

Please find attached the CIECP-PHASE on the Holtec PSDAR for Indian Point. Please note I was unable to file these via the Federal Register portal.

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**Re: Docket ID NRC-2021-0125. Holtec Decommissioning International, LLC; Indian Point Nuclear Generating, Units Nos. 1, 2, and 3; Post-Shutdown Decommissioning Activities Report (PSDAR)**

Dear Nuclear Regulatory Commission:

The Council on Intelligent Energy & Conservation Policy (CIECP) and Promoting Health and Sustainable Energy (PHASE) aver that the Post-Shutdown Decommissioning Activities Report (PSDAR) including a Site-Specific Decommissioning Cost Estimate (DCE), submitted by Holtec Decommissioning International (Holtec) for the Indian Point Nuclear Generating Units 1, 2 and 3 (Indian Point) in December 2019 is superficial and deficient. We strongly urge the Nuclear Regulatory Commission (NRC) to:

- (1) Maintain a resident inspector at the Indian Point nuclear facility throughout decommissioning and major site remediation operations. A resident inspector is imperative given (a) the unique nature of the Indian Point site; (b) Holtec's lack of experience decommissioning a nuclear reactor site; and (c) Holtec's "fleet" approach, in which the company proposes to rapidly decommission multiple sites at or about the same time – a plan which virtually guarantees rushing and the cutting of corners.
- (2) Provide detailed inspection reports which comprehensively identify challenges and problems which occur, even where regulatory violations are not found. These should be published at least quarterly and drafted in a manner which would reasonably be expected to be understood by laypersons. Such reporting is needed to comply with the NRC's recently enunciated objectives to improve transparency and more fully engage with public stakeholders. Such reporting is crucial given (a) the level of deteriorated conditions and radioactive leaks at the Indian Point site; (b) the lack of decommissioning experience of the new licensee; (c) the need to inform decommissioning and site cleanup work at other nuclear reactor sites, including but not limited to those conducted by Holtec and its large complex of limited liability companies.
- (3) Work with other government agencies to ensure that the pipelines which transect and are closely proximate to the site are shut down during demolition and major excavation work.
- (4) Require the licensee to apprise the public with reasonable advance notice of major planned activities at the site, particularly those which are reasonably likely to involve potential release of radioactivity or other contaminants. Such notice is particularly important for the protection of women, pregnant mothers, adolescents, children (especially girls), babies in utero, and other vulnerable individuals in the community for which current standards and the roentgen equivalent man (rem man) framework is grossly inadequate.
- (5) Maintain and retain a detailed mapping of areas at the site where significant and/or greater amounts of radioactivity and/or hazardous chemicals are found, with – where possible – a cross-checking of those locations with legacy and/or recent activities at the facility. This is important to inform operations at other nuclear sites, both those which are still running and those which are being decommissioned.

- (6) Hold a series of transcribed virtual public meetings – at least two a year – during the Indian Point decommissioning process, and ensure such meetings enable public stakeholders to ask questions and get their questions answered, to the best of the NRC’s ability, during such meetings. These meetings will facilitate the NRC’s enunciated objective of transparency and better enable engagement with public stakeholders. Such meetings would also help inform stakeholders in the vicinity of other decommissioning nuclear sites.
- (7) Require Holtec preserve major safety related structures and components of the site, so these may be available for “autopsy” to inform maintenance and oversight of reactors applying for and being granted extreme license extensions.

Indian Point reactor unit 1 was shut down in October 1974. Unit 2 ceased operation on April 30, 2020. Unit 3 ceased operation on April 30, 2021. Each reactor has a unique operational history and the NRC has conceded over the years that incidents which occurred, especially in the early decades of operation, went unreported. Indian Point also has a troubled recorded history which, over recent decades, has included transformer explosions; fires; multiple “scrams”; violations involving improper loading of assemblies into the spent fuel pool; and radioactive leaks. Upon information and belief, Holtec has commenced decommissioning work, but the specifics of what has been done to date has not been communicated to the public.

Astonishingly, in its PSDAR, Holtec fails to evaluate the conditions and infrastructure highly specific to the Indian Point site. The PSDAR nakedly appears to be a generic document created by Holtec with the overall cost estimate reverse engineered to fit the sum available in the decommissioning fund. Holtec’s flippant approach is also evident in failure to analyze environmental impacts based on its summarily stated, not explicated conclusion that environmental impacts associated with decommissioning activities are less than and bounded by previously issued environmental impact statements.

The PSDAR is particularly deficient in its failure to consider low-probability, high consequence events such as the rupture of gas pipelines, pandemics/epidemics, terrorism, extreme weather, and natural disasters. Such events are essential to take into consideration in cost and technical capability calculations, especially where the “high consequence” may be truly catastrophic.

No nuclear site in the nation has anywhere near the size of surrounding population – an estimated 17 million – as does Indian Point, which is situated in the New York Metropolitan area. No other nuclear reactor site in the nation is traversed by a large high-pressure natural gas pipeline, much less by three, as is Indian Point. No other nuclear sit in the nation has been publicly identified as a terrorist target specifically considered by foreign terrorists. Indian Point is also situated in the near vicinity of two intersecting earthquake faults identified as likely active by seismologists at Lamont-Doherty Earth Observatory.

Holtec’s cavalier disregard of the pipeline risk is particularly galling, in view of how often the topic risk was raised by experts, public officials and citizen groups prior to the issuance of the PSDAR.

Not unique to the site, but nevertheless quite relevant to decommissioning, cleanup and potential hazard risks, are the increasingly frequent and severe extreme weather events wrought by climate change. As the remnants of Hurricane Ida and many other storms which have hit the region in recent years demonstrate, the Lower Hudson Valley is quite susceptible to

major floodings, widespread prolonged power outages, and a wide array of severe weather-caused transportation and other infrastructure problems. To assume decommissioning and cleanup work, much less any nuclear waste transport regime, will not be impacted by the conditions of climate change is not reasonable. While the PSDAR acknowledges that problems may arise and there may be unanticipated events, it does not engage in any analysis whatsoever of how or the degree to which even relatively probable such events (like another Superstorm Sandy) may impact proposed work or the estimated costs thereof.

The Covid-19 crisis, which began mere months following the issuance of the PSDAR illustrates the need to incorporate significant levels of uncertainty and unpredictability into calculations. The cascading impacts of the pandemic, especially the worker shortage and significant supply chain issues, further illustrate the point.

Holtec's cost estimates are based on outdated assumptions and give no serious consideration to the possibility of a major accident involving high velocity shaking, vibration, fires, and/or collapses of various non-robust structures (e.g., roofs and debris falling into the spent fuel pool).

The potential for an accident (radiological or other) during decommissioning is not inconsequential due to extensive activity that does not occur during normal operation of the active plant.

Finally, the PSDAR is fatally flawed because its conclusions regarding risk, public health and environmental impact, and cost all rest on the unfounded assumption that all of the nuclear waste will be removed from the site, with spent fuel transferred to Holtec's as yet unlicensed and not built "HI-STORE" consolidated interim storage facility (CISF) in Lea County, New Mexico. That site, dangerously in the heart of the Permian Basin, is vigorously opposed by the state of New Mexico, Native American groups, and many organizations and individuals. Its creation would be an environmental justice atrocity. The majority Hispanic communities in Lea County, and large Hispanic communities in adjacent counties, as well as Native American and other people of color and low-income communities nearby, already suffer the health impacts from intensive, heavily polluting fossil fuel industries, heavy mining activities, and the existing complex of nuclear facilities. Adding more radioactivity to the area already burdened by radioactivity and hazardous chemicals would effectively transform the region into a toxic sacrifice zone. In any event, Holtec's divination that the waste will begin to be removed in the current decade is nothing more than a guess which is very likely guided by its financial self-interest in opening the CISF. As the history of other sites shows, even if licensed, the CISF enterprise is hardly assured of being brought to fruition.

Moreover, in proceedings before the NRC Atomic Safety and Licensing Board (ASLB), Holtec representatives said that if a spent fuel canister being received at its proposed HI-STORE CISF were found to be defective or leaking upon receipt in New Mexico, Holtec would send it back to the nuclear power site from whence it came.<sup>1</sup>

In this regard it must also be emphasized that numerous issues relating to management of the spent fuel, especially the high burnup fuel which is much more hot and radioactive than

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<sup>1</sup> ASLB: Official Transcript of Proceedings, in the Matter of Holtec International (HI-STORE Consolidated Interim Storage Facility), U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board hearings, Albuquerque, New Mexico, Docket No. 72-1051-ISFSI, ASLBP No. 18-958-01-ISFSI-BD01, Jan 24, 2019, at p 282. <http://wethefourth.org/files/pdf/ELEA-NRC-transcript-2019-01-24.pdf>.

traditional lower burnup fuel, remain unresolved. A September 2019 report to Congress by the U.S. Nuclear Waste Technical Review Board (NWTRB), an independent federal agency established by the 1987 Nuclear Waste Policy Amendments Act, points out that periodic small-scale shipments of spent fuel have occurred for decades, but most of these involve transport of naval spent fuel conducted by the U.S. Navy. In contrast, transportation of large quantities of spent nuclear fuel (or SNF) and high level waste (HLW) has not been done in this country and will require significant planning and coordination by DOE. The NWTRB observes that unresolved technical issues could significantly delay or impede the implementation of a national transportation program for radioactive waste: “The large size, broad scope, and geographic distribution of the U.S. SNF and HLW program make resolving the technical and integration issues associated with a nationwide transportation effort a significant challenge. SNF and HLW inventories in the U.S. include a diverse collection of waste forms, waste storage containers, storage conditions, storage locations, waste transportation containers, and licensing requirements. Current waste storage sites also include several unique challenges, such as varying degrees of accessibility for large transport vehicles or railcars. Addressing the unresolved technical and integration issues associated with these program elements prior to initiating transportation will require a well-planned and well-integrated effort.”<sup>2</sup>

Robert Alvarez, a senior scholar at the Institute for Policy Studies who previously served as a DOE Secretary Senior Policy Adviser, warns that high burnup fuel poses inadequately studied challenges to even temporary spent fuel storage plans.<sup>3</sup>

Moreover, issues relating to the thin-wall canisters used and proposed by Holtec for additional use at Indian Point keep emerging. Of concern is a report issued the same month as the PSDAR in which scientists at Sandia National Lab and Pacific Northwest National Lab changed the priority of stress corrosion cracking risks of thin-wall canisters to a high priority no “1” for

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<sup>2</sup> Bahr JM, Becker SM, Brantley SL, Croff AG, Foufoula-Georgiou E, Illangasekare T, Peddicord KL, Turinsky PJ, and Zoback ML, Preparing for Nuclear Waste Transportation: Technical Issues that Need to Be Addressed in Preparing for a Nationwide Effort to Transport spent Nuclear Fuel and High-Level Radioactive Waste, U.S. Nuclear Waste Technical Review Board report to the U.S. Congress and the Secretary of Energy, Sep 2019, at p xxiii. Link at: <https://www.nwtrb.gov/our-work/press-releases/technical-issues-that-need-to-be-addressed-in-preparing-for-a-nationwide-effort-to-transport-spent-nuclear-fuel-and-high-level-radioactive-waste-is-subject-of-u.s.-nwtrb-report>. The NWTRB also noted that “considerable planning and coordination will be required to refurbish or reestablish the capabilities to handle and load SNF containers, reconstitute needed site infrastructure (e.g., electrical power, radiological controls), and rebuild the roadways and/or rail lines necessary to support SNF transportation.” (Id at p 31)

<sup>3</sup> Alvarez, Robert, Spent Power Reactor Fuel: Pre-Disposal Issues, slide presentation at: Decommissioning Nuclear Power Plants: What Congress, Federal Agencies and Communities Need to Know, Environmental and Energy Study Institute Decommissioning forum briefing, Jul 16, 2018. Link at: [www.eesi.org/071618nuclear](http://www.eesi.org/071618nuclear). (A graphic in this slide presentation depicts estimated quantity of thermally hotter high burnup (as well as low burnup) fuel generated by Indian Point as of 2013 (p 5). Alvarez notes that: “High burnup fuel reduces the fuel cladding thickness and a hydrogen-based rust forms on the zirconium metal used for the cladding, which can cause the cladding to become brittle and fail. High burnup fuel temperatures make the used fuel more vulnerable to damage from handling.” (p 7) Alvarez states that, even if the proposed centralized interim storage becomes available, the amount of spent fuel could clog transport and impact the schedule for relocation.) Billone MC, Burtseva TA, Han Z and Liu YY, Effects of Multiple Drying Cycles on High-Burnup PWR Cladding Alloys, Argonne National Laboratory Study for Department of Energy, FCRD-UFD-2014-000052 ANL-14/11, Sep 26, 2014. <http://www.ipd.anl.gov/anlpubs/2014/09/107521.pdf>.

research and identified a technology “gap” relating to assessment of impact of through-wall canister cracks.<sup>4</sup>

In sum, the merits of the contention that decommissioning would flow smoothly and all the nuclear waste would be removed from the Indian Point at the time Holtec envisions with nary a hitch are highly debatable.

## **Conclusion**

For all the reasons stated herein, CIECP and PHASE aver that the PSDAR is flawed and urge heightened NRC oversight of the Indian Point site throughout decommissioning and cleanup.

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<sup>4</sup> Teague MC, Saltzstein SJ, Hanson B, Sorenson KB, and Freeze GA, Gap Analysis to Guide DOE R&D in Supporting Extended Storage and Transportation of Spent Nuclear Fuel: An FY2019 Assessment, Sandia National Laboratories and Pacific Northwest National Laboratories report to U.S. Department of Energy Office of Nuclear Energy, SANDA-2019-15479R; 681990, Dec 23, 2019. <https://www.osti.gov/servlets/purl/1592862> Link at: <https://www.osti.gov/biblio/1592862>.

Sandia analysis has also found that: “Full loadings of high burnup fuels in very large casks may require decades of aging in pools” with minimum cooling time before storage or transport for burnup at 40 GWd/MTU and 45 GWd/MTU to be, respectively  $\geq 20$  years and  $\sim 25$  years. Stockman C and Kalinina E, Cooling Times for Storage and Transportation of Spent Nuclear Fuel, Sandia National Laboratories brief presentation for U.S. Department of Energy, SAND2013-1698C, Feb 25, 2013, at pp 2 & 4. <https://www.osti.gov/servlets/purl/1145261>.