New Report Suggests Seismic Threat to Diablo Canyon Is Greater than Previously Understood

Nick Welsh, Santa Barbara Independent, 3-7-13

ARE YOU RADIOACTIVE OR JUSTHAPPY TO SEE ME? To be truthful, I wouldn't know an algorithm if one bit me on the ass. But I am assured by people who would that we have now entered the Age of Algorithm. Google rules the universe because it has better algorithms than Yahoo. Barack Obama beat Mitt Romney last November not just because Romney called 47 percent of the American public a bunch of whiney, entitled moochers, but also because Romney — a board-certified über-white guy — has absolutely no sense of algorithm. Amazon.com knows you better than your own mother because it, too, has superior algorithms. This revelation is relevant as we approach the second anniversary of the late, great Fukushima nuclear meltdown because there's a serious bad-ass geologist working for the United States Geological Survey (USGS) who has come up with a few algorithmic tricks of her own relating to the size and scale of seismic risk confronting the Diablo Canyon nuclear power plant located snugly just a few hours up the coast. The punch line of this new work is that the true earthquake threat posed by the two fault lines running just off the coast of Avila Beach — home to the world's most scenic nuclear power plant — is roughly 10 times bigger than the Nuclear Regulatory Commission (NRC) says it is. And it's a lot bigger than PG&E, the plant operator, says it is.

Our story starts with geologist Jeanne L. Hardebeck, who, since earning her advanced degrees back in 2001, has done nothing but win all kinds of prestigious awards for her scientific contributions. Back in 2008, Hardebeck discovered the existence of the hitherto unrecognized seismic fault running just 600 yards off the coast from Diablo Canyon. This fault — dubbed the Shoreline Fault — runs about 25 kilometers long. Not only did Hardebeck discover something that by all rights PG&E and the NRC should have caught on their own, but she also documented that this fault has been going off like a popcorn popper. (For the record, PG&E points out that they helped bankroll Hardebeck's research and hence deserve some credit for discovering this fault.) Since 1987, the Shoreline Fault has given birth to no less than 50 mini-earthquakes, none registering more than 3.5 on the Richter scale. This, it should be noted, is the second major fault line that PG&E and the NRC both managed to miss. Back in the 1970s, they missed the fact that the Hosgri Fault ran 2.5 miles off the coast from the plant. When it was discovered by a couple of geologists looking for oil, PG&E was forced to rebuild the plant — then under construction — at a cost to ratepayers that was in the billions.

The rebuild was fortified to withstand a 7.5-magnitude quake emanating from the Hosgri Fault, nearly 10 times what PG&E estimates either the Hosgri or the Shoreline are capable of delivering. By that reckoning, Diablo Canyon should be able to withstand any motion the Earth chooses to throw its way. But Hardebeck is not content to let sleeping dogs lie. What if, she asks, the Hosgri Fault and the Shoreline hooked up somewhere deep under the ocean floor? If that were the case, it would be a substantially longer fault line. That's important because the longer the fault line, the more violence it can inflict. In addition, Hardebeck has suggested, if the two faults intersect, that would mean a hypothetical earthquake could strike much closer to the nuclear power plant — about 1.5 miles closer — than previously believed.

Geologists working for PG&E and the NRC have dismissed Hardebeck's suggestions as unsubstantiated. They have insisted that there are at least three "discontinuities" in the fault lines, sizable gaps that effectively prevent all that coiled-up earthquake energy from hopscotching between the two fault lines and beating the crap out of Diablo Canyon. This, I suppose, explains the sudden and peculiar popularity of T-

shirts reading, “Discontinuity Is a Myth” among some anti-nuke activists in San Luis Obispo. Annie Kammerer, a geologist with the NRC, dismissed Hardebeck’s concerns about fault-line linkage as just an “opinion,” during a recent confab with the natives in San Luis Obispo. Blair Jones, a spokesperson for Diablo Canyon, is smart enough to argue that PG&E and the NRC are still studying all the new information just uncovered during recent underwater seismic explorations and that it’s premature to arrive at any conclusions yet. But that sage advice did nothing to prevent the NRC from issuing an official edict last October stating unequivocally that the Shoreline Fault poses no new seismic threats beyond Diablo Canyon’s engineered capacity to withstand.

Having things closer to home to worry about besides Diablo Canyon, I was content to accept the NRC’s assurances. But then I picked up my February copy of the Bulletin of the Seismological Society of America. Rather than yet another titillating cheesecake centerfold of the San Andreas Fault, this issue contained an article by Hardebeck asserting that the two fault lines were, in fact, linked. By using something called an “Optimal Anisotropic Dynamic Clustering” algorithm, Hardebeck claims to have demonstrated that any discontinuities that may exist between the two fault lines are sufficiently insignificant to not matter. In other words, the nuclear power plant could face a maximum quake of 7.5, as opposed to the 6.5 insisted upon by PG&E and the NRC. What makes the article significant is that it’s peer-reviewed by a team of independent geologists. In other words, it’s not just Hardebeck’s opinion anymore. It’s the opinion of others in her field.

Maybe it doesn’t really matter. Maybe Diablo Canyon can withstand a 7.5 shot across the bow, whether delivered 600 yards or 2.5 miles off the coast. Probably, it will never happen. Or if it does, we’ll all have been struck by an asteroid first. No doubt there’s a handy algorithm on all this, but I wouldn’t get it. One thing, however, I do know: By the time you’re bitten on the ass, it’s too late.