UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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TO: Phil Ellison

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COMMENTS:

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DIVISION OF SYSTEMS SAFETY AND ANALYSIS

TELECOPY NUMBER: (301) 415-3577

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UNION OF
CONCERNED
SCIENTISTS

March 14, 2000

Dr. William Travers
Executive Director for Operations
United States Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: PETITION PURSUANT TO 10 CFR 2.206, INDIAN POINT UNIT 2, DOCKET NO. 50-247

Dear Dr. Travers:

On behalf of the Nuclear Information & Resource Service, the PACE Law School Energy Project, and Public Citizen's Critical Mass Energy Project, the Union of Concerned Scientists submits this petition pursuant to 10 CFR §2.206 requesting that the NRC issue an order to Consolidated Edison Company of New York preventing the restart of Indian Point 2 until the following conditions are satisfied:

1. All four steam generators are replaced.

2. The steam generator tube integrity concerns identified in Dr. Joram Hopenfeld's differing professional opinion and in generic safety issue GIS-163, "Multiple steam generator tube leakage," are resolved.

3. Potassium iodide (KI) tablets are distributed to residents and businesses within the 10-mile emergency planning zone or stockpiled in the vicinity of the Indian Point 2 facility.

Adequate protection of public health and safety dictates these problems be fully resolved before the plant resumes operation. The petitioners additionally request a public meeting be held in the vicinity of the Indian Point Unit 2 facility as soon as possible. We have information related to these items that we feel can be best provided to the NRC staff during a public meeting. In addition, the almost complete failure of the Agencywide Documents Access and Management System (ADAMS) makes a public meeting absolutely necessary to verify that we have all of the available information on this safety matter.

Background

On February 15, 2000, Indian Point 2 (IP2) was operating at nearly full power. IP2 is a four-loop pressurized water reactor designed by Westinghouse. Each of the four loops contains a steam generator and a reactor coolant pump and connecting piping. Each loop circulates hot water at nearly 550°F and 2,200 pounds per square inch (psig) pressure from the reactor vessel through a steam generator. The reactor coolant pump takes the slightly cooler water from the steam generator and sends it back to the reactor vessel.

There are 3,260 metal tubes inside each of the four steam generators at IP2. Hot water from the reactor passes on the inside of the tubes. Heat passes through the walls of the tubes to boil water on the outside of the tubes. The steam produced in this way leaves the steam generator via piping called steam lines. The steam lines transport the steam to the turbine where it is used to generator electricity. The steam leaving the turbine is cooled back into water in a large metal box called a condenser. The water from the condenser is pumped back to the steam generator to make more steam.

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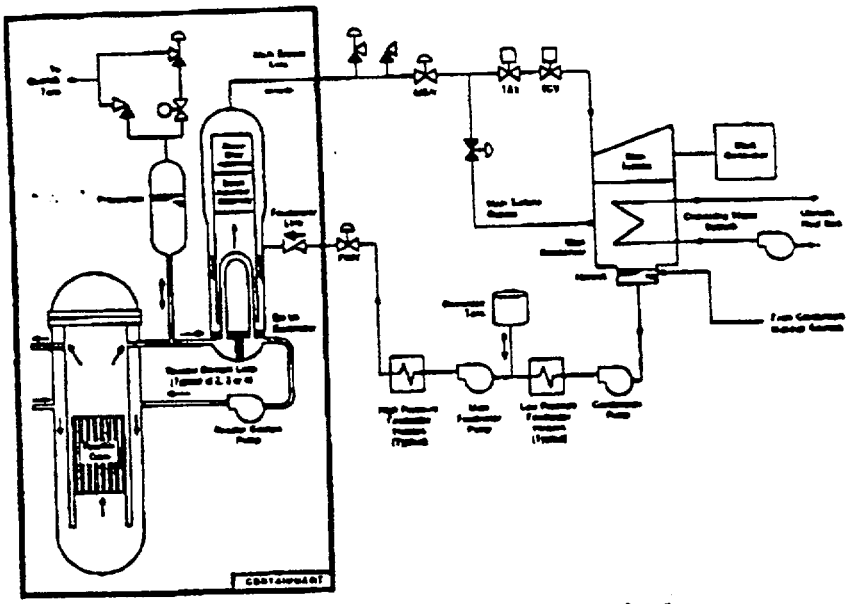
The reactor, the four steam generators, and the four reactor coolant pumps are housed inside the containment building. The turbine and the main condenser are located outside this containment structure.



Normal PWR Heat Transport Paths During Power Operation

At 7:29pm operators received indications that one or more tubes inside Steam Generator #24 (there are not 24 steam generators – 24 comes from being the fourth steam generator at the second unit at Indian Point) had broken and was allowing roughly 75 gallons per minute to leak from the inside to the outside of the tubes (i.e., from the primary loop to the secondary loop).

By procedure, the operators responded to these alarms and indications by manually shutting down the reactor. They caused the control rods to rapidly insert into the reactor core and stop the nuclear chain reaction. They closed valves for Steam Generator #24 to stop leakage through the broken tube(s). The remaining three steam generators continued to be used to remove the decay heat produced by the reactor core.

Basis for Requested Actions

The petitioners request that the NRC order Indian Point 2 be remain shut down until the following conditions are satisfied:

1. All four steam generators are replaced.

   Eight nuclear units in the United States had Westinghouse Model 44 steam generators. Turkey Point 3 replaced the Model 44 SGs in April 1982, Turkey Point 4 in May 1983, Point Beach 1 in March 1984, HB Robinson 2 in October 1984, Indian Point 3 in June 1989, Ginna in June 1996 and Point Beach 2 in 1996. The only remaining US nuclear unit with Westinghouse Model 44 steam generators is Indian Point 2.[1]

   Following the most recent refueling outage in 1997, Steam Generator 21 (SG21) at Indian Point 2 had 313 of its 3,260 tubes plugged, SG22 had 405 plugged, SG23 had 301, and SG24 had 306. Thus, each steam generator has about ten percent of its tubes plugged.[2]

   Con Ed purchased replacements for the Model 44 steam generators at Indian Point 2. These replacements have been stored at the Indian Point 2 site since 1988.[3]

[1] Nuclear Regulatory Commission, "Circumferential Cracking of Steam Generator Tubes, NUREG-1604, April 1997. [Tables B-5 and B-6]

[2] Stephen E. Quinn, Vice President, Consolidated Edison Company of New York, Inc., to United States Nuclear Regulatory Commission, "Steam Generator Tube Inservice Examination 1997 Refueling Outage," July 29, 1997.

[3] David Stellfox, Tube Rupture Prompts Look at 'Inspection & Maintenance Commitments,' *Inside N.R.C.*, February 28, 2000.

All of the operating nuclear power plants in the United States originally equipped with Westinghouse Model 44 steam generators have replaced them with different steam generators, except for Indian Point 2. There are replacement steam generators at the Indian Point 2 site. The Model 44 steam generators, which have on average ten percent of their tubes removed from service and many other tubes having crack indications, must be replaced prior to restart.

2. The steam generator tube integrity concerns identified in Dr. Joram Hopenfeld's differing professional opinion and in generic safety issue GIS-163, "Multiple steam generator tube leakage," are resolved.

Dr. Joram Hopenfeld of the NRC staff first documented concerns with steam generator tube integrity on December 23, 1991.[4] More than eight years later, his concerns remain unresolved. A protracted debate over nuclear safety issues does not meet any one of the NRC's four stated objectives: (1) maintain safety, (2) increase public confidence, (3) improve regulatory efficiency and effectiveness, and (4) reduce unnecessary regulatory burden. If Dr. Hopenfeld is correct, then safety is not maintained until after actions taken to resolve his concerns are fully implemented. If Dr. Hopenfeld is incorrect, then the unnecessary regulatory burden is not reduced until the issue is settled. Whether Dr. Hopenfeld is right or not, an eight-plus year campaign by the NRC on a single safety issue is not efficient, not effective, and not conducive to building public confidence. Equally important, it may serve as a "chilling effect" for other conscientious NRC staffers preventing them from documenting safety concerns. Therefore, Dr. Hopenfeld's differing professional opinion and the related generic safety issue must be revolved prior to restart.

One of Dr. Hopenfeld's concerns involved multiple steam generator tube ruptures following design bases events. This concern has safety implications because the emergency systems which provide makeup and cooling water to the reactor pressure vessel to prevent core damage may be unable to perform this vital function when many tubes fail. Since Dr. Hopenfeld raised this concern, researchers at the Idaho National Engineering Laboratory (INEL) concluded that the probability of a single tube rupture was equal to the probability of 10 tubes failing concurrently for design bases events such as loss of feedwater, turbine generator trip, loss of offsite power, steam line rupture, and main feedwater line rupture. INEL additionally reported that the probability of having more than 10 tubes fail is within an order of magnitude of a single tube rupture for the loss of feedwater, turbine generator trip, steam line rupture, and main feedwater line rupture events.[5] It appears that INEL's study affirms rather than refutes Dr. Hopenfeld's safety concerns, which remain unresolved by NRC.

3. Potassium iodide (KI) tablets are distributed to residents and businesses within the 10-mile emergency planning zone or stockpiled in the vicinity of the Indian Point 2 facility.

The February 15, 2000, event at Indian Point 2 involved the unplanned release of radioactivity to the atmosphere.[6] While it appears that no members of the public received excessive amounts of radiation from this accident, it demonstrates the potential for more serious releases of radioactivity. Potassium iodide (KI) has long been recognized for reducing the harm experienced by humans from airborne radioactivity. By distributing KI tablets to people in the vicinity of the plant along with directions on when to administer the tablets, the health consequences from an accident can be reduced. Alternatively, sufficient KI tablets for the people around the facility could be stockpiled in the

[4] James L. Blaha, Assistant for Operations, Nuclear Regulatory Commission, to Elizabeth J. Yeates, Public Document Room, Nuclear Regulatory Commission, "Memorandum from Dr. Joram Hopenfeld," January 6, 2000.
[5] P. E. MacDonald, V. N. Shah, L. W. Ward, and P. G. Ellison, Idaho National Engineering Laboratory, "Steam Generator Tube Failures," NUREG/CR-6365, April 1996.
[6] David Stellfox, Tube Rupture Prompts Look at 'Inspection & Maintenance Commitments,' *Inside N.R.C.*, February 28, 2000.

communities for rapid distribution following an accident. To minimize human health consequences from an accident, KI tablets must be provided for the people near the plant.

Basis for Public Meeting

The petitioners seek a public meeting to present concerns related to the three requested items to the NRC staff. For example, the NRC staff may not be aware that the Town of Duxbury, Massachusetts just recently voted to stockpile KI tablets in event of a nuclear accident at the nearby Pilgrim nuclear plant.

On March 9, 2000, one of the petitioners (Lochbaum) performed a simple search on ADAMS for all documents on the Indian Point 2 docket (Number 50-247) dated February 15, 2000 or later. A grand total of five (5) documents were found. None of the documents dealt with the steam generator tube leak event. The NRC News Releases[7] on the event were not even in ADAMS as of March 9, 2000.

In a letter dated November 17, 1999, from Stuart A. Reiter and William D. Travers to distribution, the NRC detailed its "Policy on Timing the Release of Documents to the Public in the ADAMS Environment." For documents generated by the NRC staff to external or internal addresses, the policy applies the same criterion: such documents "shall be released 3 working days after the date of the document."

Returning to the five (5) documents in ADAMS on the Indian Point 2 docket dated February 15, 2000 or later:

Document Date	File Date	Lag Time, Working Days
February 15, 2000	February 28, 2000	8
February 16, 2000	February 22, 2000	3
February 16, 2000	March 2, 2000	9
February 22, 2000	March 8, 2000	10
February 25, 2000	March 7, 2000	6

The NRC staff only complied with the stated policy for making documents available to the public for one (1) of these five (5) documents, or only twenty percent (20%) of the time. In fact, the actual compliance is less than twenty percent because documents, such as the charter for the Augmented Inspection Team dispatched to Indian Point 2 following the steam generator tube leak, have not yet made it to the system and are already overdue.

The unreliability of ADAMS and the inability of the NRC staff to follow its own policies and procedures imposes an unfair burden on the petitioners to fully understand the condition of the steam generators and response capabilities at Indian Point 2. Consequently, the petitioners request a public meeting with the NRC staff to go over the available documentation on the subject.

Requested Actions

The petitioners request that the NRC order Con Ed to keep Indian Point 2 shut down until the Westinghouse Model 44 steam generators are replaced, until the differing professional opinion of Dr. Joram Hopenfeld and the related generic safety issue are resolved, and until potassium iodide tablets are provided for people around the facility. Alternatively, the NRC staff could modify the license for the Indian Point 2 reactor to limit it to zero power until these three conditions are satisfied.

[7] I-00-14, "NRC Monitoring 'Alert' at Indian Point 2," February 16, 2000; I-00-15, " NRC Returns to Normal Level of Oversight Following Exit from 'Alert' at Indian Point 2 Nuclear Power Plant," February 16, 2000; I-00-16, " NRC Sends Augmented Inspection Team to Indian Point 2," February 18, 2000; and I-00-19, " NRC to Meet with Consolidated Edison Tomorrow Night to Discuss IP2 Steam Generator Examination," February 29, 2000.

The petitioners additionally request that a public meeting be conducted in the vicinity of the plant. The agenda for this public meeting must include at least the following items: (1) presentation by petitioners on the three elements of the requested order, and (2) presentation by NRC staff of all publicly available documentation on the steam generator tube rupture event.

Sincerely,

David A. Lochbaum
Union of Concerned Scientists

For:

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