Hudson River Sloop Clearwater Comments to the Nuclear Regulatory Commission Annual Assessment Report Meeting on Indian Point June 8, 2016

Insufficient Preventative Maintenance: I first want to point out that to ensure the safety of the 40 passengers, mainly school children, that we take sailing twice a day, the US Coast Guard has recently required Hudson River Sloop Clearwater to do a complete restoration – essentially a full rebuild – of our 47 year old sloop. When completed, this project will have cost a struggling non-profit river organization over $1,000,000 and will allow us to offer the unique experience our icon sloop provides for another 50 years. In contrast, the Nuclear Regulatory Commission (NRC) does not require preventive maintenance of Indian Point's aging, deteriorating, 40+ year old reactors, operating on borrowed time with expired licenses. Instead, Entergy and the NRC respond to crises that are inevitably discovered after damage has occurred. Rather than preventing leaks, it repairs them after severe spikes of tritium and other isotopes are noted in monitoring wells, which are located in the groundwater under the plant, or bolts found to be broken and missing from former plates inside one of the reactors.

Support for Emergency Petition: Given the potential for a nuclear disaster due to degradation of critical equipment and structures inside the nuclear reactors at Indian Point, Clearwater fully supports the Emergency Petition filed by Friends of the Earth on Tuesday, May 24, 2016 calling on the Nuclear Regulatory Commission to keep Reactor 2 offline until the NRC certifies that the root causes of reactor bolt degradation are identified, other internal components of the reactor vessel, including but not limited to the baffle and former plates and attached structures, are fully inspected and repaired, and that the reactor is safe to operate. It also calls for an immediate shutdown to inspect Reactor 3, the twin to IP-2, to ensure that its bolts and related structures undergo the same rigorous scrutiny.

<u>From the Friends of the Earth's Emergency Petition:</u>

> "For the foregoing reasons, the Commission should exercise its authority to immediately prohibit restart of Unit 2 and order the shut down and inspection of Unit 3 until the Staff and Entergy
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> (1) ensure that the baffle-former bolt failures in Unit 2 are mitigated;
> (2) study the cause of the failures;
> (3) ensure that the failures will not recur at Unit 2; and
> (4) determine whether the same failures are present at Unit 3, which has nearly the same design as Unit 2.
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> The Commission should not permit restart of Unit 2 until it is satisfied that the unit can operate safely."

Need for Independent Review Before Restart: In addition, we call upon our Congressional delegation to ensure that there is rigorous independent oversight of, and input into, this process by a wide range of nuclear scientists and technical experts; that all facts and findings regarding both reactors by the NRC and an independent evaluation of these reactors be brought forward in a public and transparent process at a Congressional field hearing to be held in this region; and that neither facility be allowed to reopen unless there is indisputable evidence that it is safe to do. The Governor's Oversight Committee formed to follow up on the severe leak of tritium and other radioactive isotopes in February should be included in the oversight process.

Here are some specific considerations:

1) **The bolts damage was caused by embrittlement:** "The root cause of the baffle-former bolt failures is primarily Irradiation Assisted Stress Corrosion Cracking (IASCC) and increased fatigue loading...it has been concluded that IASCC was the initiating degradation mechanism that resulted in flaws in the baffle-former bolts." The assumption that the root cause of the degradation is IASCC seems premature. Root cause has to be the result of analysis and testing, not assumptions. Entergy has sent a sample of bolts to a lab for analysis, but until that information is available, the root cause is still undetermined.

2) **You can't blame the bolt failure all on nickel. Steel is also subject to failure due to embrittlement, which has likely degraded other steel components besides the bolts**: "IASCC is a type of stress-corrosion cracking of austenitic stainless steels and nickel-based alloys that appears after irradiation in aqueous (water) environments. IASCC is typically inter-granular and the amount of cracking increases with neutron exposure, until a saturation level is reached." Isn't it likely that the same process that degraded the old bolts cause degradation to the plates and other components?

- … In total, replacement baffle-former bolts were installed in 278 locations. The replacement bolt material is SA-479 Type 316 cold worked stainless steel with a new type of anti-rotational/locking mechanism. These replacement baffle-former bolts have been installed and utilized successfully at other operating plants since 1998. The original bolts are 0.625 inch diameter. The size of the replacement bolts is 0.625 inch diameter or 0.750 inch diameter, depending on whether the bolt required machining of the thread major diameter to remove it.

Entergy had to bore out several bolts, and thread new holes into the baffle and former plates to fit new, larger bolts into them. This could easily lead to damage in the baffle and former plates, which have only been visually inspected, yet there is no discussion of the potential for damage to the plates from the bolt replacement activities, or of the need to do ultrasonic testing to determine the extent of degradation.

3) **The NRC doesn't understand why the failure was so severe, and is jumping the gun in arguing for restart before they even know the cause.** They've proposed nickel in the alloy as a speculation, but they don't know. "Failure analyses of selected removed bolts will be performed." Why are they talking about restart before that analysis is complete? The rush to restart is prejudicial, as is the failure to close and inspect IP-3. Neither Entergy nor the NRC seems to care about the root cause; they just want to ensure Entergy's profitability.

4) **Inspections are inadequate.** "During replacement activities, 2 additional bolts were determined to require replacement." Why weren't these found on the initial inspection? The first inspection was prompted by the NYS Attorney General's Office, who asked the NRC to require it in the relicensing process; otherwise NRC would not have ordered it. This points to an inspection regime that is not adequate by a regulatory body that consistently puts the industry's well-being ahead of the public's.

Finally, for years I have been saying that allowing Indian Point to continue to operate, and to continue to generate increasing numbers of highly radioactive fuel rods that are stored in severely overcrowded fuel pools, is like playing Russian roulette with our future. This is now truer than ever – except that now we have a lot more bullets in the cylinder. It is simply time to close and safely decommission these aging, leaking and deteriorating reactors before a major disaster occurs here along the shores of the Hudson, where more than 20 million people live and work.

Sincerely,

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