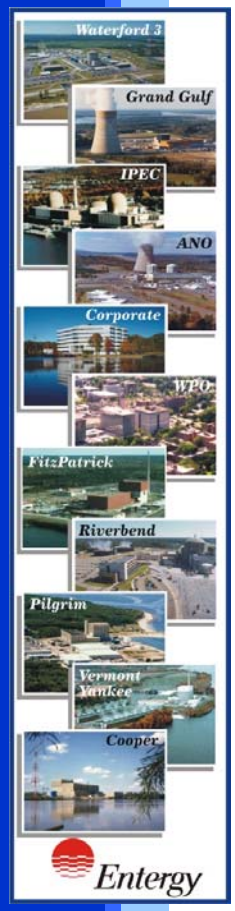


Scoping of Non safety-Related Systems, Structures, and Components

(10 CFR 54.4a(2))

- Utilized site component database, P&IDs, and isometric drawings
- Reviewed safety related cable / piping locations
- Performed walkdowns for a(2) scope verification

JAFNPP License Renewal Project

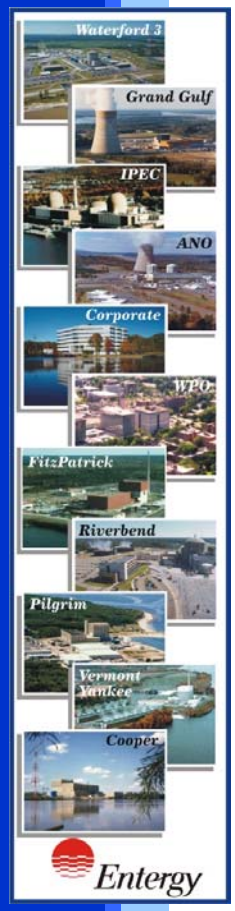


Scoping of Non safety-Related Systems, Structures, and Components

(10 CFR 54.4a(2))

- Regional Inspection verified a(2) scoping for in-plant areas and systems
- 10 CFR 54.4a(2) scope changes made in LRA Amendment 11
- Regional Inspection concluded that JAF had implemented an acceptable method of scoping and screening of non-safety related SSCs and that this method resulted in accurate scoping determinations

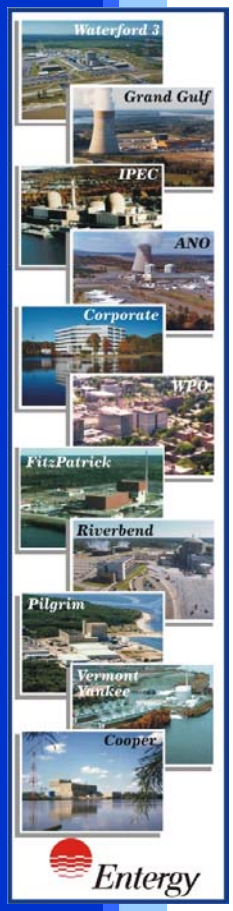
JAFNPP License Renewal Project



Draft SER Summary

- Open Items – 2
  - Reactor Vessel Fluence
  - Environmentally Assisted Fatigue
- Confirmatory Items – None

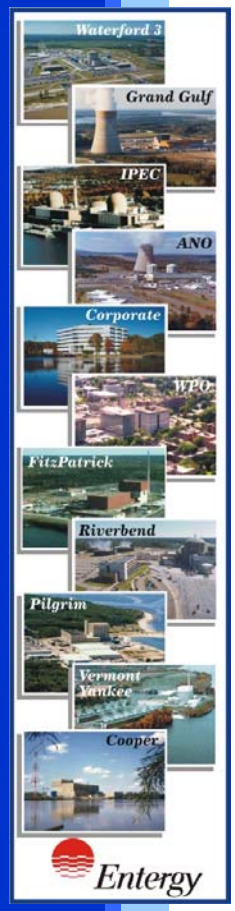
JAFNPP License Renewal Project



Reactor Vessel Neutron Fluence

- **Current P-T curves valid through 2014 (32EFPY)**
- **Submit RG 1.190 calculations by September 2007**
- Evaluated TLAAs to determine limiting fluence (RG 1.99)
  - Adjusted Reference Temperatures (<200F)
  - Upper Shelf Energy (>50 ft-lb)
  - RPV welds
  - RPV nozzles near beltline
- Axial Weld Failure Probability is limiting at 5×10^{-6} per Reactor Year
- ART and USE values will not be challenged at 54 EFPY

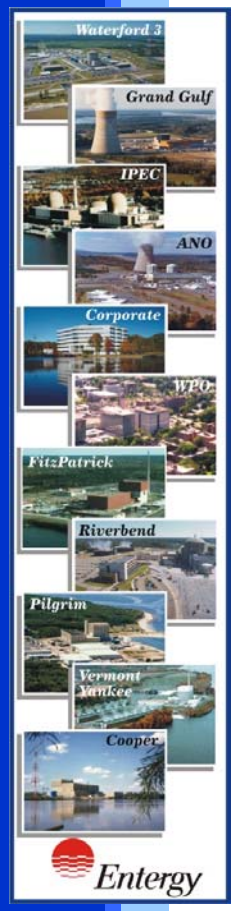
JAFNPP License Renewal Project



Environmentally Assisted Fatigue

- JAF will demonstrate that cumulative usage factors (CUF) of the most fatigue sensitive locations are less than 1.0 throughout the license renewal period by first using Option (1) of commitment #20
- Analysis methods for determination of stresses and fatigue usage will be in accordance with NRC endorsed ASME Boiler and Pressure Vessel Code
- JAF will utilize design transient specifications and information from BWR-4 references to bound operational transients

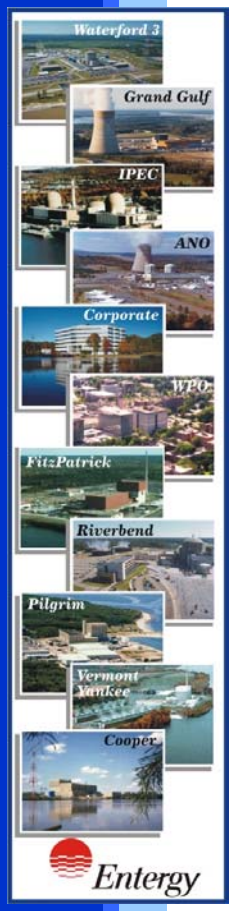
JAFNPP License Renewal Project



Environmentally Assisted Fatigue

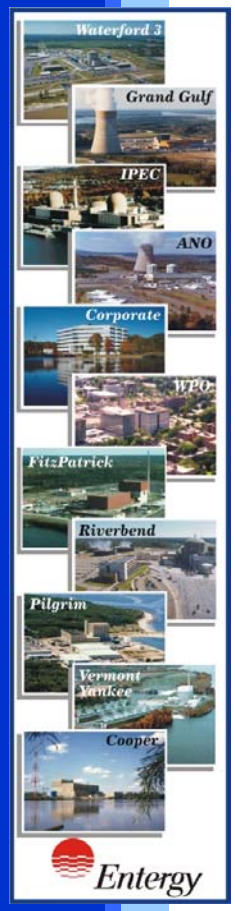
- Environmental effects on fatigue usage will be assessed consistent with the Generic Aging Lessons Learned Report, NUREG-1801, Rev. 1.
- If Option (2) becomes necessary, plant inspection program will be described in terms of the ten elements specified in Branch Technical Position RLSB-1.
- If Option (3) becomes necessary, repair or replacement will be in accordance with plant procedures that meet ASME Section XI requirements.
- Above actions will be incorporated into the Fatigue Monitoring Program.
- The Fatigue Montoring Program will manage the effects of EAF in accordance with 10 CFR 54.21(c)(1)(iii).

Cost-Beneficial SAMAs



- Six Potentially Cost-Beneficial SAMAs Identified
- No Age-Related SAMAs
- Implementation will be evaluated using the plant cost-benefit analysis process

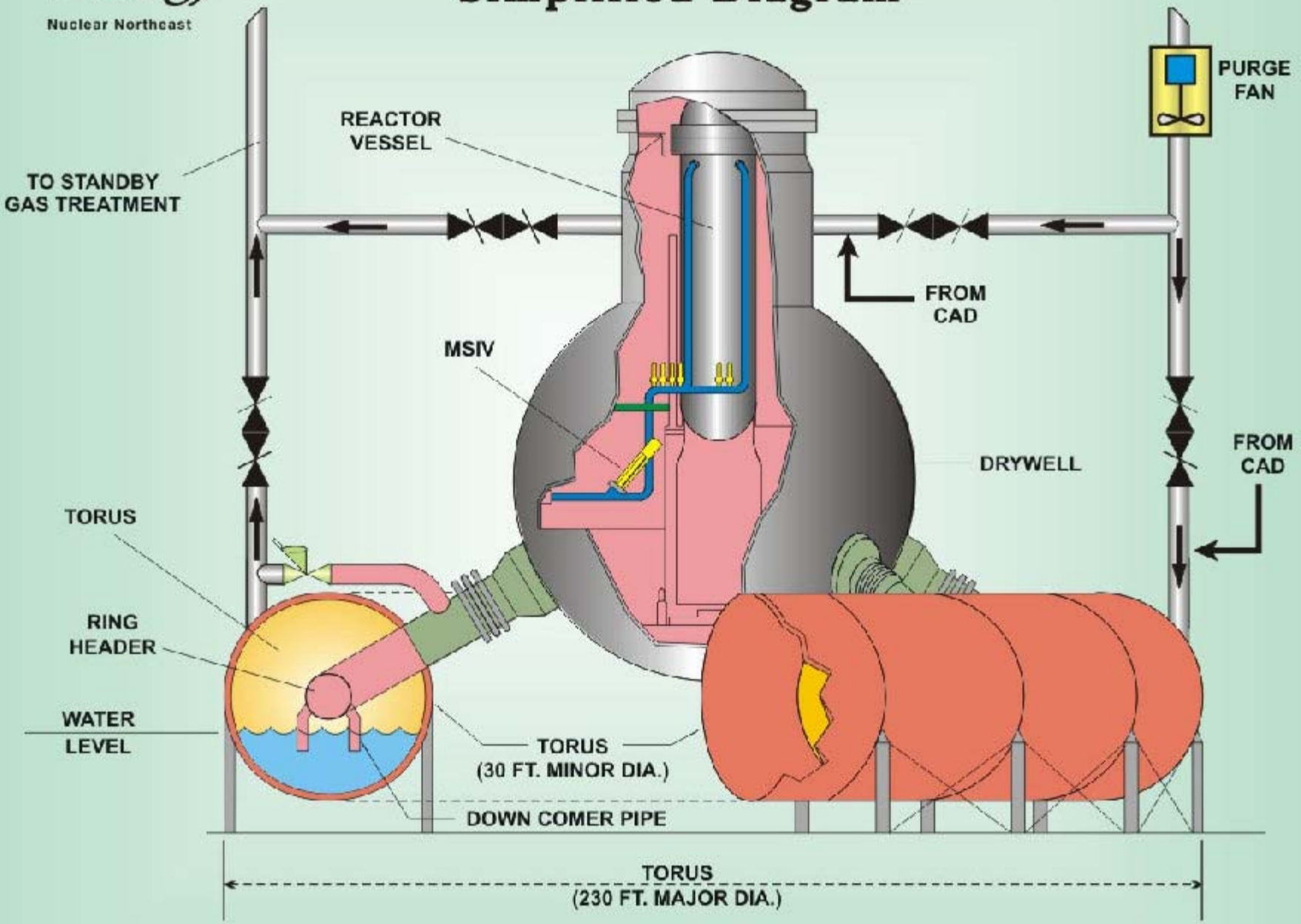
Presentation Topics



- Drywell and Torus Monitoring
- Torus Repair

Entergy
Nuclear Northeast

Primary Containment System
Simplified Diagram



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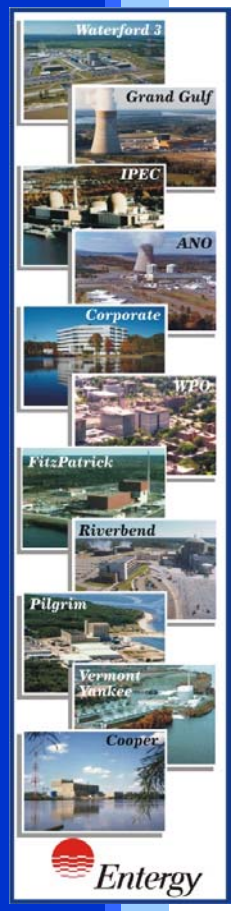

Drywell and Torus Monitoring

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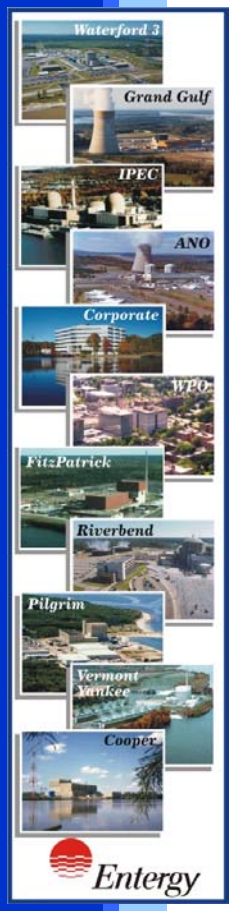

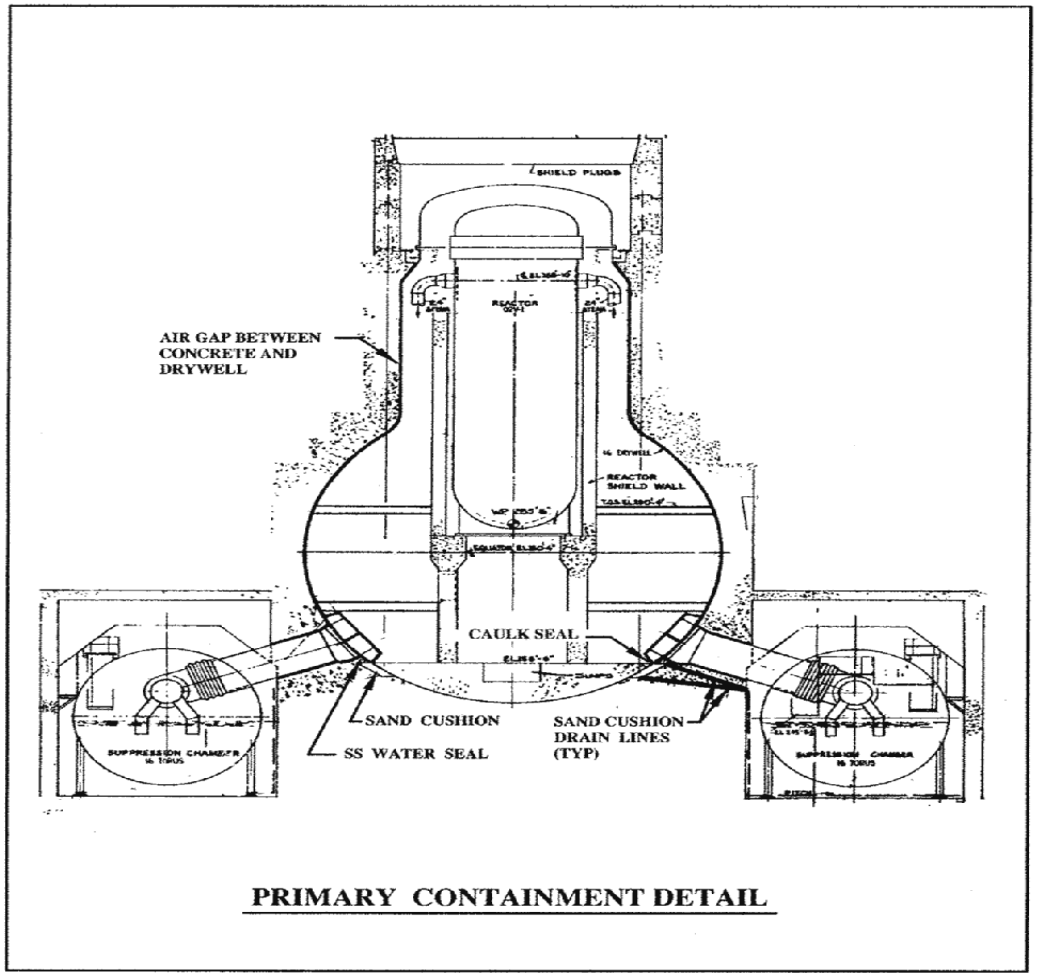

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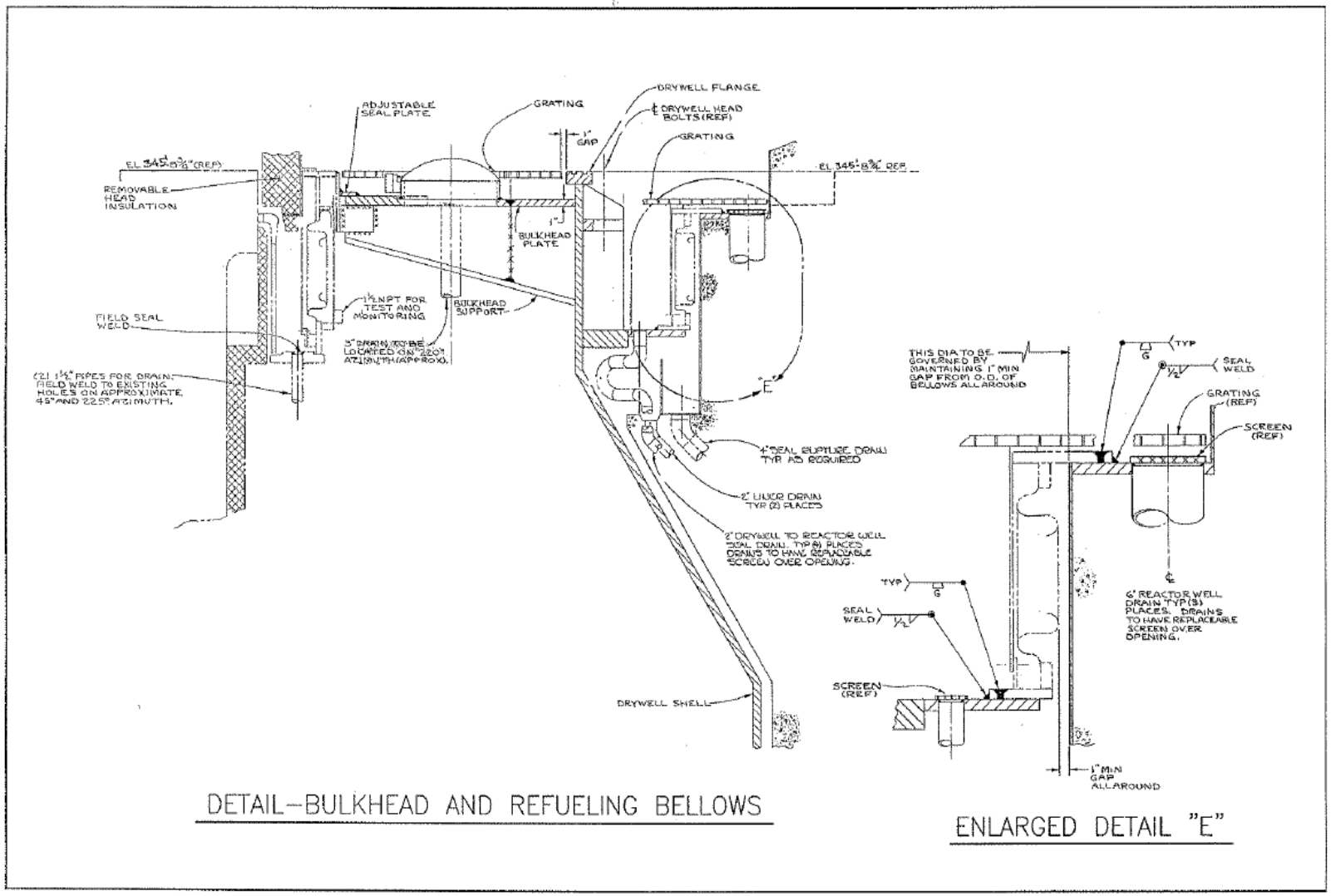

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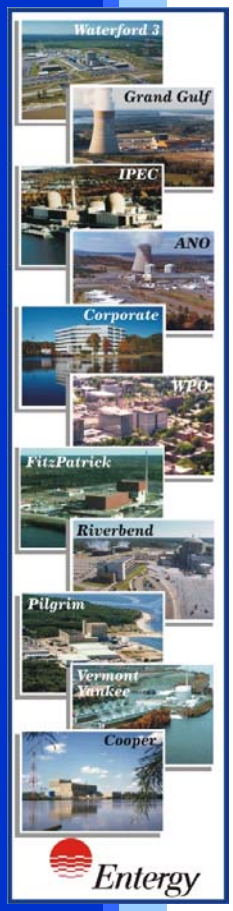
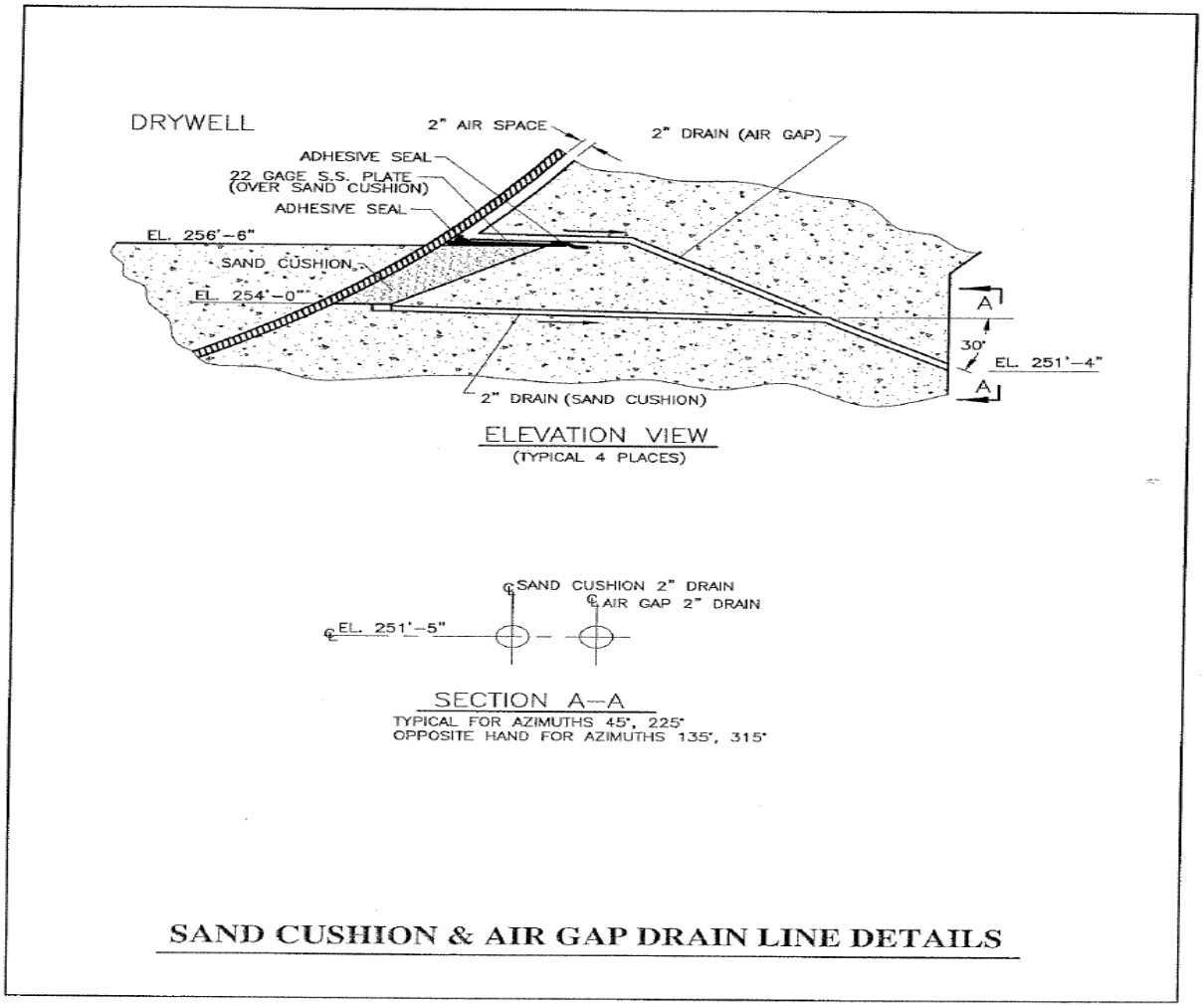
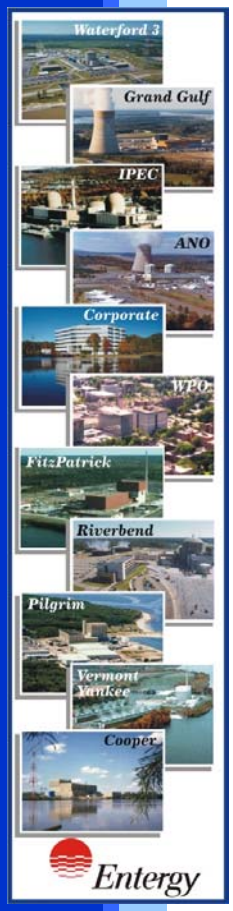


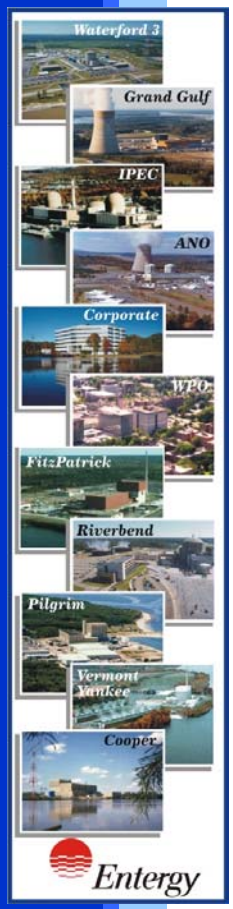


Drywell Monitoring



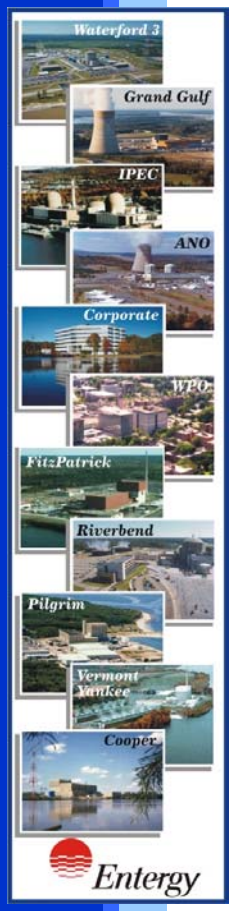
- Sand Cushion Inspections. No Evidence of Moisture (Boroscopic Inspection).
- Visual Inspection of Interior Drywell Caulk Seal.
- Drywell Interior Coating System (Carbozinc 11 and Dupont Corlar Epoxy) Inspection IAW IWE Program during RFO.

Torus Monitoring



- Torus Interior Shell Inspection 1998 (Installation of ECCS Suction Strainers).
- Torus Interior Coating System (Carbozinc 11) inspected.
- Torus Interior/Exterior Inspected IAW JAF IWE Program.

Drywell Shell Construction Photo



Drywell Shell Construction Photo

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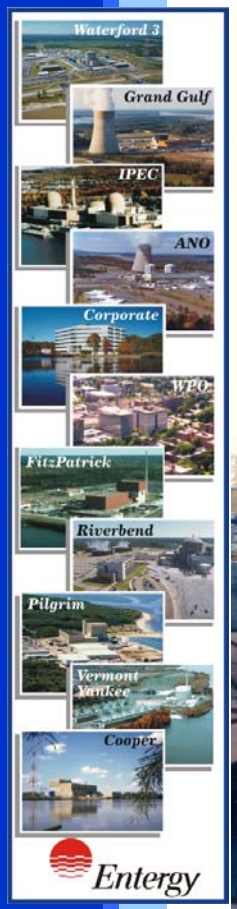

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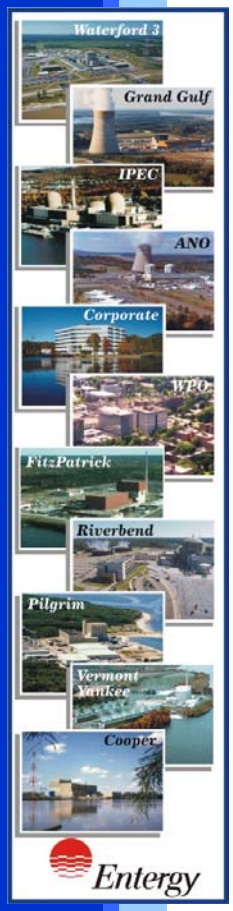

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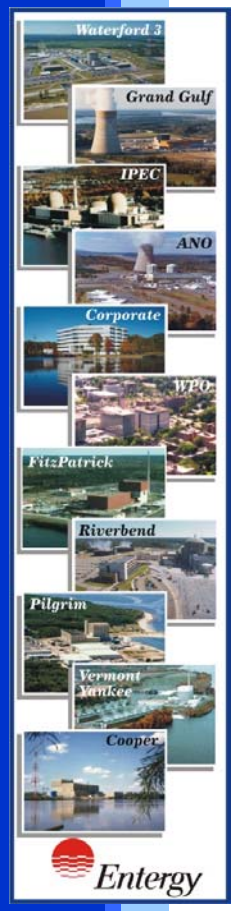
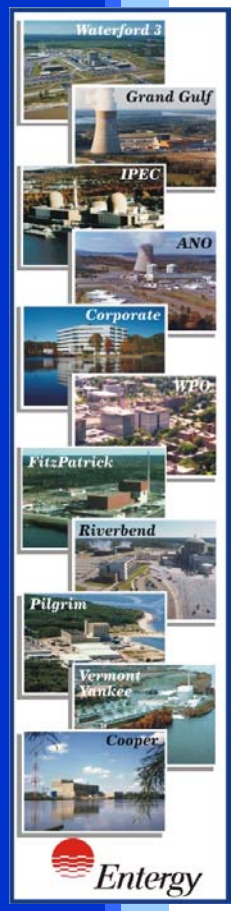
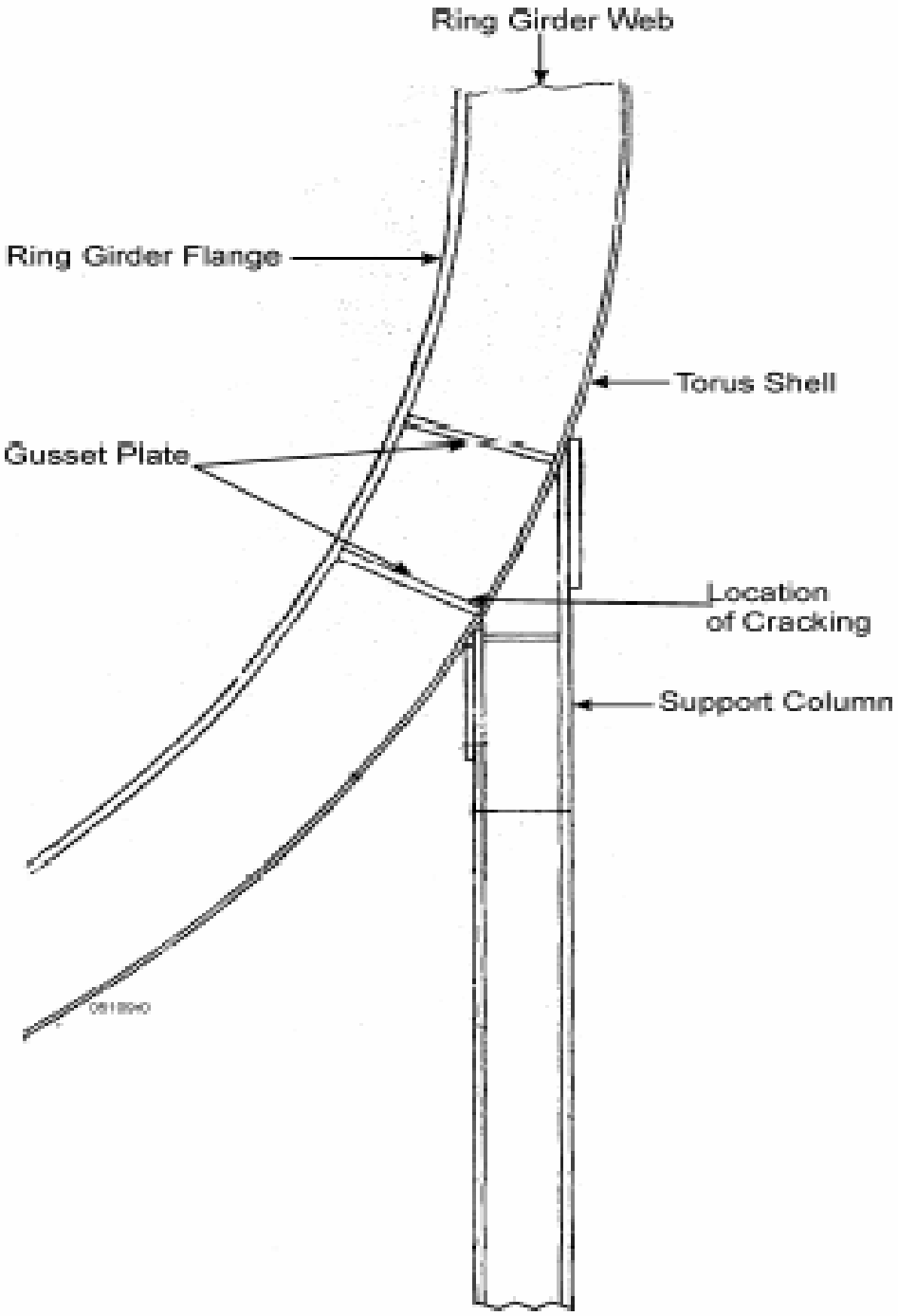


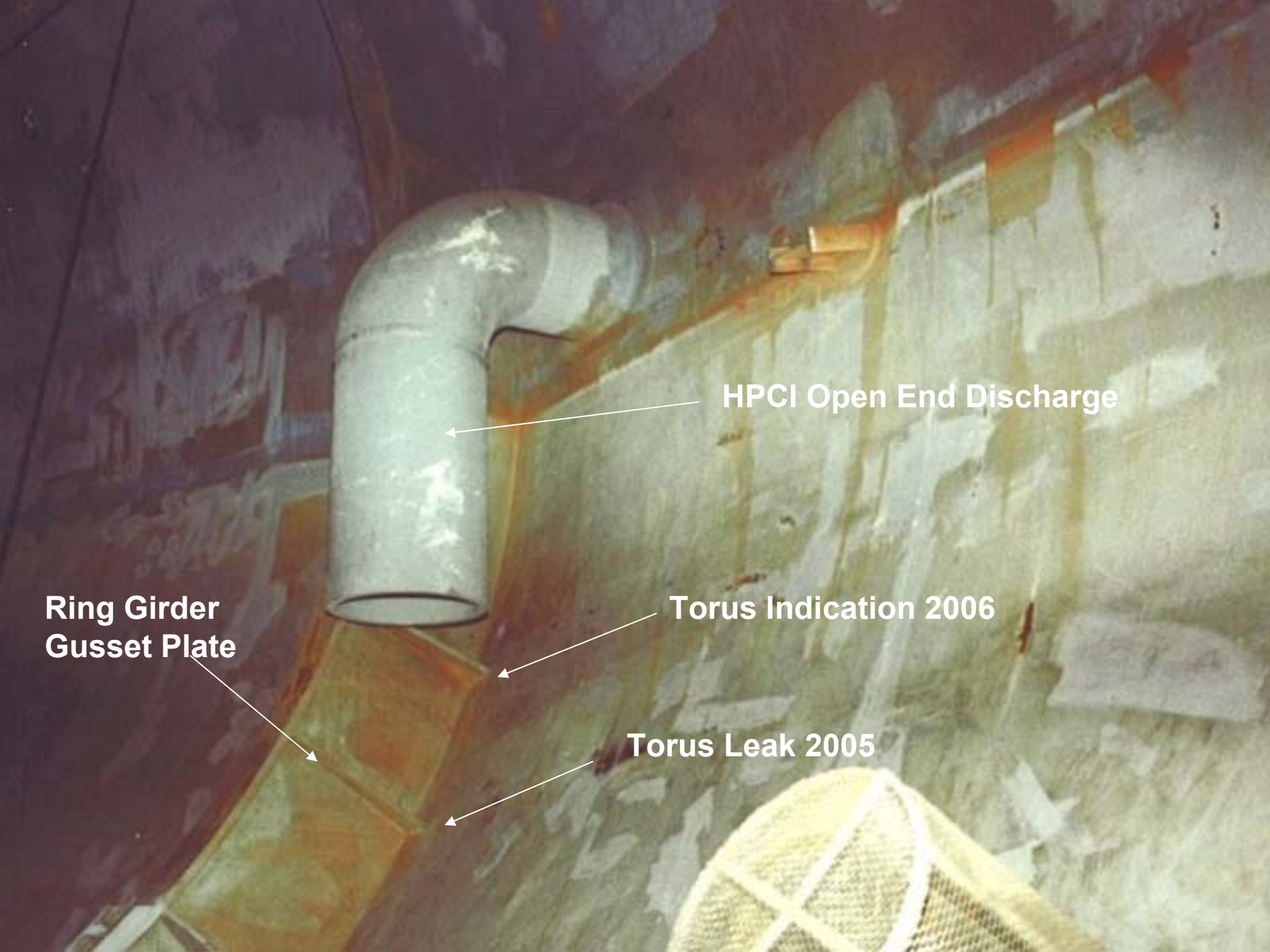
Torus Repair

Torus Repair

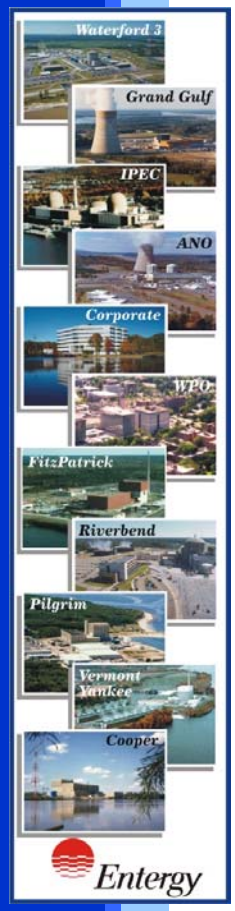


- Torus shell through-wall leak reported in June 2005
- Leak was located in same bay as HPCI Steam Discharge pipe near ring girder gusset plate weld
- ASME Section XI code repair performed in July 2005 by removing the flaw and adding a circular repair plate
- Root cause of flaw was vibration fatigue from HPCI steam condensation oscillation loading

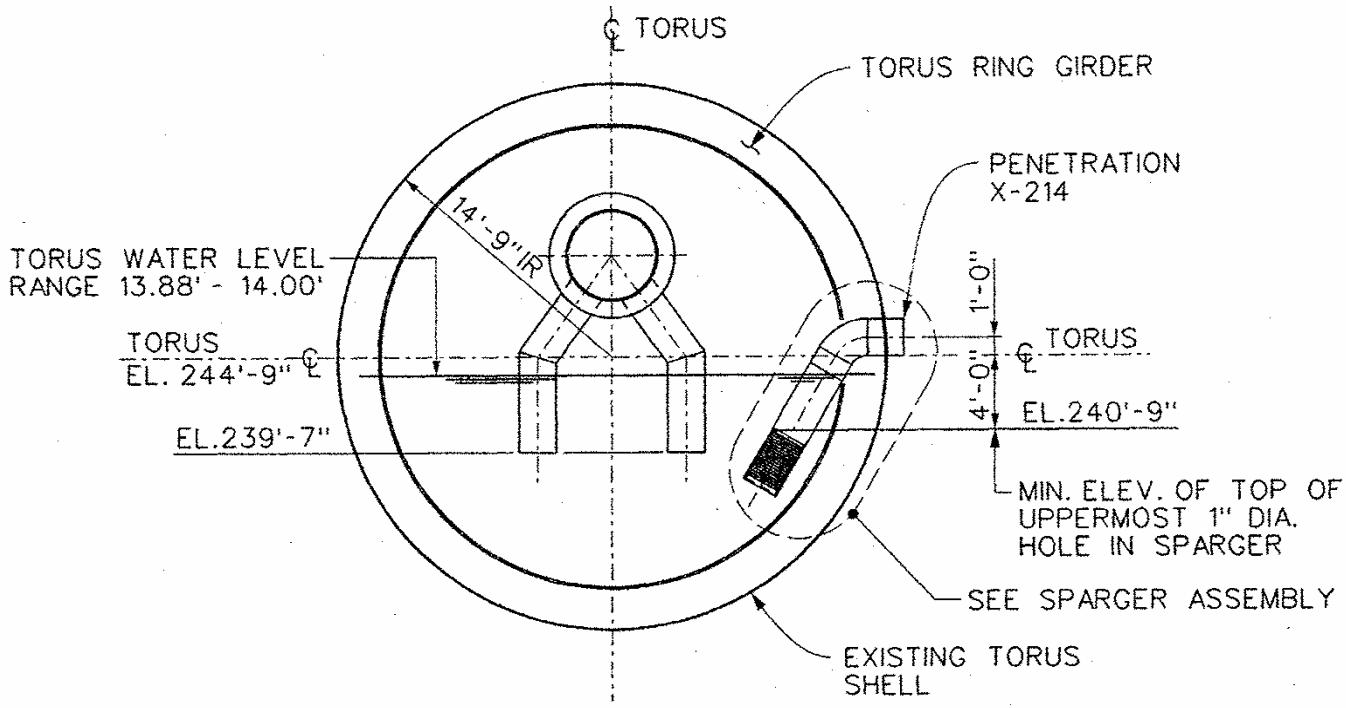

Ring Girder Web
Ring Girder Flange
Torus Shell
Gusset Plate
Location
of Cracking
Support Column


HPCI Open End Discharge
Ring Girder
Gusset Plate
Torus Indication 2006
Torus Leak 2005

Torus Repair



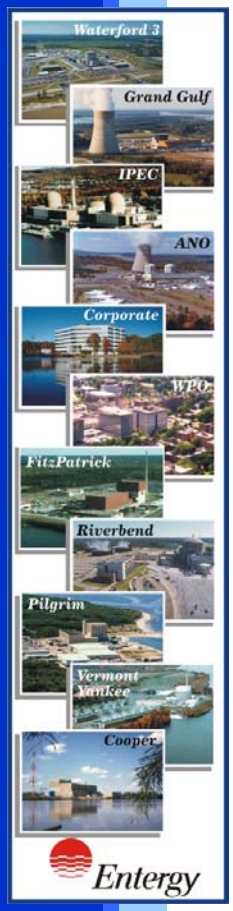
- A HPCI Steam Exhaust Sparger assembly was added during refueling outage October 2006
- The sparger directs steam flow away from the Torus shell
- The sparger significantly reduces loads on the Torus shell from HPCI Steam condensation oscillation



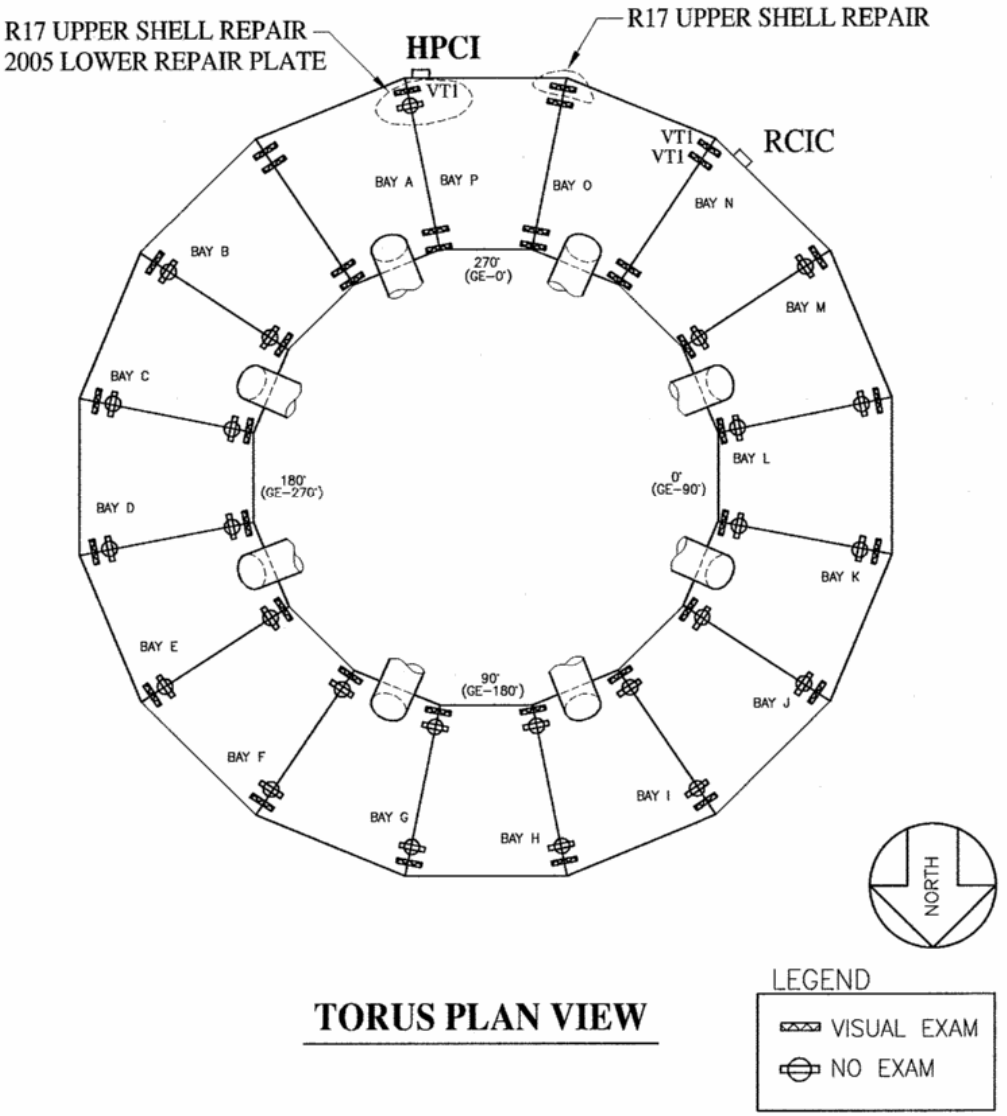
ELEVATION LOOKING EAST @ 270° AZIMUTH

SCALE: 1/8"=1'-0"

Torus Repair

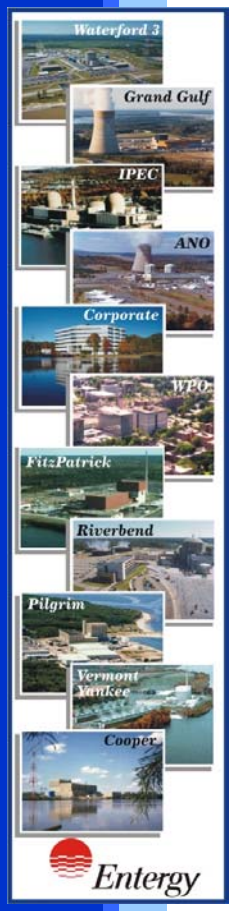


- Extent of condition actions from Root Cause required additional shell exams during refueling outage October 2006
- ASME visual exams of similar ring girder gusset welds performed at HPCI and RCIC steam discharge locations
- General visual exams of similar ring girder gusset welds performed at several locations throughout the Torus
- Exam results reported shell base metal flaws at two additional locations in the HPCI discharge bay



TORUS PLAN VIEW

Torus Repair



- ASME Section XI code repairs were performed by grinding to remove the flaws and welding to restore configuration
- Review was performed to confirm the HPCI steam discharge loading also caused these flaws

Comments and Questions