Offshore fault near Diablo Canyon a 'significant unknown,' USGS scientist warns

Colin Sullivan, Environment & Energy Publishing, 7-27-11

How a recently discovered offshore fault near California's Diablo Canyon nuclear power station might interact or connect with other faults is an uncertainty that must be explored in detail before plant relicensing resumes, a federal scientist said yesterday.

Samuel Johnson, a research geologist at the U.S. Geological Survey's marine science center in Santa Cruz, Calif., told the California Energy Commission that the offshore fault known as the Shoreline Fault could combine with either onshore or offshore fault zones to create a potentially more damaging earthquake.

"Nobody really knows," Johnson said, in response to a question on how the faults connect during a hearing before the commission. "That's a significant unknown. Information on that very topic will probably end up being the most valuable thing we get from the proposed 3-D seismic study."

The comments were timely because the owner of the 2,300-megawatt plant, Pacific Gas and Electric Corp., is completing 3-D seismic studies of the new fault to assess the plant's vulnerability. The studies are attracting heightened attention in the wake of the meltdown at Japan's Fukushima Daiichi plant after a powerful March earthquake and tsunami.

The Nuclear Regulatory Commission recently delayed its review of the Diablo Canyon licenses, which expire in 2024 and 2025, until the studies are complete.

Diablo Canyon, online since 1985, is near the Pacific Ocean in a region known for seismic activity and was built to withstand a magnitude 7.0 quake. The Shoreline Fault was discovered in 2008.

Johnson said he hopes the forthcoming studies, which will be conducted jointly by USGS and PG&E, will shed some light on how the Shoreline Fault interacts with the offshore Hosgri Fault and the onshore Los Osos and Sam Simeon faults. Still, the scientist cautioned that the nature of the work is a "high risk kind of data acquisition" as the rock formations in the region are complex and poorly understood.

"It's an experiment with an unknown outcome," he told the commission. "It could be a lot of money paid to produce data that aren't that useful. The basement rocks in this area are not amenable to yield high-quality data."

Johnson added that it is equally important to conduct research on the earthquake history of the Hosgri Fault and the risks associated with undersea landslides in the region, which have been known to cause tsunamis, though of a more localized variety than the waves that inundated northern Japan.

Whether PG&E should be allowed to relicense the facility at all is an open and looming question in California. The topic sparked protests recently at a state Public Utilities Commission hearing on whether PG&E should be allowed to raise ratepayer funds for the license renewal, and many in the state believe California should follow Germany's lead in banning nuclear power.

The only other operational nuclear power plant in the state, Southern California Edison's San Onofre facility, is also on the coast, between San Diego and Los Angeles. San Onofre's NRC license expires in 2022.

PG&E initiated the license review for Diablo Canyon in 2009 against the wishes of state officials who had asked the utility to wait until the new seismic studies were complete.