Guest Editorial: Diablo Canyon is Done

By David Weisman Published On: November 18, 2021

Released with much fanfare, no doubt given the attention focused on the Climate COP 26 summit, was last week's study from a Stanford and MIT team finding that keeping the Diablo Canyon Nuclear Power Plant online at least a decade past its closure date would produce huge dollar and greenhouse gas savings.

The problem is that the authors of "An Assessment of the Diablo Canyon Nuclear Plant for Zero-Carbon Electricity, Desalination, and Hydrogen Production" take an aspirational macro-view of a potential future scenario while ignoring the historical and present context for this nuclear reactor. More broadly—as with all things *Diablo*—they forget that this devil is truly about the details.

One example is the study's reliance on Diablo Canyon being able to meet the criteria for the reduction in entrainment and mortality of marine life per state law in order to continue to use large amounts of seawater to cool the superheated twin reactors. The study authors acknowledge this challenge and present their preferred solution, which is akin to one proffered by consultant Bechtel in 2013-2014. Shortly after that, the Diablo Canyon Independent Safety Committee (DCISC)—an advisory body chartered by the California Public Utilities Commission to provide safeguards over the ratepayer's investment in Diablo Canyon—weighed in on the challenges presented by Bechtel's analysis regarding safety thresholds and Nuclear Regulatory Commission License Amendment Requests (LARs) in their September 4, 2013, report.

However, the Diablo Assessment study authors' summary concludes, "Similar intake systems have been specified for the Huntington Beach desalination plant, and are currently being tested at Carlsbad as a potential replacement for the existing intake." What they fail to consider is that the intake needs and requirements for a desalination plant do not come with the same requirements as a nuclear power plant, specifically regarding the role of the ocean water itself as the "ultimate heat sink" needed to maintain the constant cooling stream, which is a cornerstone of reactor safety. That—and the NRC LAR process—may very well render their work moot.

The Stanford/MIT Assessment states:

The California Water Quality Control Policy on the Use of Coastal and Estuarine Water for Power Plant Cooling requires that existing power plants using once-through cooling decrease their intake flow rate by 93% to reduce impingement and entrainment of marine life…[T]his regulatory policy is the primary technical reason for the impending shutdown of Diablo Canyon, as the cost of meeting this requirement was thought to be prohibitive. The assumed approach was to construct a submerged intake gallery below the surface of the ocean floor, and use the sand and sediments on the ocean floor as a natural filter to ensure that marine life does not enter the intake. However, this approach poses both significant costs and environmental challenges. ***As a feasible alternative, this study proposes—and examines in depth—the use of mechanical brush-cleaned wedgewire screens, which will be substantially less costly.*** *Similar intake systems have been specified for the Huntington Beach desalination plant, and are currently being tested at Carlsbad as a potential replacement for the existing intake.* [Emphasis added]

It adds:

The array of screens is designed to achieve equal withdrawal from each ***wedgewire screen****, and the design also allows for inspections and simplified maintenance and repair. Following the approach used in the Bechtel report, the existing shoreline basin would be closed off from the Pacific Ocean by extending the existing breakwater structure.* ***The new section of breakwater would include a stop log structure*** *so the wedgewire screens could be bypassed should the need arise.* [Emphasis added]

The Diablo Canyon Independent Safety Committee met to discuss this issue, and in general, came to a different conclusion. It found sufficient information was lacking to conclude any of the proposed options would meet the NRC's nuclear reactor safety regulations, noting specific design details were unavailable. They wrote:

We conclude that the Bechtel assessment that no LAR is required might be correct for the inshore fine-mesh screening system option because this option involves the least extensive modifications to the plant; however, ***this assessment is questionable for the off-shore, modular wedge-wire system, because this option requires the installation of a new, safety-related stop-log system in the plant intake cove. The addition of a new, safety-related system will certainly require a NRC LAR****.* [Emphasis added]

The need for that NRC License Amendment Requests—whether achievable or not—is not mentioned in this report as one of the hurdles to be cleared. It also fails to address the required say of the state's Coastal Commission and the California State Lands Commission. Nor is it clear that the authors have explored the safety consequence of bifurcating the incoming cooling water flows to divert some to pure desalination purposes.

Replacement power during construction?

Further, they do not consider the number of years it will take to construct any alternative cooling system—a period of time during which reactor operation will necessarily cease as systems are disrupted and rerouted. What will be used for replacement power then?

And what about higher levels of radioactive waste from running Diablo, which is slated for closure mid-decade, for another 10-20 years? Pacific Gas & Electric's currently licensed disposal pad would be maxed out. And there still is no national repository for the high-level radioactive waste. The study is mum on this subject.

Among the policy challenges left unexplored by the Assessment is whether the County of San Luis Obispo will be required to return the $90 million ratepayer dollars they received in mitigation for closure and redevelopment planning courtesy of SB 1090 by Sen. Bill Monning and Assemblymember Jordan Cunningham passed in 2018. Will the plant's workers, who have been collecting 25% retention bonuses on their salaries since the retirement was finalized be required to return that money if the plant is relicensed?

Even more important: what entity is going to make the multibillion-dollar investment necessary to enable this process to go forward? None have stepped forward thus far.

I give the last word to retired Nuclear Regulatory Commission administrative law judge—and current San Luis Obispo resident—Alex Karlin: "Diablo is dead. The authors should honor California's Death with Dignity law and let Diablo rest in peace."

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