

Doris Mendiola - Comments on draft Supplement 28 to GEIS (NUREG-1437) specific to application for 20-year license extension for the Oyster Creek Nuclear Generating Station

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Subject: Comments on draft Supplement 28 to GEIS (NUREG-1437) specific to application for 20-year license extension for the Oyster Creek Nuclear Generating Station

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Comments on draft Supplement 28 to GEIS (NUREG-1437) specific to application for 20-year license extension for the Oyster Creek Nuclear Generating Station

Thank you for the opportunity to offer comments regarding the NRC's preliminary decision that there are no environmental impacts that would preclude the renewal of the operating license for the Oyster Creek Nuclear Generating Station (OCNGS) in Lacey Township, NJ.

These comments are submitted by the GrassRoots Action Center for the Environment (GRACE), a non-profit organization that works with research, policy and grassroots communities to raise public awareness and promote solutions to preserve the planet for future generations. GRACE is involved in nuclear issues on a regional and national level, working in the public interest to ensure reactor safety. As a New York City-based organization, we are specifically concerned with the proposed license extension of OCNGS and its accompanying threats to regional security.

In summary, the draft Supplement 28 to GEIS does not adequately address environmental impacts to the region caused by continued operation of OCNGS.

- A twenty year extension to the operating license would bring the facility into the high-risk "wear-out" phase, dramatically increasing the risks for system failure and catastrophic release of radiation.
- The obsolete Mark 1 reactor containment design and elevated spent fuel pool would not meet current licensing standards and pose unacceptable risks to public health and safety.
- OCNGS has not demonstrated sufficient back-up power supply to ensure public safety in the event of station black-out or malfunction.
- OCNGS has among the highest rates in the country of routine releases of carcinogenic radioactive particulates.
- The location of OCNGS in a high population density area along the eastern seaboard would seriously hamper expedient evacuation in the event of an emergency and differentiate it as an attractive terrorist

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- Global warming and extreme weather events will increasingly render reactors inoperable and dangerous due to design of cooling systems and unreliable back-up power sources.
- OCNGS's once-through cooling systems use over a billion gallons of water a day, discharging it with elevated temperatures and chemical contaminants into an estuary of Barnegat Bay, exacting a serious toll on the marine ecosystem.
- The limited environmental scope of the supplemental EIS does not constitute the mandated "hard look" at potential impacts.
- OCNGS threatens endangered turtle species, which is inconsistent with stated objectives of other governmental agencies.
- Site-specific spent fuel storage considerations, such as pool overcrowding and dry-cask vulnerabilities, are substantial and should not be omitted from an EIS.
- The GEIS is outdated and incomplete. The possibility of terrorist attacks is not so "remote and speculative," and potential impacts should be included for consideration.
- New Jersey and regional consumers are not dependent on OCNGS for electricity generation.
- Concerns related to the NRC and ASLB review of age-related corrosion in the inaccessible and embedded region of the drywell liner component of the station's containment system are omitted from these comments as we await a full report specifically regarding this important component of containment integrity and provision for public health.

In light of the seriousness of the risks associated with on-site spent fuel storage, increased potential for accidents at aging reactors, vulnerability and overcrowding of spent fuel pools, and the region's ability to economically replace the power generated by the plant, OCNGS should not be re-licensed. The specific design, location and attractiveness as a terrorist target of OCNGS distinguish relicensing concerns from other stations and should be thoroughly addressed through a site-specific SAMA review. While the supplement to the GEIS is not required to discuss actual need for power, economic cost benefits of alternatives or any aspect of the storage of spent fuel or terrorist threat, we believe that these issues are central to decision making for the energy future of New Jersey and the regional PJM electricity grid.

1. **High risk "wear-out" phase of operation:** Nuclear reactors are at the highest risk for failure as they approach the end of their engineered lifespan. A twenty year extension to the forty-year operating [1]

license would bring the facility into the high-risk "wear-out" segment of the bathtub curve for failure risk. The GE Mark 1 BWR design of OCNGS is such that in the event of an accident the containment system's only mechanism to avoid a core meltdown would be the direct release of radioactive steam.

The regulatory track record shows that age-related damage at reactors is most-often identified only after they become self-revealing. Based on this track record, we can only assume that there is undetected age-related degradation occurring. Unfortunately, the current regulatory and inspection regime at the NRC has not been effective at identifying these serious threats to reactor integrity and enacting appropriate prevention and protection measures, nor has AmerGen demonstrated a satisfactory level of regard for public safety in their operations. Extending the operational license for OCNGS will dramatically increase the risks for system failure and catastrophic release of radiation.

2. **Mark 1 design:** The obsolete Mark 1 reactor design of OCNGS would not meet current licensing standards. This design-based defect means that in the event of an accidental buildup of pressure inside OCNGS, the only means to avert a core meltdown would be the intentional release of radioactivity directly into the environment. This design flaw poses unacceptable risks to public health and safety, and should not be grandfathered into a license extension. In light of this site-specific design

flaw, how did the NRC conclude that there are no DBA threats at OCNGS beyond those discussed in the GEIS?

In addition to the highly questionable safety of the Mark 1 containment design, its elevated spent fuel pool makes the station more vulnerable to and attractive as a target for sabotage or attack. The spent fuel cooling pool is open at the top and has no protective structure surrounding it. According to the National Academy of Sciences' report, a loss of coolant event in the spent fuel pool would have long-term contamination effects greater than those from the Chernobyl accident [2]

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3. **Back-up power:** In the evaluation of risks, loss of on-site power accounts for 40% of core damage frequency (CDF) risk (Ibid.). AmerGen has not proven their ability to provide sufficient back-up power in the event of station blackout for the renewal period (NJDEP, ASLB No. 06-844-01-L.R.).
4. **Routine releases:** The supplemental EIS does not discuss the substantially above average routine releases of radioactivity into the environment from OCNGS. For airborne emissions of Barium-140, Iodine-131, Strontium-90 and Strontium-89, OCNGS was in the top ten ranked reactors in 2003. OCNGS ranked number one for Strontium-90, which carries a half-life of 29 years, during 2003. The cumulative effects of these low-doses of radiation should be discussed in the EIS, as the National Academy of Sciences has found that there is no safe dose of radiation (NAS BIER IIV, 2005).
5. **Central, high-density location:** The location of OCNGS in a high population density area along the eastern seaboard further differentiates it from other reactor sites. It is situated 50 mi east of Philadelphia and 60 mi south of Newark, with population growth rates for Ocean County among the fastest in the country. The severe impediments to successful and timely evacuation of residents and summer transients from the region as well as long-term environmental contamination and population displacement following an accident are not given just weight in the GEIS Supplement 28.
6. **Reactor vulnerabilities to climatic fluctuations:** The impacts of Climate Change on water and atmospheric temperatures present a significant threat to the future operation of reactors with once-through cooling systems. OCNGS is a MARK 1 design Boiling Water Reactor model and utilizes water from the Forked River as its primary cooling agent. When the water drawn in from a lake or river is too warm to maintain a differential between steam and the condenser, the plant cannot operate. Therefore, as water temperatures continue to rise during summer heat-waves, OCNGS will become an increasingly unreliable and unsafe source of electricity generation.

Over the coming decades, global warming is likely to usher in additional threats to OCNGS operational safety in the form of flood waters from rising levels in the Atlantic Ocean which adjoins Barnegat Bay and increased vulnerability of back-up power to blackout from increased frequency and strength of extreme weather events, particularly hurricanes and Nor'easters. As temporary shut-downs from extreme heat and weather become more common, nuclear power will become less and less reliable, especially during peak demand across summer months, and more susceptible to accidents.

7. **Marine impacts:** The marine impacts of once-through cooling systems are well documented across the country and far more damaging than initially thought. Waste water with significant concentrations of chlorine (595,500,000 gpd flow rate) and elevated temperatures by approximately 25% is discharged into Barnegat Bay, which is a registered U.S. protected estuary. Among the concerns which the EPA has identified for Barnegat Bay, degraded water quality, changes in abundance and diversity, closure of shellfish beds and loss of submerged vegetation can be at least partially attributed to the operations

of OCNGS. Because Barnegat Bay is shallow estuary with limited tidal flushing, it is particularly sensitive to impacts and inputs, natural or anthropogenic. Its ecosystem balance is dependent upon the interchange of fresh and salt water and warm and cool water, making for rich biodiversity that is commercially, recreationally and ecologically important to the region. The operations of OCNGS have already incurred substantial loss of habitat in the estuary, and continued operation promises to further the ecological disturbance to the area during the renewal period.

8. **Limited Environmental Scope:** The supplemental EIS for OCNGS discusses only 17 of the 108 fish and shellfish species associated with Barnegat Bay and among those that are addressed, current population estimates are given for only two, the hard clam and shipworms. This does not connote a thorough, "hard look" at the environmental impacts associated with the operation of OCNGS. Water temperature is the primary factor in hard clam spawning and it is reasonable to conclude that significant population decreases over the past few decades are due to temperature increases and a range of stressors, including deteriorated water quality, algal blooms and chemical contaminants, among which OCNGS plays a significant role as the nearest point source. Conversely, shipworms show increased rates of reproduction in higher water temperatures and greater salinity. Since the opening of OCNGS in 1969, a shipworm habitat has established itself in the creek, especially in areas influenced by the reactor's thermal plume. Oyster Creek is now infested with native and non-native shipworm species that are highly destructive to untreated wooden piling and boat hulls. Submerged aquatic vegetation and phyto- and zooplankton populations that provide critical habitat for many estuary species are in marked decline, largely due to frequent algal blooms and decreased water quality.
9. **Endangered species policy inconsistent with other government agencies:** Five species of sea turtles that are listed as either threatened or endangered live in the vicinity of OCNGS, at which there have been 34 reported cases on impingement of these turtles with a mortality rate of approximately 50% (NUREG-1437, Supplement 28, p 2-51 – 2-53). The removal of these individuals from the sea turtle populations can have dramatic effects on overall species viability, especially as they are attracted to artificially warmed waters surrounding the reactor and therefore vulnerable to dangers posed by the intake structure. While the supplemental EIS says that there is no significant impact to the species from reactor take limits, extending the permissible killing of protected species through the renewal period goes against the stated objectives of other government agencies and legislation.
10. **Spent fuel storage:** While supplemental EIS for license renewal is not required to address and aspect of spent fuel storage, there are significant site-specific consideration at OCNGS that cannot be overlooked or assumed sufficiently accounted for the in the GEIS. New Jersey as a whole has already reached a critical point in spent fuel storage capacity, OCNGS having surpassed storage pool capacity in 2002 and Hope Creek to exceed storage limits in 2008. If OCNGS is re-licensed for twenty additional years of operation, the NJ Public Interest Resource Group has calculated that it will generate an additional 640 metric tons of waste with nowhere to go, inevitably adding to operation costs and increased rates for consumers in the region. The dry cask storage system currently in place at OCNGS does not fully address the issue of spent fuel rod crowding in the pool or vulnerability of waste to attack. Waste generated during the proposed renewal period would necessitate building more dry cask units.
11. **Outdated and incomplete GEIS:** The NRC is relying on a generic EIS that does not take current geopolitical realities or differentiations between reactor sites under consideration when deciding on potential accident risks. The 1996 GEIS for severe accidents at all reactors stated that the environmental impacts would be "small." This was done before 9/11 and without looking at site-specific vulnerabilities and distinctions of targets. AmerGen did not include external sabotage in their ER

(NUREG 1437 Supplement 28, 5-7).

12. **Terrorist attack impacts should be evaluated in EIS under NEPA:** The recent decision of the Ninth [3]

Circuit court that the NRC "erred" in determining that the National Environmental Policy Act (NEPA) does not require the agency to consider potential environmental impacts of terrorist attacks at nuclear facilities. The determination that the possibility of terrorist attacks is not so "remote and speculative," and that they should be included under NEPA items for consideration. Given the location and spent-fuel pool vulnerabilities of OCNGS, the risks of an attack are relatively high and therefore potential environmental impacts should be considered in a supplemental EIS. License extension and continued waste generation will heighten the already elevated risk of an attack.

13. **Electricity from OCNGS extraneous to regional demand:** Finally, New Jersey and regional consumers are not dependent on OCNGS for electricity generation. The regional PJM grid has ample supply of excess capacity and statewide efficiency measures and increased reliance on and deployment of renewable energy sources will enable New Jersey to meet future electricity demand without compromising the safety or economy of the region. While the supplemental EIS is not required to discuss either the need for power or an economic cost/benefit analysis of alternatives, the extreme risk of an accident at OCNGS as it ages and implicit threats to public safety and the regional economy posed by continued operation should be considered on a site-specific basis.

The NRC is required to take a "hard look" at direct and indirect impacts of license extension. Please consider the aforementioned comments for further review of the proposed license extension for OCNGS. We await your good faith response.

Sincerely,

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[1]

The "bathtub curve" refers to the stage-based risk profile outlined in "U.S. Nuclear Plants in the 21st Century: The Risk of a Lifetime" by the David Lochbaum of the Union for Concerned Scientists, May 2004.

[2]

"Safety and Security of Commercial Spent Nuclear Fuel Storage: Public Report," National Academy of Sciences.

[3]

San Luis Obispo Mothers for Peace v. Nuclear Regulatory Commission, No. 03-74628, 2006 WL 1511889 (9th Cir. June 2, 2006).

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