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State Water Resources Control Board (SWRCB)
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03 November 2014

RE: Comment Letter – Once-Through Cooling Policy Special Studies

Hello, Ms. Townsend:

I am serving as a spokesman for **Californians for Green Nuclear Power (CGNP)**, a local group of concerned Californians. Attached find my comments regarding proposed changes to once-through cooling at Diablo Canyon Power Plant (DCPP.) In summary, there are significant intrinsic degradation of safety issues that would likely result from the substitution of cooling towers for once-through cooling at DCPP. There is a relevant section of the federal EPA 316(b) NPDES rules which indicates that reduction in DCPP plant safety should not occur with any proposed modifications. Thus, any proposal to substitute cooling towers for once-through cooling should be rejected by the SWRCB, in deference to relevant federal EPA regulations.

I and other members of CGNP will be traveling to Sacramento, California on November 18, 2014 to make oral presentations regarding the topics raised in the attached comments and respond to questions from the SWRCB.

Please confirm the timely receipt of this email.

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Californians for Green Nuclear Power (CGNP) <http://cgnp.org/>

By Gene A. Nelson, Ph.D., a CGNP Spokesman

Summary of engineering objections to proposed DCPD cooling towers.

(Based on the author's attendance at 14-15 October 2014 DCISC meeting.)

- The proposed use of cooling towers would place millions of gallons of highly-conductive salt water at elevations of 130+ feet above sea level at the DCPD site. Given the complexity of the proposed retrofit, there are multiple potential points of failure that could unleash a manmade tsunami of salt water flowing downhill that could **destroy** critical safety systems such as the Emergency Diesel Generators (EDGs) at 85 feet above sea level and/or vital electrical distribution systems inside DCPD. (It might not even require an earthquake to unleash this tsunami.) The world saw the harm caused by such a salt water tsunami with three reactor melt downs at Fukushima dai-ichi on 11 March 2011.

- The proposed use of low-drift cooling towers using seawater would still distribute over 1.8 million pounds per year of conductive salt onto the DCPD environment and equipment. In a moist coastal environment, this salt will increase the probability of insulator failures (flashovers) that would compromise the safety and reliability of DCPD. In this environment, corrosion of metal surfaces will also be accelerated. Substantial adverse environmental impacts to the flora and fauna from this salt are expected.

The current DCPD salt burden is around a ton per year, mostly from natural salt spray and from the plant's cooling water outfall into the lagoon. There have already been some flashovers at this level that DCPD engineers are working to mitigate. **Increasing the DCPD salt burden by a factor of almost 2,000 will dramatically increase the above problems associated with salt drift.**

- At the 14 October 2014 DCISC meeting, Friends of Earth (FoE) consulting engineer Bill Powers, P.E. advanced the misleading claim that the 28 year operation of the Hope Creek Power Plant (HCPP) in southern New Jersey provided evidence that sea water is already being successfully used to cool a nuclear power plant that uses a cooling tower. **In reality, the HCPP uses brackish water from the Delaware River with an average salinity about 1/3 that of sea water.** Furthermore, only about 20 percent of the brackish water is evaporated in the cooling tower. 66.8 million gallons /day (MGD) are drawn in for the single HCPP reactor and 13 MGD are evaporated, yielding a net 53.8 MGD (80.5% of the water drawn in) return to the Delaware River. Thus, the proposed use of sea water in cooling towers with a low rate of return brine flow to the ocean is unprecedented in the U.S. nuclear power industry. As noted in the first two points, this proposed change imposes significant adverse safety burdens.

- The FoE proposed design for the cooling towers would use fiber-reinforced plastic (FRP) instead of reinforced concrete for corrosion resistance to sea water. This substitution could contain an adverse safety risk, as the flammability of FRP is much higher than reinforced concrete. Having a nuclear power plant utilize a critical safety system that is constructed of a material that can combust and/or melt at high temperatures is poor engineering practice which will likely be rejected by the NRC.

- DCPD's entrainment of larval animals, which consequently perish, is of a similar magnitude to what happens on a mile of ocean coastline from natural wave action - and the actions of natural filter feeders in this marine environment such as barnacles. (Note that any animal larger than larval stage are already excluded by DCPD intake water systems.) A "worst case" analysis of the consequences of DCPD's entrainment concludes that there could be a loss of about \$50,000 per year to the local fisheries industry. However, this worst case loss should be balanced by the benefit to the local fisheries industry in the preservation of adult fish as a consequence of the one-mile-radius security exclusion zone around DCPD, (which is an expansion of the marine sanctuary to the north of the security exclusion zone.) The entirety of this marine sanctuary is preventing overfishing, resulting in a preservation of the long-term economic viability of the local commercial fishing industry.

The EPA provides a specific section in the 316(b) NPDES regulations regarding adverse safety impacts of proposed changes to nuclear power plants which is quoted below:

<http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/upload/316b-prepub-preamble.pdf>

The EPA Administrator, Gina McCarthy, signed the following final rule on May 19, 2014

6560-50-P **ENVIRONMENTAL PROTECTION AGENCY**

40 CFR Parts 122 and 125 [EPA-HQ-OW-2008-0667, FRL – 9817-3] RIN 2040–AE95

National Pollutant Discharge Elimination System—Final Regulations to Establish Requirements for Cooling Water Intake Structures at Existing Facilities and Amend Requirements at Phase I Facilities

E. How Will the Director Determine the Best Technology Available (BTA) for Minimizing Adverse Environmental Impacts? (p. 291)

7. Nuclear Units (p.305)

The rule includes a provision that permits the owner of a nuclear facility to demonstrate to the Director that compliance with the rule would result in a conflict with safety requirements for their facility. See § 125.94(f). EPA anticipates that this provision would be implemented as follows. Initially, the Director will draft a permit and will share the draft permit with the owner or operator of the nuclear facility. Upon reviewing the draft permit, the owner or operator will determine whether in their view a conflict with a safety requirement established by the Nuclear Regulatory Commission, the Department of Energy or the Naval Nuclear Propulsion Program exists. If a conflict exists, the owner or operator should communicate the conflict to the NRC, Department or Program and the Director. In all cases, whether a conflict exists or not, the Director should notify the NRC, Department or Program and the owner or operator of the facility that he or she wishes to informally confer regarding the permit. Such interactions should be scheduled, conducted and documented. Where a conflict is identified, the Director would make a site-specific BTA determination.

Based on the objections raised above, the proposed changes from DCPD's once-through-cooling to cooling towers represent a conflict with the NRC safety requirements for DCPD. The proposed changes should be summarily rejected by the SWRCB.

About the author: Dr. Nelson earned a Ph.D. in radiation biophysics from SUNY Buffalo in 1984. He worked as a systems engineer in the automated clinical chemistry analyzer field for seven years. He has served as a professor for science and engineering courses at 3 colleges and a university. He has been researching the safety and reliability of nuclear power generation for about a decade. He is currently employed in the physical sciences division at Cuesta College in San Luis Obispo, California. He and his wife have lived about 10 miles from DCPD since 2006.

References Cited:

1. Diablo Canyon Independent Safety Committee's (DCISC's) Preliminary Evaluation of Safety Issues for "Addendum to the Independent Third Party Final Technologies Assessment for the Alternative Cooling Technologies or Modifications to the Existing Once-Through Cooling System for the Diablo Canyon Power Plant" dated October 17, 2014 <http://www.dcisc.org/2014-10-17-final-assessment.pdf>
2. PSEG Nuclear, LLC; Hope Creek Generating Station Draft Environmental Assessment and Finding of No Significant Impact Related to the Proposed License Amendment To Increase the Maximum Reactor Power Level, Nuclear Regulatory Commission Docket No. 50-354, [Federal Register Volume 72, Number 203 (Monday, October 22, 2007)] [Notices] [Pages 59563-59572] From the Federal Register Online via the Government Printing Office [www.gpo.gov] [FR Doc No: E7-20761] <http://www.gpo.gov/fdsys/pkg/FR-2007-10-22/html/E7-20761.htm>
3. Nuclear & Uranium State Nuclear Profiles Data for 2010 Release Date: April 26, 2012
New Jersey Nuclear Profile 2010, U.S. Energy Information Administration, <http://www.eia.gov/nuclear/state/newjersey/>
4. Hope Creek Generating Station, Unit 1 profile, Nuclear Regulatory Commission, <http://www.nrc.gov/info-finder/reactor/hope.html>
5. Applicant's Environmental Report Operating License Renewal Stage, Hope Creek Generating Station [Docket No. 50-354] License No. NPF-57, PSEG Nuclear, LLC, 29 March 2012, Hope Creek Generating Station License Renewal Application, Section 3.1.3, Cooling and auxiliary water systems, pp. 3-4 to 3-6. www.nrc.gov/reactors/operating/licensing/renewal/applications/hope-creek/hope-creek-envir-rpt.pdf
6. 6560-50-P ENVIRONMENTAL PROTECTION AGENCY 40 CFR Parts 122 and 125 [EPA-HQ-OW-2008-0667, FRL – 9817-3] RIN 2040-AE95
National Pollutant Discharge Elimination System (NPDES) —Final Regulations to Establish Requirements for Cooling Water Intake Structures at Existing Facilities and Amend Requirements at Phase I Facilities (The EPA Administrator Gina McCarthy signed this final rule on May 19, 2014.) See relevant "Nuclear Units" section regarding safety starting at page 305 of 559. See also p. 540. <http://water.epa.gov/lawsregs/lawguidance/cwa/316b/upload/316b-prepub-preamble.pdf>