

IPRenewal NPEmails

From: Walpole, Robert W [rwalpol@entergy.com]
Sent: Wednesday, April 22, 2015 5:45 PM
To: Howard, Kent
Cc: Green, Kimberly; Walpole, Robert W
Subject: ACRS slides
Attachments: NRC Presentation Rev 1.pdf

Kent,

Attached are the final slides that Entergy will be using for tomorrows meeting. Let me know if you have any trouble reading them. My cell phone is 914.760.2019.

I am bringing with me 16 color copies and 50 black and white (back to back, 2 slides to a page) for the public.

Thank you,

Bob Walpole

Hearing Identifier: IndianPointUnits2and3NonPublic_EX
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Recipients:

"Green, Kimberly" <Kimberly.Green@nrc.gov>
Tracking Status: None
"Walpole, Robert W" <rwalpol@entergy.com>
Tracking Status: None
"Howard, Kent" <Kent.Howard@nrc.gov>
Tracking Status: None

Post Office: jdcxmetsp004.etrsoth.corp.entergy.com

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Indian Point Energy Center

ACRS License Renewal Subcommittee

April 23, 2015



AGENDA

- Introduction
- Plant Status
- License Renewal Status
- Timely Renewal Activities
- Plant Modifications
- SER Supplement 2
 - Reactor Vessel Internals Program
 - Underground and Buried Piping
 - Program Changes
- Concluding Remarks

Indian Point Energy Center



Indian Point Energy Center

Personnel in Attendance

- Larry Coyle Vice President, Site-IP
- Fred Dacimo Vice President, License Renewal-IP
- Bob Walpole Manager, Regulatory Assurance
- Garry Young Director, License Renewal
- Alan Cox Manager, License Renewal Technical (ret.)
- Rich Drake Supervisor, Civil/Structural Engineering
- Nelson Azevedo Supervisor, Code Programs
- Richard Burroni Director, Engineering
- Don Mayer Director, IP1
- William Glew Jr. Associate General Counsel
- Walter Wittich Engineering Supervisor IPEC
- Dave Lach Implementation Project Manager
- Robert Dolansky Senior Lead Engineer

IPEC Plant Status

- IP2 – Status
- IP3 – Status
- Next refueling outages
 - Spring 2016 (IP2)
 - Spring 2017 (IP3)

License Renewal Status

- Entergy's license renewal application was docketed in 2007
- Indian Point 2 entered the period of extended operation (PEO) on September 28, 2013 and its license remains valid and in effect under the timely renewal provision of federal regulations
- Indian Point 3 will enter the PEO on December 12, 2015, also under the timely renewal provision
- The license renewal project, ongoing for more than 7 years, is very comprehensive. More than 33,000 man-hours of engineering evaluations, procedure development, and inspections for commitment implementation
- Proceedings are ongoing to address 2 state environmental reviews triggered by major federal licensing action (license renewal)
 - US Clean Water Act (Water Quality Certification)
 - US Coastal Zone Management Act (Consistency Certification)

License Renewal Status (cont.)

- NRC issued a supplement to the Final Supplemental Environmental Impact Statement (FSEIS) in June 2013. A second supplement is scheduled to be issued in March 2016, with a draft due in July 2015
- The NRC issued a safety evaluation report (SER) in 2009 and supplements to the SER in 2011 and 2014, all supporting continued operation of both units
- There are no SER open items
- The ACRS License Renewal Subcommittee met in March of 2009 and the full Committee met in September of 2009 to review the IPEC license renewal application and SER
- Hearings are ongoing before the Atomic Safety and License Board (ASLB). Thirteen of sixteen admitted contentions have been settled, resolved or appealed. Hearings for the remaining three contentions are planned for later this year

Timely Renewal Activities

Indian Point Unit 2

- Commitments, which include inspections, due before entering the PEO were completed as required
- Subsequent aging management activities are scheduled and completed as IP2 continues through the PEO
- Aging management programs are described in the updated FSAR which was updated prior to entering the PEO

Planned Timely Renewal Activities

Indian Point Unit 3

- Commitments, which include inspections, due before entering the PEO are either completed or scheduled to be completed before December 12, 2015
- Inspections requiring the plant to be shutdown are complete
- Subsequent aging management activities will be scheduled and completed as IP3 continues into the PEO
- Aging management program descriptions will be included in the Updated FSAR before entering the PEO

Timely Renewal Activities (cont.)

LR Commitment 19 –One-Time Inspection (OTI) Program (Required prior to PEO)

IP2 One-Time Inspection Program

- Performed OTI for 437 samples
 - Inspections verified that unacceptable degradation is not occurring
 - The inspections verified the effectiveness of the IP2 Water Chemistry Control, Oil Analysis and Diesel Fuel Monitoring programs to manage the effects of aging during the IP2 period of extended operation

IP3 One-Time Inspection Program

- 324 total OTI samples required
- 297 OTIs performed – one observation
- All 27 one-time inspections scheduled to be performed during the 2015 refueling outage were completed with one observation

Timely Renewal Activities

- **LR Commitment 23 - Selective Leaching (SL) Program**

IP2 Selective Leaching Program

- Performed SL inspections for 46 samples – No evidence of SL for either gray cast iron or copper alloy materials
- Destructive testing/analysis for 7 sample (2 copper alloy and 5 cast iron) – Results of laboratory analysis revealed graphitization in 4 of the 5 cast iron samples. No loss of function occurred.
- Developed new ongoing IPEC Selective Leaching Management Program – Established the program implementation requirements for the identification, monitoring, trending and repairing/replacing components susceptible to selective leaching

IP3 Selective Leaching (SL) Program

- 22 total SL samples required
- 17 SL inspections performed – no findings

Major Plant Modifications since 2009 ACRS Subcommittee Meeting

- Entergy has an ongoing robust capital improvement program
- Since 2009 over 1000 modifications and other plant improvements have been implemented costing nearly \$ 600 million
- Examples of modifications are included in the next several slides

Major Plant Modifications since 2009 ACRS Subcommittee Meeting (cont.)

Indian Point Unit 2

- 2010 – Installed vortex suppressors above internal recirculation and containment sump strainers
- 2010 – 2013 Replaced 21 main transformer and rebuilt oil containment moats for 21 and 22 main transformers
- 2012 – Installed cathodic protection system on Condensate Storage Tank supply and return piping
- 2012 – Received license to transfer spent fuel from Unit 3 to Unit 2
- 2015 – Work in progress to install Spent Fuel Pool wide-range level indication
- 2015 – Installed robust Flex Equipment Storage Building (also used for Unit 3)
- 2015 – Work in progress to install FLEX electrical and mechanical connectors

Major Plant Modifications since 2009 ACRS Subcommittee Meeting (cont.)

Indian Point Unit 3

- 2009 – Replaced guide tube split pins
- 2011 – Installed vortex suppressors above internal recirculation and containment sump strainers
- 2011 – Installed cathodic protection system on Condensate Storage Tank supply and return piping
- 2012 – Fuel Storage Building and external roadway modifications to allow wet transfer of spent fuel from IP3 to IP2
- 2012 – Replaced Plant Process Computer with upgraded computer
- 2014 – Completed rebuilding 31 and 32 main transformer oil containment moats
- 2015 – Completed installation of FLEX electrical and mechanical connections
- 2015 – Completed installation of Spent Fuel Pool wide-range level indication

Major Plant Modifications since 2009 ACRS Subcommittee Meeting (cont.)

Site

- New site security perimeter to include
 - 2011 – Vehicle barrier system enhancement
 - 2012 – New Security Owner Controlled Area fence line
- 2012 – New Protected Area security access building
- 2014 – New Plant Access Authorization System
- 2014 – New security central monitoring and alarm system
- 2014 – Removal of most of the Unit 1 stack
- 2014 – Rebuilt the Unit 1 Screenwell house

Reactor Vessel Internals Program

- The NRC has reviewed and approved the IPEC Reactor Vessel Internals (RVI) Program (based on MRP-227-A) as documented in Supplement 2 to the Safety Evaluation Report. The NRC review included the detailed RVI inspection plan that implements the elements of the RVI Aging Management Plan and fulfills License Renewal Application Commitment 30
- Inspections of all MRP-227-A primary components (including over 4700 specific inspections) are scheduled for the Spring of 2016 (IP2) and Spring of 2019 (IP3)
- Industry MRP-227-A inspections performed to date have found no issues with RV internals, other than isolated cracking of baffle-to-former bolts
- Based on the industry OE, IPEC will have a baffle bolt minimum pattern analysis to document that cracking of small numbers of bolts has no impact on the structural integrity of the baffle-former assembly
- IP2 is planning on replacing the split pins during the 2016 refueling outage with cold-worked 316 stainless steel which is degradation resistant. IP3 replaced their split pins with cold-worked 316 stainless steel in 2009

Underground Piping

- Underground piping is defined as below grade, in contact with air and with limited accessibility
- The program was changed to reflect new regulatory guidance
- All underground piping inspections due prior to entering the PEO were completed at IP2. No adverse conditions were identified. All underground piping at IP2 has been coated with a qualified coating
- Approximately 50% of the pre-PEO underground piping inspections have been completed at IP3. The remainder of the inspections are scheduled for this upcoming Summer. No adverse conditions have been identified to date

Buried Piping

- Buried piping is defined as below grade and in contact with soil
- All buried piping inspections due prior to entering the PEO have been completed at both IP2 and at IP3. The inspection results have demonstrated that the piping and the protective coating are generally in good condition. Some minor coating degradation has been identified and corrected
- There have been two exceptions where some moderate corrosion has been identified. One was a 2009 through-wall leak in the IP2 Condensate Storage Tank piping (discussed in the September 2009 ACRS) and the other was degradation in a Service Water line (two areas of degradation) in 2014 at IP3. Both locations have been repaired
- In both instances, the affected piping remained structurally capable of performing its intended safety function

Buried Piping (cont.)

- There is approximately 16,000 feet of buried piping within the scope of license renewal at IPEC (i.e. both units combined)
- We have inspected in excess of 1,000 feet of buried piping at each Unit (2,000 feet total)
- IP2 committed to inspect (direct visual inspections) 20 carbon steel locations prior to the PEO (IP2 does not have any buried stainless steel piping)
- IP3 committed to inspect 11 carbon steel and 3 stainless steel buried piping locations prior to the PEO
- IP2 committed to inspect 14 carbon steel locations and IP3 committed to inspect 14 carbon steel and 2 stainless steel buried piping locations during each of the 10-year period during the PEO

Buried piping - Cathodic Protection (CP)

- As a result of the site geology, a site wide CP system is not feasible at IPEC
- Targeted CP systems have been installed to protect specific areas where vulnerabilities have been identified
- These include some City Water piping and Condensate Storage Tank piping at both IP2 and IP3
- These CP systems provide some corrosion protection but not the full protection because of the non-conductive nature of the IPEC site geology
- The main corrosion protection barrier for buried piping at IPEC is the bitumastic protective coating
- Since the full CP protection levels are not achievable at IPEC, the installed CP systems are not credited in establishing the inspection population which results in a larger direct visual inspection population

Program Changes

- **Examples of program changes**
- **Buried Piping** – Omission and corrections related to systems and components credited in AFW pump room fire (added IP1 river water, IP2 Circulating Water and IP2 Instrument Air)
- **Metal-Enclosed Bus Inspection Program**
Metal-enclosed bus associated with Diesel Fire Pump is not required to start the diesel since it only provides power to charge the batteries and was removed from program
- **Structures Monitoring Program**
 - sump screens, strainers and flow barriers removed from program if they were changed to stainless steel in an air-indoor uncontrolled environment
- **External surface Monitoring program**
 - some carbon steel piping and filter housing exposed externally to indoor air added to be managed for loss of material by the program
 - carbon steel piping and filter housings and gray cast iron turbochargers exposed internally to indoor air removed from program since they were associated with GT3 which is no longer credited

Program Changes (cont.)

- **Oil Analysis Program** - Added copper alloy greater than 15% zinc (inhibited) heat exchanger tubes which are exposed externally to lubricating oil
- **Tables in LRA revised to add or delete components based on annual update submittals** – programs looking for loss of material due to general, pitting and crevice corrosion, microbiologically influenced corrosion, fouling and lining/coating degradation
- **Elastomer Degradation** – materials added
- **Service Water System** – Plastic piping exposed internally to raw water and externally to indoor air added to a table in the LRA
- **Fuel Oil System** added copper alloy with greater than 15% zinc then removed because GT-3 no longer credited
- **Water treatment plant, City Water system, Lube Oil Systems** - components added

Concluding Remarks

- Unit 3 is being prepared to enter the PEO as was done for Unit 2
- License renewal activities are being or will be conducted as if the plants had received a renewed license
- Entergy continues to make investments into the plants to ensure safe and reliable operation
- IPEC is consistently operating with capacity factors above 90%