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NL-17-157

December 14, 2017

U.S. Nuclear Regulatory Commission  
Document Control Desk  
11545 Rockville Pike, TWFN-2 F1  
Rockville, MD 20852-2738

**SUBJECT: Amendment 19 to License Renewal Application (LRA)**  
Indian Point Nuclear Generating Unit Nos. 2 and 3  
Docket Nos. 50-247 and 50-286  
License Nos. DPR-26 and DPR-64

**REFERENCES:**

1. Entergy Letter dated April 23, 2007, F. R. Dacimo to Document Control Desk, "License Renewal Application" (NL-07-039)
2. Entergy Letter dated April 23, 2007, F. R. Dacimo to Document Control Desk, "License Renewal Application Boundary Drawings" (NL-07-040)
3. Entergy Letter dated April 23, 2007, F. R. Dacimo to Document Control Desk, "License Renewal Application Environmental Report References" (NL-07-041)
4. Entergy Letter dated October 11, 2007, F. R. Dacimo to Document Control Desk, "License Renewal Application (LRA)" (NL-07-124)
5. Entergy Letter dated November 14, 2007, F. R. Dacimo to Document Control Desk, "Supplement to License Renewal Application (LRA) Environmental Report References" (NL-07-133)

Dear Sir or Madam:

In accordance with 10 CFR 54.21(b), each year following submittal of the license renewal application and at least 3 months before scheduled completion of the NRC review, an amendment to the renewal application must be submitted that identifies any change to the CLB of the facility that materially affects the contents of the license renewal application (LRA), including the FSAR supplement. In the referenced letters, Entergy Nuclear Operations, Inc. applied for renewal of the Indian Point Nuclear Generating Units 2 and 3 operating licenses. This letter provides Amendment 19 of the Indian Point Units 2 and 3 license renewal application.

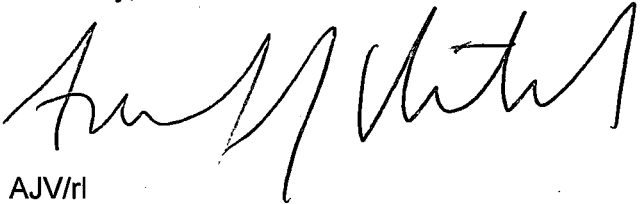
There are no new commitments being made in this submittal.

Should you have any questions concerning this report, please contact Mr. Robert W. Walpole, Licensing Manager, at (914) 254-6710.

A128  
NRR

I declare under penalty of perjury that the foregoing is true and correct. Executed on  
12-14-17, 2017.

Sincerely,



AJV/rl

Attachment 1. Annual Update Amendment

cc: Mr. David C. Lew, Regional Administrator, NRC Region I  
Mr. William Burton, Senior Project Manager, NRC DLR  
Mr. Richard V. Guzman, Senior Project Manager, NRC NRR DORL  
Ms. Bridget Frymire, New York State Department of Public Service  
Ms. Alicia Barton, President and CEO NYSERDA  
NRC Resident Inspector's Office

**ATTACHMENT 1 TO NL-17-157**

**ANNUAL AMENDMENT**

ENTERGY NUCLEAR OPERATIONS, INC.  
INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 and 3  
DOCKET NO. 50-247 and 50-286

**INDIAN POINT NUCLEAR GENERATING UNIT Nos. 2 AND 3  
LICENSE RENEWAL APPLICATION  
ANNUAL AMENDMENT**

In accordance with 10 CFR 54.21(b), each year following submittal of the license renewal application and at least 3 months before scheduled completion of the NRC review, an amendment to the renewal application must be submitted that identifies any change to the CLB of the facility that materially affects the contents of the license renewal application (LRA), including the FSAR supplement. This attachment is the required annual amendment to the LRA.

Amendment 19 is based on a review of documents potentially affecting the Current Licensing Basis (CLB) during the periods of September 1, 2016 through August 31, 2017.

The review concluded that certain sections of the LRA are affected by changes to CLB documents and other related LRA reviews. The table below summarizes the changes listing the affected system (if applicable), an explanation of the change (including effect on the LRA), and the affected LRA section.

**Affected LRA Sections**

| <b>Change</b>  | <b>LRA Section Affected</b>                    |
|--|--|
| <p>IP2 - EC 38036</p> <p>Review ER IP2-05-15107 and develop new ECR/EC to install long radius coated elbows at the steam jet air ejector. REF ECR 13994 and TEMP MOD 37924 for work accomplished on 21 SJE A</p> | <p>Table 3.3.2-19-4-IP2</p>                    |
| <p>IP2 – EC 53505</p> <p>Base EC for IP2 EDG cooler rupture disk installation</p>  | <p>Table 2.3.3-2-IP2<br/>Table 3.3.2-2-IP2</p> |
| <p>IP2 – EC 53509</p> <p>Base EC for IP3 EDG cooler rupture disk installation</p>  | <p>Table 2.3.3-2-IP3<br/>Table 3.3.2-2-IP3</p> |

| Change   | LRA Section Affected   |
|--|--|
| <p>IP3 - EC 59290</p> <p>Evaluate the use of rubber lattice supports as an equivalent to the springs of existing vibration isolators underneath the PAB supply fan</p>   | <p>Table 2.4-4<br/> Section 3.5.2.1.4<br/> Section 3.5.2.2.2.6<br/> Table 3.5.1<br/> Table 3.5.2-4</p> |
| <p>RA-17-089</p> <p>The NRC staff approves use of the 2007 Edition through 2008 Addenda of the ASME Code, Section XI, for activities related to repair/replacement, pressure testing, and NDE of Class 1, 2, 3, MC, and CC components, component supports, and welds, for the remainder of the fourth 10-year ISI intervals at IP-3, which is scheduled to end on July 20, 2019. (Ref. Relief request EN-ISI-16-1).</p>                                  | <p>A.3.1.17<br/> B.1.18</p>  |
| <p>NL-16-065</p> <p>Entergy notified the NRC staff of the application of the latest edition and addenda of the ASME Code (2007/2008 Addenda) for the fifth 120 month interval at IP-2 which began on June 1, 2016.</p>   | <p>A.2.1.17<br/> B.1.18</p>  |
| <p><u>CR-IP2-2017-4851</u></p> <p><u>NI-12-190</u> added components to <u>Table 3.3.2-13-IP3</u> related to <u>EC 38047</u> (IP2) instead of 3.3.2-13-IP2. <u>NL-13-131</u> added these components to <u>Table 3.3.2-13-IP2</u> but neglected to delete them from <u>Table 3.3.2-13-IP3</u>. <u>NL-13-152</u> determined that these components were not within the scope of license renewal, but did not delete them from <u>Table 3.3.2-13-IP3</u>.</p> | <p>Table 2.3.3-13 IP3<br/> Table 3.3.2-13-IP3</p>  |

| Change  | LRA Section Affected   |
|---|--|
| <p><u>CR-IP2-2017-4851</u></p> <p>During update of AMRRS and Annual Update preparation, it was noted that additional minor changes to the material content of the LRA were required for submittal to the NRC.</p> | <p>Table 3.4.2-5-4-IP2<br/>B.1.27<br/>B.1.29<br/>A.2.1.28<br/>A.2.1.39</p> |

IPEC LRA changes are shown below.

(Changes are shown as strikethroughs for deletions and underlines for additions)

**Table 3.3.2-19-4  
 Condensate System  
 Nonsafety-Related Components Potentially Affecting Safety Functions  
 Summary of Aging Management Review**

| <b>Table 3.3.2-19-4-IP2: Condensate System</b> |                          |                                    |                    |  |                                  |                               |                     |              |
|--|--------------------------|------------------------------------|--------------------|--|----------------------------------|-------------------------------|---------------------|--------------|
| <b>Component Type</b>                          | <b>Intended Function</b> | <b>Material</b>                    | <b>Environment</b> | <b>Aging Effect Requiring Management</b> | <b>Aging Management Programs</b> | <b>NUREG-1801 Vol. 2 Item</b> | <b>Table 1 Item</b> | <b>Notes</b> |
| <u>Piping</u>                                  | <u>Pressure boundary</u> | <u>Metal with internal coating</u> | <u>Steam (int)</u> | <u>Loss of coating integrity</u>         | <u>Coating integrity</u>         | =                             | =                   | <u>E</u>     |

**Table 2.3.3-2-IP2  
 Service Water System  
 Components Subject to Aging Management Review**

| <b>Component Type</b> | <b>Intended Function(s)</b> |
|-----------------------|-----------------------------|
| <u>Rupture disc</u>   | <u>Pressure boundary</u>    |

**Table 3.3.2-2-IP2  
 Service Water System  
 Summary of Aging Management Review**

| <b>Table 3.3.2-2-IP2: Service Water System</b> |                          |                     |                           |  |                                     |                               |                     |              |
|--|--------------------------|---------------------|---------------------------|--|-------------------------------------|-------------------------------|---------------------|--------------|
| <b>Component Type</b>                          | <b>Intended Function</b> | <b>Material</b>     | <b>Environment</b>        | <b>Aging Effect Requiring Management</b> | <b>Aging Management Programs</b>    | <b>NUREG-1801 Vol. 2 Item</b> | <b>Table 1 Item</b> | <b>Notes</b> |
| <u>Rupture disc</u>                            | <u>Pressure boundary</u> | <u>Nickel alloy</u> | <u>Raw water (int)</u>    | <u>Loss of material</u>                  | <u>Service Water Integrity</u>      | <u>VII.C1-13 (AP-53)</u>      | <u>3.3.1-78</u>     | <u>A</u>     |
| <u>Rupture disc</u>                            | <u>Pressure boundary</u> | <u>Nickel alloy</u> | <u>Condensation (ext)</u> | <u>Loss of material</u>                  | <u>External Surfaces Monitoring</u> | --                            | --                  | <u>G</u>     |

| <b>Table 2.3.3-2-IP3<br/>           Service Water System<br/>           Components Subject to Aging Management Review</b> |                             |
|---|-----------------------------|
| <b>Component Type</b>   | <b>Intended Function(s)</b> |
| <u>Rupture disc</u>   | <u>Pressure boundary</u>    |



**Table 3.3.2-2-IP3  
 Service Water System  
 Summary of Aging Management Review**

| <b>Table 3.3.2-2-IP3: Service Water System</b> |                          |                     |                           |  |                                     |                               |                     |              |
|--|--------------------------|---------------------|---------------------------|--|-------------------------------------|-------------------------------|---------------------|--------------|
| <b>Component Type</b>                          | <b>Intended Function</b> | <b>Material</b>     | <b>Environment</b>        | <b>Aging Effect Requiring Management</b> | <b>Aging Management Programs</b>    | <b>NUREG-1801 Vol. 2 Item</b> | <b>Table 1 Item</b> | <b>Notes</b> |
| <u>Rupture disc</u>                            | <u>Pressure boundary</u> | <u>Nickel alloy</u> | <u>Raw water (int)</u>    | <u>Loss of material</u>                  | <u>Service Water Integrity</u>      | <u>VII.C1-13 (AP-53)</u>      | <u>3.3.1-78</u>     | <u>A</u>     |
| <u>Rupture disc</u>                            | <u>Pressure boundary</u> | <u>Nickel alloy</u> | <u>Condensation (ext)</u> | <u>Loss of material</u>                  | <u>External Surfaces Monitoring</u> | --                            | --                  | <u>G</u>     |

**Table 2.4-4  
 Bulk Commodities  
 Components Subject to Aging Management Review**

| <b>Component</b>           | <b>Intended Function</b>                      |
|----------------------------|---|
| <i>Other Materials</i>     |   |
| <u>Vibration isolators</u> | <u>Support for Criterion (a)(3) equipment</u> |

#### 3.5.2.1.4 Bulk Commodities

##### **Aging Effects Requiring Management**

The following aging effects associated with bulk commodities require management.

- cracking
- cracking/delamination
- change in material properties
- loss of material
- Reduction or loss of isolation function
- separation

#### 3.5.2.2.2.6 Aging of Supports Not Covered by Structures Monitoring Program

(3) Reduction/loss of isolation function due to degradation of vibration isolation elements for Group B4 supports

~~The IPEC aging management review did not identify any component support structure/aging effect combination corresponding to NUREG-1801 Volume 2 Item III.B4.2-a.~~

NUREG-1801 Item III.B4.2-a discusses vibration isolation elements and aging effect/mechanism: Reduction or Loss of Isolation Function due to Radiation Hardening, Temperature, Humidity, and Sustained Vibratory Loading. The IPEC Structural Monitoring Program manages reduction/loss of isolation function due to degradation of vibration isolation elements for Group B4 supports.

**Table 3.5.1: Containment, Structures and Component Supports, NUREG-1801**

| Item Number | Component                    | Aging Effect/<br>Mechanism  | Aging Management Programs     | Further Evaluation Recommended  | Discussion  |
|-------------|------------------------------|---|-------------------------------|---|---|
| 3.5.1-41    | Vibration isolation elements | Reduction or loss of isolation function/<br>radiation hardening, temperature, humidity, sustained vibratory loading | Structures Monitoring Program | Yes, if not within the scope of the applicant's structures monitoring program | <del>No vibration isolation elements at IPEC are in scope and subject to aging management review.</del> The Structures Monitoring Program is used to manage the listed aging effects. |

**Table 3.5.2-4: Bulk Commodities**

| Structure and/or Component or Commodity | Intended Function | Material          | Environment                      | Aging Effect Requiring Management   | Aging Management Program     | NUREG-1801 Item         | Table 1 Item    | Notes    |
|---|-------------------|-------------------|----------------------------------|---|------------------------------|-------------------------|-----------------|----------|
| <u>Vibration isolators</u>              | <u>SRE</u>        | <u>Elastomers</u> | <u>Air – indoor uncontrolled</u> | <u>Reduction or loss of isolation function/<br/>radiation hardening, temperature, humidity, sustained vibratory loading</u> | <u>Structures Monitoring</u> | <u>III.B4-12 (T-31)</u> | <u>3.5.1-41</u> | <u>A</u> |

## B.1.18 INSERVICE INSPECTION

### Program Description

The Inservice Inspection (ISI) Program is an existing program that encompasses ASME Section XI, Subsections IWA, IWB, IWC, IWD and IWF requirements.

On March 1, 2007, IP2 entered the fourth ISI interval and on July 21, 2009 IP3 entered the fourth ISI interval. The ASME code edition and addenda used for the IP2 and IP3 fourth fifth interval is the 20047 Edition, 20038 Addenda. The ASME code edition and addenda used for the remainder of the IP3-fourth interval is the 2008 Edition, 2009 Addenda.

### A.2.1.17 Inservice Inspection – Inservice Inspection (ISI) Program

On ~~June 1, 2016~~ March 1, 2007, IP2 entered the ~~fourth~~ fifth ISI interval. The ASME code edition and addenda used for the ~~fourth~~ fifth interval is the 20047 Edition with 20038 addenda.

### A.3.1.17 Inservice Inspection – Inservice Inspection (ISI) Program

On July 21, 2009, IP3 entered the fourth ISI interval. The ASME code edition and addenda used for the fourth interval is the 2001 Edition 2003 Addenda.

The NRC staff approved use of the 2007 Edition through 2008 Addenda of the ASME Code, Section XI, for activities related to repair/replacement, pressure testing, and NDE of Class 1, 2, 3, MC, and CC components, component supports, and welds, for the remainder of the fourth 10-year ISI interval at IP3, which is scheduled to end on July 20, 2019.

**Table 2.3.3-13-IP3  
Fuel Oil  
Components Subject to Aging Management  
Review**

| <b>Component Type</b>   | <b>Intended Function</b>           |
|-------------------------|------------------------------------|
| Flexible bellows        | Pressure boundary                  |
| Heat exchanger (bonnet) | Pressure boundary                  |
| Heat exchanger (tubes)  | Pressure Boundary<br>Heat transfer |
| Silencer                | Pressure boundary                  |
| Turbocharger            | Pressure boundary                  |

**Table 3.3.2-13-IP3  
Fuel Oil Systems  
Summary of Aging Management Review**

| Table 3.3.2-13-IP3: Fuel Oil Systems |                   |                 |                     |                                   |  |                        |              |       |
|--------------------------------------|-------------------|-----------------|---------------------|-----------------------------------|--|------------------------|--------------|-------|
| Component Type                       | Intended Function | Material        | Environment         | Aging Effect Requiring Management | Aging Management Programs                        | NUREG-1801 Vol. 2 Item | Table 1 Item | Notes |
| Filter housing                       | Pressure boundary | Carbon-steel    | Air-indoor (int)    | Loss-of material                  | External Surfaces Monitoring                     | V.B-1 (E-25)           | 3.2.1-32     | E     |
| Flexible bellows                     | Pressure boundary | Stainless steel | Air-indoor (ext)    | None                              | None   | VII.J-15 (AP-17)       | 3.3.1-94     | A     |
| Flexible bellows                     | Pressure boundary | Stainless steel | Exhaust-gas (int)   | Cracking-fatigue                  | Periodic Surveillance and Preventive Maintenance | --                     | --           | H     |
| Flexible bellows                     | Pressure boundary | Stainless steel | Exhaust-gas (int)   | Loss-of material                  | Periodic Surveillance and Preventive Maintenance | VII.H2-2 (A-27)        | 3.3.1-18     | E     |
| Heat exchanger (bonnet)              | Pressure boundary | Carbon-steel    | Air-indoor (ext)    | Loss-of material                  | External Surfaces Monitoring                     | VII.I-8 (A-77)         | 3.3.1-58     | A     |
| Heat exchanger (bonnet)              | Pressure boundary | Carbon-steel    | Treated water (int) | Loss-of material                  | Water Chemistry Control—Closed Cooling Water     | VII.C2-1 (A-63)        | 3.3.1-48     | D     |

Table 3.3.2-13-IP3: Fuel Oil Systems

| Component Type         | Intended Function | Material              | Environment         | Aging Effect Requiring Management | Aging Management Programs                        | NUREG-1801 Vol. 2 Item | Table 1 Item | Notes |
|------------------------|-------------------|-----------------------|---------------------|-----------------------------------|--|------------------------|--------------|-------|
| Heat exchanger (tubes) | Heat transfer     | Copper alloy > 15% zn | Air—indoor (ext)    | Fouling                           | Periodic Surveillance and Preventive Maintenance | —                      | —            | G     |
| Heat exchanger (tubes) | Heat transfer     | Copper alloy > 15% zn | Treated water (int) | Fouling                           | Water Chemistry Control—Closed Cooling Water     | VII.C2-2 (AP-80)       | 3.3.1-52     | D     |
| Heat exchanger (tubes) | Pressure boundary | Copper alloy > 15% zn | Air—indoor (ext)    | None                              | None   | V.F.3 (EP-10)          | 3.2.1-53     | C     |
| Heat exchanger (tubes) | Pressure boundary | Copper alloy > 15% zn | Treated water (int) | Loss of material                  | Selective Leaching                               | VII.H1-4 (AP-43)       | 3.3.1-84     | C     |
| Heat exchanger (tubes) | Pressure boundary | Copper alloy > 15% zn | Treated water (int) | Loss of material                  | Water Chemistry Control—Closed Cooling Water     | VII.E1-2 (AP-34)       | 3.3.1-51     | D     |
| Piping                 | Pressure boundary | Carbon steel          | Treated water (int) | Loss of material                  | Water Chemistry Control—Closed Cooling Water     | VII.H2-23 (A-25)       | 3.3.1-47     | D     |
| Piping                 | Pressure boundary | Carbon steel          | Exhaust gas (int)   | Loss of material                  | Periodic Surveillance and Preventive Maintenance | VII.H2-2 (A-27)        | 3.3.1-18     | E     |

Table 3.3.2-13-IP3: Fuel Oil Systems

| Component Type | Intended Function | Material       | Environment       | Aging Effect Requiring Management | Aging Management Programs                        | NUREG-1801 Vol. 2 Item | Table 1 Item | Notes |
|----------------|-------------------|----------------|-------------------|-----------------------------------|--|------------------------|--------------|-------|
| Piping         | Pressure boundary | Carbon-steel   | Air—indoor (int)  | Loss of material                  | External Surfaces Monitoring                     | V.A-19 (E-29)          | 3.2.1-32     | E     |
| Piping         | Pressure boundary | Aluminum       | Air—indoor (ext)  | None                              | None   | V.F-2 (EP-3)           | 3.2.1-50     | G     |
| Piping         | Pressure boundary | Aluminum       | Air—indoor (int)  | None                              | None   | V.F-2 (EP-3)           | 3.2.1-50     | G     |
| Silencer       | Pressure boundary | Carbon-steel   | Air—indoor (ext)  | Loss of material                  | External Surfaces Monitoring                     | VII.1-8 (A-77)         | 3.3.1-58     | A     |
| Silencer       | Pressure boundary | Carbon-steel   | Exhaust-gas (int) | Loss of material                  | Periodic Surveillance and Preventive Maintenance | VII.H2-2 (A-27)        | 3.3.1-18     | E     |
| Silencer       | Pressure boundary | Carbon-steel   | Exhaust-gas (int) | Cracking-fatigue                  | Periodic Surveillance and Preventive Maintenance | —                      | —            | H     |
| Turbocharger   | Pressure boundary | Gray cast iron | Air—indoor (ext)  | Loss of material                  | External Surfaces Monitoring                     | VII.1-8 (A-77)         | 3.3.1-58     | A     |
| Turbocharger   | Pressure boundary | Gray cast iron | Air—indoor (int)  | Loss of material                  | External Surfaces Monitoring                     | V.A-19 (E-29)          | 3.2.1-32     | E     |



Table 3.3.2-13-IP3: Fuel Oil Systems

| Component Type | Intended Function | Material | Environment       | Aging Effect Requiring Management | Aging Management Programs                        | NUREG-1801 Vol. 2 Item | Table 1 Item | Notes |
|----------------|-------------------|----------|-------------------|-----------------------------------|--|------------------------|--------------|-------|
| Turbocharger   | Pressure boundary | Aluminum | Air—indoor (int)  | None                              | None   | V.F-2 (EP-3)           | 3.2.1-50     | G     |
| Turbocharger   | Pressure boundary | Aluminum | Exhaust gas (int) | Loss of material                  | Periodic Surveillance and Preventive Maintenance | —                      | —            | G     |

### B.1.27 One-Time Inspection

#### Program Description

- Internal surfaces of the IP2 instrument air system stainless steel or aluminum tubing and valve bodies containing condensation

### B.1.29 Periodic Surveillance and Preventive Maintenance

#### Program Description

|                   |   |
|-------------------|---|
| Condensate system | Use visual or NDE techniques to inspect a representative sample of the internal surfaces of the main condenser tubes exposed to raw water (internal) and expansion joints exposed to treated water <u>and indoor air</u> to manage <u>cracking</u> , loss of material, and change in materials properties, and fouling. |
|-------------------|---|

**Table 3.4.2-5-4-IP2  
City Water System  
Components Required to Support AFW Pump Room Fire Event  
Summary of Aging Management Review**

| Table 3.4.2-5-4-IP2 City Water System (CYW) |                   |                      |                     |                                   |  |                        |              |        |
|---|-------------------|----------------------|---------------------|-----------------------------------|--|------------------------|--------------|--------|
| Component Type                              | Intended Function | Material             | Environment         | Aging Effect Requiring Management | Aging Management Programs                        | NUREG-1801 Vol. 2 Item | Table 1 Item | Notes  |
| Strainer housing                            | Pressure boundary | Copper alloy >15% Zn | Air-indoor-(ext)    | None                              | None   | V.F-3 (EP-10)          | 3.2.1-53     | G      |
| Strainer housing                            | Pressure boundary | Copper alloy >15% Zn | Treated water (int) | Loss of material                  | Periodic Surveillance and Preventive Maintenance | -                      | -            | G, 407 |

**A.2.1.28 Periodic Surveillance and Preventive Maintenance Program**

Surveillance testing and periodic inspections using visual or other non-destructive examination techniques verify that the following components are capable of performing their intended function.

- o chlorination, circulating water, city water, intake structure system, emergency diesel generator, fresh water cooling, instrument air, integrated liquid waste handling, lube oil, miscellaneous, radiation monitoring, river water, station air, waste disposal, wash water, and water treatment plant system piping, piping components, and piping elements

#### **A.2.1.39 Water Chemistry Control – Closed Cooling Water Program**

The Water Chemistry Control – Closed Cooling Water Program is an existing program that includes preventive measures that manage loss of material, cracking, or fouling for components in closed cooling water systems (component cooling water (CCW), instrument air (IP2 only), ~~fresh water cooling~~, conventional closed cooling (CCC), instrument air closed cooling (IACC), emergency diesel generator cooling, security generator cooling, station air (IP1) cooling and SBO/Appendix R diesel generator cooling). These chemistry activities provide for monitoring and controlling closed cooling water chemistry using procedures and processes based on EPRI guidance for closed cooling water chemistry.