

Fukushima's Triple Meltdowns, Seven Years On*

March 11 marks the seventh anniversary of the Great Eastern Japan Earthquake and tsunami that killed over 18,000 people. The quake destroyed the foundations and pipes of the Fukushima-Daiichi nuclear reactor complex, and caused a tsunami that crashed the site's emergency back-up generators resulting in a "station blackout" and the world's only simultaneous triple reactor meltdown. The consequent mass radiation releases, mass evacuations and mass contamination of the Pacific Ocean are unprecedented. Only the 1986 Chernobyl disaster compares to Fukushima, although its radiation was dispersed largely to the atmosphere rather than the sea.

One of the first books on the subject was Takashi Hirose's *Fukushima Meltdown: The World's First Earthquake-Tsunami-Nuclear Disaster*. This passage from the introduction is a reminder of the avoidable risks of operating nuclear reactors in earthquake zones:

"...the fact that there is no way of putting an end to earthquakes and tsunamis is ... something that we must accept.... "However, the Fukushima Daiichi Nuclear Power Plant Disaster is neither a natural disaster nor ordained by fate. It is a human-made disaster brought about by bad faith. Unlike natural disasters, which are beyond human understanding, this was easily predictable and preventable. The officials of Tokyo Electric Power Co. [Tepco] say things like, 'We could not imagine that a once-in-a-thousand-years earthquake might come,' and 'The tsunami was beyond our expectation,' but these are only obfuscations. A major earthquake accompanied by a nuclear power plant accident was—as I will show in detail—something very much within the realm of possibility, a possibility these officials arrogantly refused to consider.

"If I, neither a scholar nor a specialist, was able to foresee this, and the nuclear power specialists from Tepco and from the government's nuclear-related agencies were not, then for what do they exist?"

Minister Opposes Ocean Dumping Contaminated Water in Pacific

Japan's disaster reconstruction minister announced at a press conference last July 15 that he opposes dumping contaminated cooling water from the disaster-struck Fukushima Daiichi site into the sea, citing protests by local fishermen. While the minister has no control over how the waste water will be disposed, his comments came after several experts endorsed the ocean dumping.

About 770,000 tons of waste water has been collected in over 900 densely crowded tanks on site, and the amount grows by 150 tons a day. With limited acreage Tepco officials have said it can keep adding tanks only until 2020, and the tank farm is vulnerable to earthquakes that could spill the waste.

The water becomes highly radioactive when it is poured over wreckage inside the three reactors in order to cool the three masses of "corium"—the hot uranium fuel and its cladding melted into a giant mass that has partially burned through the foundations. Most of the water is then treated in an experimental process that removes many radioactive materials but not the tritium, the radioactive form of hydrogen.

Reconstruction minister Masayoshi Yoshino spoke shortly after Takashi Kawamura, chairman of Tepco Inc. which owns the reactors and caused the catastrophe, said in an interview that the decision to dump the contaminated water "has already been made."

Kawamura's remarks were widely condemned and a Tepco spokesperson made a retraction saying, "The chairman meant to say that the decision to release is not yet final." Minister Yoshino also asked dumping advocates "not to drive (fishermen) further towards the edge," alluding to concern among local fishermen about the effects on their livelihood if the fish and other marine products they catch were to be contaminated.

Misinformation About Tritium**

Reporting about the millions of gallons of radioactive waste water accumulating at the Fukushima site, major media have called tritium harmless. Koydo News Service said last July: "Tritium is a radioactive substance considered relatively harmless to humans." The *London Independent* said last November, "Treatment has removed all the radioactive elements except tritium, which they say is safe in small amounts." The Institute for Energy and Environmental Research (IEER) notes that these assertions directly contradict the US Environmental Protection Agency's Fact Sheet on tritium. That fact sheet says tritium is one of the "least dangerous radionuclides" but reminds readers that "As with all ionizing radiation, exposure to tritium increases the risk of developing cancer." IEER notes, "The established science is that there is no threshold for cancer risk of radiation and therefore no level of exposure is 'safe.'"

High Radiation Levels Found Outside Reactors

Tepco still knows so little about the state of the deadly melted fuel inside the three reactors that the most the company could say in January about its latest remote-controlled probe inside Unit 2 was, "the radiation reading [8 Sieverts] was taken near *what appeared to be fuel debris*." (emphasis added). The harsh radiation environment inside the wrecked reactors is so novel and deadly that robotic probes and containment equipment haven't yet been devised and have to be invented whole cloth. Seven years in, Tepco hasn't yet positively located the melted fuel debris inside all three reactors.

What surprised the January inspectors was a reading of 42 Sieverts per hour "outside the foundations of the reactor." Mycle Schneider, an energy consultant and lead author of the World Nuclear Industry Status

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Through the Prism of Nonviolence

THE DARK SIDE OF THE WALL

By John Heid

For years I have felt an edgy tug, like a rip tide, drawing me closer to *La Frontera*, the US-Mexico border and its wall, the great divide. Last June I finally gave in. I packed my books and sourdough starter and headed two and a half hours west of Tucson to a copper mining community-gone-bust, Ajo, Arizona. It is quintessential small town America, southwestern style.

Ajo has one zip code, one stop light, one grocery store, three gas stations, and three coffee shops. Add to that a mechanic's garage, two hardware stores, a library, and three private clubs. There is no Walmart, no McDonald's, no local police department, no hospital, and never a traffic jam except on winter weekends when tourists travel main street—headed to the beaches of the Sea of Cortez, an hour and a half south.

Javelinas, also known as Collared Peccary or skunk pig, roam the streets at night, and coyotes stroll the sidewalks by day. We can see the Milky Way from the historic, palm tree-lined plaza, *downtown*. Yes, there is little light pollution and few clouds here.

At a glance this town looks like a Norman Rockwell print: idyllic. The postcards at the local gift shop, like the Ajo Red Raider High School yearbook, show our best side. Yet Ajo has another side, a shadow side. It is the shadow of the Wall. Ajo is just 39 miles from the border with Mexico. Thus, well within the 100-mile perimeter of an enhanced border enforcement zone which encompasses the entire United States. This is the wall's 100-mile shadow even where there is no physical barricade. Some residents call this region a Constitution-free zone. It is the political equivalent of the frost-free bioregion Ajo enjoys. The latter fosters the growth of extraordinary flora; the former permits extra-legal practices that are, at best, constitutionally challenged.

The military-style US Border Patrol checkpoints are a prime example. Nobody leaves Ajo without passing through one—no one. They can be an annoyance for caucasians, but a civil rights violation for people of color, nationality notwithstanding. There are also the home incursions that are unwarranted—literally and figuratively. The incidence of these invasions

is markedly higher on the nearby Tohono O'odam Nation than in town. Several years ago, in one of the more dramatic incidents within Ajo proper, three men at prayer were wrested from their pew at the local Catholic Church and arrested just before Mass. In mid-January of this year two patients and a humanitarian aid worker were apprehended in a private clinic. Most of these incidents happen outside public view and are not deemed fit to print in our weekly paper, *The Ajo Copper News*.

Residents south of the checkpoints live in a state of low-intensity occupation, a form of psychological warfare and a strategy designed to keep people subliminally on edge. Towers equipped with rotating cameras, ground sensors, helicopter fly-overs, and the dull hum of drones remind us that we are being watched—all of us. The escalating number of military personnel and the increase in unmarked government vehicles add to the specter of surveillance.

For most people however, Ajo is, and has been, a place to pass through, or overwinter. The town is situated squarely in a region that has been an historic crossroad for indigenous peoples in a network that stretched from present day Mexico to Utah and from the Pacific coast to New Mexico. Now, as then, the year-round residents are a fraction of the number of those who pass through. Each winter our population more than doubles with the arrival of mostly retired, mostly northern US residents in their recreational vehicles or to their second home. Add to that figure the high volume of tourists we see every winter

weekend bound for the beaches of Puerto Peñasco, in Sonora, Mexico.

With the ever expanding militarization of the US-Mexico border, we have also witnessed a veritable odyssey of people from the south traversing the harsh Sonoran desert terrain and walking through or around town. To one degree or another these passersby all experience "the shadow." For northern tourists, it is a potential wrinkle in their vacation, like a long wait at the checkpoint. For our neighbors to the south, it's another story entirely. The shadow, for many of them, is the shadow of death. Nearby Cabeza Prieta is the most lethal National Wildlife



Over 3,000 immigrants have died in the Arizona desert since January of 1999 according to the group Humane Borders. Above, Alonzo Rangel makes notes about the body of a woman in her 20s found near Falfurrias, Texas. (Photo by Don Bartletti/Los Angeles Times via Getty Images)

Refuge in the country, and neighboring Organ Pipe, the deadliest National Monument. The number of recovered human remains on these federal lands accounts for a significant percentage of the overall fatalities in the entire Tucson Sector of the border.

It is not uncommon for people crossing by night from the south, to slip past the public campsites of vacationing northerners at Organ Pipe. One seeking reunion, the other recreating together. Herein lies a slice of the pathos and paradox of life in the shadow. Every wall casts a shadow. Our nation's immigration policies and enforcement have constructed hundreds of miles of border wall, and there's a vigorous push for more. Take warning from those of us who live on the nation's rim: the shadow is always longer, darker, and more insidious than the object that casts it—concrete, wrought iron, or racism.

—John Heid works with the group *No More Deaths in Ajo, Arizona*.