# Oyster Creek
# License Renewal Commitments Inspection
## Exit Meeting - Dec 3, 2008

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## Introductions

- NRC Region 1
- NRC HQ
- NRC Residents
- AmerGen
- NJ DEP (Observers)

**Excellent Overall Cooperation** from everybody

>>> use of the Certrec Internet Database was quite helpful

**Special Thanks**
- Pete Tamburro (LR Program Owner)
- Chris Hawkins (NDE Level-III)
- Cal Taylor & Jhansi Kandasamy

## Tough Inspection Schedule & Difficult Inspection

- LR outage schedule slipped due to unexpected issues
  - Some NDE UTs re-scheduled, due to unanticipated physical interference issues
  - Bay 11 Coating Blisters
  - Bay 3 Moisture Barrier Seal Problem
  - Cavity Leakage and Water Intrusion into 4 bays
- As a result, our inspection ran into a 2nd on-site week and a 3rd in-office week

**Documentation** Team Report 45 days after the Exit Meeting (mid Jan)

## Exec Summary of Inspection Results

- Satisfactory Actions to evaluate primary containment structural integrity
- [ (b)(5) ] Ex 5
  These were also §50 App-B corrective actions from a significant condition adverse to quality
  - Monitoring of Sand Bed Drain Lines
  - Strippable Coating to Prevent Water Intrusion
- For the selected samples [ (b)(5) ] Ex 5
  - Sampled 9 AMPs to Verify Commitment Implementation
  - No Problems or Issues Identified, with Two/Three (??) Notable Exceptions
- [ (b)(5) ] (two items) Ex 5
  - Perform Full Scope inspections of sand bed region every other outage
  - Monitor drywell trenches every refueling outage, until trenches are restored
- Verified 2 commitment changes were done iaw Exelon commitment management program
  - Bolting Integrity Program (commitment 12)
  - Rx Vessel Axial Weld Examination Relief Request (commitment 48)
- Regarding §54.21(b) Annual Updates, you intend to submit your 2008 Amendment Update by the end of the year -- , in consultation with NRR, we consider that to be acceptable

## Inspection Details -- Three (??) [(b)(5)] Issues Will be Documented

Ex 5

**(1) Commitment 27, ASME Section XI, Subsection IWE, Item (2)** [(b)(5)] Ex 5
A strippable coating will be applied to the reactor cavity liner to prevent water intrusion into the gap between the drywell shield wall and the drywell shell during periods when the reactor cavity is flooded.

- The strippable coating initially limited leakage into the cavity drain trough at < 1 gpm. On Nov 7, the leakage rate took a step change to 4 to 6 gpm. Water was subsequently identified in 4 sand bed bays.

- This was also a previous commitment made in response to Generic Letter 87-05

(b)(5)

(b)(5)

Ex 5

Ex 5

Ex 5

**(2) Commitment 27, ASME Section XI, Subsection IWE, Item (3)** [(b)(5)]
Sand bed region drains will be monitored daily during refueling outages.

- Sand bed drains were remotely monitored by checking poly bottles, attached via tygon tubing to funnels hanging below the drain lines. The drain lines were not directly observed.

- This was also a previous commitment made in response to Generic Letter 87-05

(b)(5)

Ex 5

Ex 5

Ex 5

>>> [ (b)(5) ] Ex 5
>>>

**(3) Commitment 27, ASME Section XI, Subsection IWE, Item (3) -** [ (b)(5) ] Ex 5
Reactor cavity seal leakage trough drains and the drywell sand bed region drains will be monitored for leakage. Periodically.

- Drain line was found isolated during a boroscope examination to verify no line blockage.
- ?? This was also a previous commitment made in response to Generic Letter 87-05

[ (b)(5) ] Ex 5

## ANY QUESTIONS at this point

>>> [ (b)(5) ] Ex 5

## Inspection Observations

### ASME IWE, Containment In-service Inspection

- D/W Inside UT Examinations
  - 41 separate 7x7 arrays and 7 separate 1x7 arrays evaluated (2058 separate UT readings)
  - No on-going corrosion or trend was identified
  - No statistically significant deviations from 2006 data values
  - Overall, not enough data sets to identify a corrosion trend, with any statistical certainty
  - Adequate margin for the 20 year extended period
- D/W External UT Examinations in the Sand Bed Region
  - 111 separate UT readings
  - Overall, not enough data sets to identify a corrosion trend, with any statistical certainty
  - 2008 data compared to 2006, shows a 1-2 mil decrease, well within the statistical variances
  - Adequate margin for the 20 year extended period
- Leakage Monitoring of cavity drain and sand bed drains
  - Problems as already discussed
  - Good poly bottle monitoring practices and log keeping
  - Good pro-active monitoring actions during cavity flood-up (continuous Ops monitoring)
  - Good compensatory actions, when strippable coating de-laminated
  - You are re-thinking action levels, based on cavity drain leakage rates
    - Calc and Action plan established 12 gpm Admin Limit
    - Didn't expect water intrusion at observed leakage values
- Cavity Strippable Coating
  - Problems as already discussed
- Moisture Barrier Seal inside D/W (floor curb to shell)
  - Done as part of Structural Monitoring Program. No issues or problems identified.
  - Newly installed in 2006. Turned out to be an interference item to D/W UTs.
  - Commitment for post-EPO is per ASME Sec-XI IWE. We asked whether your Structural Monitoring examination satisfied IWE requirements. You initiated an engineering action item to evaluate this question.
- Moisture Barrier Seal inside Sand Bed Bays
  - Numerous deficiencies identified in 7 of 10 bays (none in 2006). All problems were repaired.
  - Moisture barrier function not impaired, no cracks or separation fully penetrated the seal
    - Surface cracks
    - Separation from shell or floor
    - Inadequate epoxy cure -- initial installation issue, from 1992

### Protective Coating Monitoring and Maintenance Program

- D/W Interior Service Level I Coating
  - Some minor issues identified. Documented results indicated a good quality inspection
- D/W Exterior Service Level II Coating, in Sand Bed Bays
  - Bay 11, one small 1/4 inch broken blister identified, with a 6" rust stain
  - During initial investigation, 3 smaller unbroken blisters also found
  - All 4 blisters were within a 1-2 inches square area, and all were thoroughly evaluated and fixed.
  - Good extent of condition, 4 bays re-inspected by a different level-II
  - During follow-up, you identified a 2006 video that showed the same 6" rust stain
  - Estimated corrosion of ~ 3 mils, over a 16 year period
  - No impact to D/W structural integrity, when compared to existing thickness margins

### Electrical Cables and Connections

- Drywell Cable Inspections
  - Good attention to detail & good questioning attitude
  - Good engineering planning, prep, and participation
  - Excellent cooperation between work group and engineering

### Inaccessible Medium Voltage Cables

- Cable Testing - Auxiliary Transformer (bank 4)
  - Cable test done as part of transformer Doble Test
  - Some industry experience suggests that large transformer characteristics can de-sensitize the test results regarding cable insulation degradation

### Buried Piping

- ESW Pipe Replacement and Tie-in
  - FME control and pipe handling (to protect pipe coating) adequate to ensure a quality installation

### Structures Monitoring Program

- Intake tunnel and expansion joints
  - Good hand-offs between night-shift and day-shift engineering

### One-Time Inspection Program

- Isolation Condenser Inspection and UT below the water line
  - Observed coatings inspection and UT data taking
  - Reviewed UT data evaluation

### Periodic Inspection Program

- Condensate System expansion joint inspection
- Fire barrier inspection inside a switchgear

### Metal Fatigue Program

- At this point in time, not enough program usage to have resulted in a change to the high cumulative usage factor components List.

## ANY QUESTIONS for US