From: Kimberly Green

To: <a href="mailto:dtyner@ent

Date: 12/12/2007 11:16:55 AM

Subject: RAIs on BOP and SGTI and Chemical cc: <IPNonPublicHearingFile@nrc.gov>

Donna and Mike,

These RAIs were signed out on December 7th, and will be available in ADAMS shortly. For your use, the Word version of the files are attached.

Please let me know if you have any questions.

Thanks,

Kim Green U.S. Nuclear Regulatory Commission One White Flint North 11555 Rockville Pike Mail Stop O11 F1 Rockville, Maryland 20852-2738 phone: 301-415-1627

fax: 301-415-3313 email: kjg1@nrc.gov **Hearing Identifier:** IndianPointUnits2and3NonPublic

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Subject: RAIs on BOP and SGTI and Chemical

Creation Date: 12/12/2007 11:16:55 AM

From: Kimberly Green

Created By: KJG1@nrc.gov

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"MICHAEL D STROUD" < MSTROUD@entergy.com>

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ML073250226 SGTI and Chemical.doc 89088 12/26/2007

10:11:50 AM

Options

Priority: Standard **Reply Requested:** No **Return Notification:** None None

Concealed Subject: No

Security: Standard

December 7, 2007

Mr. Michael A. Balduzzi Sr. Vice President and COO Entergy Nuclear Operations, Inc. Regional Operations, NE 440 Hamilton Avenue White Plains, NY 10601

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE

INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3, LICENSE

RENEWAL APPLICATION

Dear Mr. Balduzzi:

By letter dated April 23, 2007, as supplemented by letters dated May 3, 2007 and June 21, 2007, Entergy Nuclear Operations, Inc., submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54, to renew the operating licenses for Indian Point Nuclear Generating Unit Nos. 2 and 3, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review. Further requests for additional information may be issued in the future.

These requests for additional information were discussed with Mr. Robert Walpole, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-1627 or via e-mail KJG1@nrc.gov.

Sincerely,

/RA/

Kimberly Green, Safety Project Manager Projects Branch 2 Division of License Renewal Office of Nuclear Reactor Regulation

Docket Nos. 50-247 and 50-286

Enclosure:

Requests for Additional Information

cc w/encl: See next page

December 7, 2007

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ADAMS Accession No. ML073190401

OFFICE	PM:RPB2:DLR	LA:DLR	OGC	BC:RPB2:DLR
NAME	KGreen	YEdmonds	STurk (w/ NLO)	RFranovich (JCaverly for)
DATE	11/27/07	11/23/07	12/3/07	12/7/07

INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3 LICENSE RENEWAL APPLICATION (LRA) REQUESTS FOR ADDITIONAL INFORMATION (RAIs)

2.2 PLANT LEVEL SCOPING RESULTS

RAI 2.2A-1

LRA Table 2.2-2-IP2, "Mechanical Systems Not within the Scope of License Renewal," identifies that the hot penetration cooling system is excluded from the scope of license renewal and references Updated Final Safety Analysis Report (UFSAR) Section 5.1.4.2.2 as its basis. UFSAR Section 5.1.4.2.2 provides a local area temperature limit of 250 degrees Fahrenheit (°F) and states that cooling is provided for hot penetrations through the use of air-to-air heat exchangers.

Cooling of hot containment penetrations minimizes age-related, heat-induced degradation of local concrete surrounding the penetration. Therefore, it may have an intended function in accordance with 10 CFR 54.4(a). Justify the exclusion of the hot penetration cooling system from the scope of license renewal.

RAI 2.2B-1

LRA Table 2.2-2-IP3, "Mechanical Systems Not within the Scope of License Renewal" identifies that the breathable air system is excluded from the scope of license renewal and references UFSAR Section 9.10 as its basis. UFSAR Section 9.10 states that the breathable air system is a non-category I system, except for the penetration into containment, where breathable air is provided inside containment through a spare penetration line.

Confirm whether the breathable air containment penetration is within scope of license renewal or justify its exclusion.

2.3.3.1 Spent Fuel Pit Cooling

RAI 2.3B.3.1-1

The Indian Point Unit 3 UFSAR, page 91, references a backup spent fuel cooling system that operates in parallel with the normal spent fuel pit (SFP) cooling system during refueling activities. The normal SFP cooling system is in scope for 10 CFR 54.4(a)(1) with the intended function of providing a pressure boundary for the component cooling system and the safety injection system, and 10 CFR 54.4(a)(2) for physical interaction.

Components from the backup spent fuel cooling system are not identified as being within scope of license renewal. Explain why the components from the backup spent fuel cooling system are not in scope, or revise LRA Tables 2.3.3-1-IP3 and 3.3.2-1-IP3 to include these components as types subject to aging management review (AMR).

2.3.3.14 Emergency Diesel Generator System

RAI 2.3A.3.14-1

License renewal drawing LRA-9321-2028-0 for the Unit 2 jacket water to diesel generators identifies that the jacket water pumps (at locations H-4, E-4, and B-4) for Diesel Engine No. 21, 22, and 23 respectively, are not subject to AMR in accordance with 10 CFR 54.21(a) because they are "Not a Long Lived Component."

NUREG-1800, Rev. 1, Table 2.3-2, "Examples of Mechanical Components Screening and Basis for Disposition," provides examples of passive, long-lived components such as diesel engine jacket water, skid-mounted equipment. Confirm that the jacket water pumps are short-lived components and describe their method for periodic replacement.

RAI 2.3A.3.14-2

License renewal drawings LRA-9321-2028-0 and LRA-9321-20283-0, for the Unit 2 and Unit 3 emergency diesel generator (EDG) jacket water cooling system, and LRA-9321-2030-0 and LRA-9321-20303-0, for the Unit 2 and Unit 3 EDG fuel oil system, identify multiple flexible piping connections as not long-lived components. In addition, LRA Section 2.1.2.1.3, "Mechanical System Drawings," states that flexible elastomer hoses/expansion joints are periodically replaced, i.e., not long-lived, and are indicated as such on the drawings.

"Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," NUREG-1800, Rev. 1, Table 2.1-3, "Specific Staff Guidance on Screening," identifies short-lived components as consumables. Further, the table states that short-lived components are periodically replaced. For the flexible connections identified above, describe the programs that manage their inspection and replacement.

RAI 2.3B.3.14-1

License renewal drawing LRA-9321-20283-0 for the Unit 3 jacket water to diesel generators identifies that the jacket water pumps (at locations B-3, B-5, and B-7) for diesel engine no. 31, 32, and 33, respectively, are not subject to aging management review in accordance with 10 CFR 54.21(a) because they are "Not a Long Lived Component."

NUREG-1800, Rev. 1, Table 2.3-2, "Examples of Mechanical Components Screening and Basis for Disposition," provides examples of passive, long-lived components such as diesel engine jacket water, skid mounted equipment. Confirm that the jacket water pumps are short-lived components and describe their method for periodic replacement.

2.3.3.17 City Water System

RAI 2.3A.3.17-1

License renewal drawing LRA-227551-0 shows a small portion of the piping, 2 inch city water (CW) Line #35 (location A-4), highlighted in purple, indicating it is within the scope of license renewal and subject to AMR for the city water system. The piping identified makes no reference

to a continuation drawing. The Detail D area of the drawing references drawing 9321-F-2510, which was not provided to the staff.

This small section of piping implies a continuation onto another drawing that may contain additional components that should be within the scope of license renewal. Explain why drawing 9321-F-2510 is not listed on page 2.3-142 of the LRA under license renewal drawings for the city water system; or provide this and any other continuation drawings that contain components within the scope of license renewal.

RAI 2.3A.3.17-2

License renewal drawing LRA-9321-4006-0 shows piping on the drawing highlighted in purple, indicating the piping is within the scope of license renewal and subject to AMR for the city water system. At valve FP-1134 (C-1), FP-338 (E-2), FP-880 (H-3), and FP-1264 (H-3), the system designation changes from the city water system to the fire protection system. At valve FP-1227 (D-1), the system designation changes from the city water system to the auxiliary feedwater system.

For these changes in system designations identified above, the highlighting remains purple, indicating components subject to AMR under the scope of the city water system. In order to ensure that there are no omissions, explain how the color coding applies to the multiple systems identified above.

RAI 2.3A.3.17-3

In the upper left corner on the license renewal drawing, LRA-227552-0 shows pipe lines FP-6077-6" DH-2 and FP-6075-6" DH-2 highlighted in purple, indicating they are within the scope of license renewal and subject to the AMR for the city water system. With the "FP" designation, they may be construed to be part of the fire protection system.

In order to ensure that there are no omissions, explain why the two fire protection lines are shown in purple as being part of the city water system for license renewal instead of green for the fire protection water system.

RAI 2.3A.3.17-4

License renewal drawing LRA-227781-0 at location A-1 shows a short piece of piping on the drawing highlighted in purple, indicating it is within the scope of license renewal and subject to AMR for the city water system. This short piece of city water system piping makes reference to drawings 9321-F-2593 and 9321-F-2696 for upstream continuation piping. Since this short piece of city water system piping is within the scope of license renewal and continues on the upstream drawings 9321-F-2593 and 9321-F-2696, then these drawings should also have city water system piping within the scope of license renewal. These drawing are not listed on page 2.3-142 of the LRA, which are the license renewal drawings for the Unit 2 and Unit 3 city water system.

Explain why drawings 9321-F-2593 and 9321-F-2696 are not listed on page 2.3-142 of the LRA under license renewal drawings for the city water system.

RAI 2.3A.3.17-5

On page 2.3-140 of the LRA for the city water system, it is stated that the Unit 2 city water system has the intended function for 10 CFR 54.4(a)(3) of providing a supply of water to fire protection system components, including the fire pumps, fire hydrants, hose reel stations inside containment, fire water tank, and various sprinkler and deluge systems. License renewal drawing LRA-9321-2018-0 at locations C-6 and D-6 shows piping highlighted in blue, indicating it is within the scope of license renewal and subject to AMR for the city water system that continues onto additional drawings. One example of this is city water system drawings that refer to drawings 9321-F-2678, 9321-F-2695 and 9321-F-2696 for downstream continuation piping, which are not listed on LRA page 2.3-142. These components would be necessary for the city water system to accomplish its intended function as identified above, (i.e., how the hose reel stations inside containment are supplied water from the Unit 2 city water system). Hence, there may be additional drawings showing city water system components that have not been identified in the LRA.

Provide drawings 9321-F-2678, 9321-F-2695, and 9321-F-2696 and other drawings, as necessary, showing the LRA scope of the Unit 2 city water system.

RAI 2.3A.3.17-6

LRA drawing LRA-9321-4006-0, for the city water system, at locations C-1 and E-2 shows a fire hydrant highlighted in purple, indicating it is within the scope of license renewal and subject to AMR because it supports an intended function in accordance with 10 CFR 54.4(a). LRA Table 2.3.3-19-7-IP2, for city water system does not include the component type "hydrant."

10 CFR 54.21(a)(1) requires the applicant to identify and list those components subject to AMR. Identify where the hydrants in the Unit 2 city water system are evaluated for aging management.

RAI 2.3B.3.17-1

On page 2.3-141, the LRA states that the Unit 3 city water system (also called city water makeup system) has the intended function for 10 CFR 54.4(a)(3) of providing water supply to the fire protection tanks. On license renewal drawing LRA-9321-20343-002-0, for the city water system, the portion of the city water system piping connecting to fire water storage tanks 1 and 2 beyond the isolation valves 84, PCV-1603, 96, 94, 80, PCV-1602, 93, and PCV-1612 is highlighted in purple, indicating it is within the scope of license renewal and subject to AMR. Upstream of these isolation valves, the city water system connects to the 16-inch main for the Village of Buchanan, which contains piping required to provide the water supply function.

Explain why all the city water system piping from the 16-inch main for the Village of Buchanan to the fire water storage tanks is not highlighted in purple, indicating it is within the scope of license renewal for 10 CFR 54.4(a)(3) and subject to AMR.

RAI 2.3B.3.17-2

On page 2.3-141, the LRA for the city water system states that the Unit 3 city water system has no intended functions for 10 CFR 54.4(a)(1). However, on license renewal drawing

LRA-9321-20343-001-0, for the city water system there is a general note, which states under the heading Class I piping: (1) above ground city water make-up to closed cooling water system - expansion tank in control room and diesel generator jacket water expansion tank and (2) City water from Unit 1 tie into auxiliary feedwater pumps suction. Also, under the heading Class III piping in the general notes it is stated: (1) above ground city water make-up to closed cooling water system - head tank in turbine building, and (2) above ground city water supply to nuclear services.

In addition, on license renewal drawing LRA-9321-20183-001-0 for the condensate & boiler feed pump suction system, there is a small portion of the city water system piping shown on the drawing in area H-6. This portion of city water system piping is highlighted in purple indicating it is within the scope of license renewal and subject to AMR. On the drawing, this portion of city water system piping is identified as Class I. By definition, all Class I and Class III piping should have intended functions in accordance with 10 CFR 54.4(a)(1).

- a. Explain why the Class I and Class III piping for the city water system on drawings LRA-9321-20343-001-0 and LRA-9321-20183-0 do not have a 10 CFR 54.4(a)(1) intended function.
- b. Explain why the city water piping up to the closed cooling water system expansion tank, diesel generator jacket water expansion tank, closed cooling water system head tank and nuclear services on license renewal drawing LRA-9321-20343-001-0 is not highlighted in purple indicating it is within the scope of license renewal and subject to AMR.
- c. Explain why the city water system piping that continues from license renewal drawing LRA-9321-20343-001-0 onto drawing 9321-H-20283 for supplying the 40-gallon diesel generator jacket water expansion tanks is also not highlighted in purple as within the scope of license renewal and subject to AMR.

2.3.4.1 Main Steam System

RAI 2.3A.4.1-1

License renewal drawings LRA-9321-2017-0 and LRA-227780-0, for the Unit 2 main steam system, show the following valves within the scope of license renewal and subject to aging management review: on LRA-9321-2017-0: PCV-1134 (D-4), PCV-1135 (D-5), PCV-1136 (D-3), PCV-1137 (D-3), MS-1-21 (E-4), MS-1-22 (E-6), MS-1-23 (E-3), MS-1-24 (E-2), and on LRA-9321-227780-0: PCV-1120 (C-5), PCV-1121 (C-4), PCV-1122 (A-4), PCV-1123 (A-4), PCV-1124 (F-5), PCV-1125 (F-5), PCV-1126 (C-4), PCV-1127 (C-4), PCV-1128 (H-5), PCV-1129 (H-4), PCV-1130 (F-4), PCV-1131 (F-4). This list is intended to be a representation; additional valves about which this RAI applies may exist.

These valves are air operated and have associated air cylinders and air tubing that have been excluded from the scope of license renewal. Explain why the instrument air system, their tubing, and associated solenoid operated valves (SOVs) to these valves are not within the scope of license renewal in accordance with 10 CFR 54.4(a).

RAI 2.3B.4.1-1

LRA Drawing LRA-9321-20173-0, for the Unit 3 main steam system, shows the following valves within the scope of license renewal and subject to aging management review: PCV-1120 (G-4), PCV-1121 (G-4), PCV-1122 (E-5), PCV-1123 (E-5), PCV-1124 (G-3), PCV-1125 (F-3), PCV-1126 (D-4), PCV-1127 (E-4), PCV-1128 (G-1), PCV-1129 (F-1), PCV-1130 (E-3), PCV-1131 (E-3), PCV-1134 (F-7), PCV-1135 (G-7), PCV-1136 (E-7), PCV-1137 (D-7), MS-1-31 (F-7), MS-1-32 (G-7), MS-1-33 (E-7), MS-1-34 (D-7). This list is intended to be a representation; additional valves about which this RAI applies may exist.

These valves are air operated and have associated SOVs and air tubing that have been excluded from the scope of license renewal. Explain why the instrument air system to these valves are not within the scope of license renewal in accordance with 10 CFR 54.4(a).

2.3.4.2 Main Feedwater System

RAI 2.3A.4.2-1

License renewal drawing LRA-9321-2019-0 identifies that valves FCV-417-L, FCV-417, FCV-427-L, FCV-437-L, FCV-437, FCV-447-L, FCV-447, BF2-21, and BF2-22, for the Unit 2 main feedwater system, are within the system evaluation boundary.

Although the aforementioned valves are passive and long-lived, they are not highlighted indicating that they are not subject to aging management in accordance with 10 CFR 54.21(a). Explain the valves' exclusion from aging management.

RAI 2.3B.4.2-1

License renewal drawing LRA-9321-20193-0 identifies that valves FCV-417-L, FCV-417, FCV-427-L, FCV-427, FCV-437-L, FCV-437, FCV-447-L, FCV-447, BF2-31, and BF2-32, for the Unit 3 main feedwater system are within the system evaluation boundary.

Although the aforementioned valves are passive and long-lived, they are not highlighted indicating that they are not subject to aging management in accordance with 10 CFR 54.21(a). Explain the valves' exclusion from aging management.

2.3.4.5 IP2 AFW Pump Room Fire Event

RAI 2.3A.4.5-1

In Section 2.3.4.5, the LRA states that water treatment plant components are credited for the auxiliary feedwater (AFW) pump fire event to support safe shutdown in the event of a fire in the Unit 2 AFW pump room. The source of water is the Indian Point Unit 1 (IP1) condensate storage tanks, which makes up to the Indian Point Unit 2 hotwell dump and condensate transfer pump. These components have an intended function for 10 CFR 54.4(a)(3) to support safe shutdown in the event of a fire, and for 10 CFR 54.4(a)(2) for physical interaction. License renewal drawings do not identify the flow path or the associated components. LRA Section 3.4.2, "Results," describes the applicant's approach to exclude these components from aging management review based upon the premise that the components in the systems required to

supply feedwater to the steam generators during the short duration of the fire event are in service at the time the event occurs or their availability is checked daily. Therefore, integrity of the systems and components required to perform post-fire intended functions for at least one hour is continuously confirmed by normal plant operation.

By concluding that this flow path integrity is continually verified during normal plant operation, the applicant is stating no aging management program is required to assure the post-accident intended function. However, the IP1 condensate storage tanks are only subject to intermittent service; they are not normally in service as a normal flow path. Hence, the approach to exclude the components on this flow path is not consistent with the suggested methodology.

The components in this flow path that are long lived and have an intended function, are required to be within the scope of license renewal and subject to aging management according to 10 CFR 54.21(a)(1). Describe the components in this flow path and how they will be included in the aging management review.

Letter to M. Balduzzi From K. Green Dated December 7, 2007

DISTRIBUTION:

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Indian Point Nuclear Generating Units 2 and 3

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The Honorable Nita Lowey 222 Mamaroneck Avenue, Suite 310 White Plains, NY 10605

December 7, 2007

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RENEWAL APPLICATION

Dear Mr. Balduzzi:

By letter dated April 23, 2007, as supplemented by letters dated May 3, 2007 and June 21, 2007, Entergy Nuclear Operations, Inc. submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54, to renew the operating licenses for Indian Point Nuclear Generating Unit Nos. 2 and 3, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review. Further requests for additional information may be issued in the future.

These requests for additional information were discussed with Mr. Robert Walpole, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-1627 or via e-mail KJG1@nrc.gov.

Sincerely,

/RA/

Kimberly Green, Safety Project Manager Projects Branch 2 Division of License Renewal Office of Nuclear Reactor Regulation

Docket Nos. 50-247 and 50-286

Enclosure:

Requests for Additional Information

cc w/encl: See next page

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ADAMS Accession No.: ML073250226

OFFICE	PM:RPB2:DLR	LA:DLR	OGC	BC:RPB2:DLR
NAME	KGreen	SFigueroa	STurk (w/ NLO)	RFranovich (JCaverly for)
DATE	11/27/07	11/26/07	12/3/07	12/7/07

INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3 LICENSE RENEWAL APPLICATION (LRA) REQUESTS FOR ADDITIONAL INFORMATION (RAIS)

RAI 3.1.2.2.14-1

LRA Table 3.1.1, Item 3.1.1-32, and LRA Section 3.1.2.2.14 "Wall Thinning due to Flow Accelerated Corrosion" state that: "Wall thinning due to flow-accelerated corrosion could occur in steel feedwater inlet rings and supports and the Steam Generator Integrity Program manages loss of material due to flow-accelerated corrosion in the feedwater inlet ring using periodic visual inspections." LRA Section B.1.35 contains a description of the Steam Generator Integrity Program but does not mention monitoring flow accelerated corrosion (FAC) in the Feedwater inlet ring.

- What is the frequency of these secondary side inspections of the feedwater inlet ring?
- When was the last inspection completed?
- What were the acceptance criteria?
- What were the results of the last inspection?

RAI B.1.15-1

LRA Table 3.1.2-4-IP2, the last component on page 3.1-152, is Blowdown pipe connection (nozzle). The interior surface aging management program (AMP) credited for monitoring degradation is Water Chemistry Control-Primary and Secondary, and refers to NUREG-1801, Vol. 2, Rev. 1, "Generic Aging Lessons Learned (GALL) Report," Table IV, Item IV.D2-8.

- Since the component is a nozzle, explain why Item IV.D2-8. is cited here, rather than GALL Item IV.D2-7 which lists FAC as the AMP.
- Is the steam generator blowdown nozzle in the FAC program?

RAI B.1.15-2

It is noted that both units have been approved for stretch power uprates within the past three years – Unit 2 in 2004 and Unit 3 in 2005.

- Provide details on any changes made to the FAC program to account for changes to process variables resulting from the power uprates.
- Which piping systems/components are the most susceptible to FAC?
- How accurately has the CHECWORKS™ model predicted changes in FAC wear rates for the top four most susceptible systems/components for each unit since the power uprates were implemented?

RAI B.1.4-1

LRA Section B.1.4 states that the Boral Surveillance Program acceptance criteria for measurements are as follows: Neutron attenuation testing and B-10 areal density is equal to or greater than the B-10 gm/cm² nominal density assumed in the criticality analysis.

- What was the subcritical margin used in the criticality analysis?
- How does this acceptance criterion account for potential degradation between surveillance periods?
- Please confirm that Indian Point Unit 3 has sufficient boral coupon samples to maintain the sampling frequency through the period of extended operation.

RAI B.1.8-1

LRA Section B.1.8, Containment Inservice Inspection Program, is the program credited for condition monitoring of protective coatings in containment. However, the description of this program only addresses the containment liner, integral attachments on the liner and the concrete surfaces. It does not address other steel surfaces in containment with protective coatings.

- How is the condition of the protective coatings on other metal surfaces, other than the containment liner, monitored?
- Describe the frequency and scope of the inspections, acceptance criteria, and the qualification of personnel who perform containment coatings inspections.

Letter to M. Balduzzi From K. Green Dated December 7, 2007

DISTRIBUTION:

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE

INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3, LICENSE

RENEWAL APPLICATION

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RConte, RI ECobey, RI

MCox, RI

PCataldo, RI

CHott, RI

DJackson, RI

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Indian Point Nuclear Generating Units 2 and 3

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