Beyond Nuclear Fact Sheet

Southeast Michigan in the Radioactive Cross Hairs:
Atomic Reactor and Nuclear Waste Risks

Introduction

Most unfortunately, the Great Lakes shores host many aspects of the hazardous, polluting, and deadly uranium fuel chain, from mining, to processing, atomic reactors, long-term radioactive waste storage, and even proposed permanent disposal sites. Michigan, especially its southeast, is in the very cross hairs of such radioactive risks.

“Fermez Fermi!” The Sordid Past, Perilous Present and Forebording Future at Fermi Nuclear Power Plant near Monroe

Whether in historic French, Enrico Fermi’s own Italian, or just plain English, the more than half-century old atomic experiment called the Fermi nuclear power plant, in Frenchtown Township just outside Monroe, not far south of Detroit, needs to be shut down for good.

Fermi 1 (F-1), an experimental plutonium breeder reactor, suffered a partial core meltdown on October 5, 1966. John G. Fuller’s anti-nuke classic, We Almost Lost Detroit, busted open the cover up and brought the near-catastrophe to public attention in 1975. Incredibly, despite being shut down in 1972, F-1 continues to experience accidents. Just several years ago, during decommissioning, sodium fires, and a spill of 8,000 gallons of radioactive water, contaminated with hazardous tritium, have occurred. Little known, Detroit Edison (now DTE), originally proposed F-1 not for electricity, but rather weapons plutonium for the U.S. nuclear arsenal.

Fermi 2 (F-2) kicked off with an inglorious inadvertent criticality in 1985, costing it a multi-billion dollar safety shutdown till 1988. The world’s largest General Electric boiling water reactor (GE BWR) with a Mark I containment, it is almost as big as its identical twins, Fukushima Daiichi Units 1 and 2, put together. F-2’s high-level radioactive waste (HLRW) storage pool, located outside any primary radiological containment, holds every single irradiated nuclear fuel assembly ever generated there, around 600 metric tons worth, more than the Fukushima Daiichi Units 1, 2, 3, and 4 pools put together (354 tons). F-2 has a dry cask storage permit to offload irradiated nuclear fuel from its vulnerable pool, but its infrastructure was not properly welded decades ago, and cannot support the heavy weight of around 100 ton, fully-loaded waste transfer casks. F-2’s near-misses are too many to list concisely, but include a Christmas Day 1993 turbine missile mechanical explosion that resulted in millions of gallons of radioactive water being discharged into Lake Erie. In 2006, it was revealed that F-2’s emergency backup diesel generators had actually been inoperable since 1986, so a loss of the electric grid could have resulted in station blackout (SBO), which plunged Fukushima Daiichi into catastrophic meltdowns. F-2 is the only Mark I amongst 23 operating in the U.S. that has yet to receive a U.S. Nuclear Regulatory Commission (NRC) 20-year license extension rubberstamp, but DTE applied for one in spring 2014. Opponents are considering intervention to resist it.
Fermi 3 (F-3) is the only proposed new atomic reactor still being actively pursued, outside of five in the southern U.S. In Sept. 2008, DTE submitted a combined Construction and Operating License Application (COLA) to NRC for a so-called ESBWR (“Economic Simplified Boiling Water Reactor”). The ESBWR is a gigantic reactor proposal, 1,560 Megawatts-electric (compared to the already giant F-2’s 1,122 MW-e). But GE-Hitachi’s (GEH) “new and improved” design garnered a remarkable 6,000 “Requests for Additional Information” (RAIs) from NRC, reflecting its half-baked nature. In 2013, GEH settled out of court with the U.S. Department of Justice, paying $2.7 million to end claims of fraud regarding the ESBWR steam dryer design; apparently, F-3 would now be allowed to fire up with an experimental piece of major equipment. DTE’s rushed COLA seems to have had more to do with getting first in line for hundreds of millions, or even billions, in federal taxpayer subsidies, than with a quality proposal. F-3’s price tag was initially set at $10 billion, but skyrocketed to $15 billion in three years, and undoubtedly has increased billions more since. Grassroots environmental resistance began immediately. A coalition, represented by Toledo attorney Terry Lodge, including Beyond Nuclear, Citizens for Alternatives to Chemical Contamination, Citizens Environmental Alliance of Southwestern Ontario (CEA), Don’t Waste Michigan (DWM), and the Sierra Club Michigan Chapter formally intervened against the proposal before an NRC Atomic Safety (sic) and Licensing Board (ASLB), and successfully won hearings on a number of contentions, including endangered species protection, thermal and chemical discharges to Lake Erie which would worsen toxic algae blooms, and widespread quality assurance (QA) violations. The coalition and its allies have shown up in force at every twist and turn, including Jan. 2009 environmental scoping hearings, as well as Dec. 2011 Draft Environmental Impact Statement hearings, filing multiple additional contentions based on the latter, including lack of need for F-3. The coalition defended its QA contention at ASLB oral evidentiary hearings on Halloween, 2013, featuring its expert witness Arnie Gundersen, Chief Engineer at Fairewinds Associates. The coalition has been joined in its resistance by the Alliance to Halt Fermi 3. Other nuclear utilities seem to know something DTE does not: numerous previously ordered ESBWRs have been cancelled. F-3 is the lead of only two last standing ESBWRs in the U.S.

**What Would Commodore Perry Do?! Radioactive Risks Galore on OH’s Lake Erie shore**

Perry captured the British Navy in Port Clinton 200 years ago during the War of 1812. But “enemies…domestic” now lurk there in 2014. Davis-Besse (D-B), just 30 mi. southeast of Fermi as the crow flies across the lake, has likely had more close calls with catastrophe than any other atomic reactor in the U.S. In 1977, it suffered a “Three Mile Island precursor incident.” No lessons were learned, nor communicated throughout the nuclear industry, and thus D-B’s twin, TMI’s, 50% reactor core meltdown inevitably followed 18 months later. In 1985, D-B “dried out” a steam generator, cutting off cooling to the reactor core for 12 minutes; workers had to sprint, *Indiana Jones* style, throughout the plant, chopping through chains that locked valves, to manually save the day by the skin of their teeth, before a Loss of Coolant Accident (LOCA) led to a core meltdown. A tornado passed between the containment building and cooling tower in 1998, destroying the grid; D-B’s first emergency backup diesel generator (EDG) was down for maintenance; its second EDG kept breaking down over the course of two days; very fortunately, the grid was restored just before that EDG gave up the ghost, or D-B would have been plunged into SBO and the high risk of meltdown. In 2002, a more than 6-inch corrosion hole in D-B’s reactor pressure vessel head became the most infamous nuclear safety incident since the 1979 TMI meltdown, coming close to breaching and causing a LOCA; FirstEnergy (FE) had to spend over $600 million on replacement electricity, lid replacement, and a record $33.5 million NRC fine. In Oct. 2011, severe cracking of D-B’s concrete containment shell was revealed. Despite
this, NRC rubberstamped restart in Dec. 2011. Absurdly, FE blamed the cracking on the Blizzard of 1978, claiming the problem had not worsened since; environmental critics dubbed that a “snow job of convenience.” In summer 2013, FE admitted discovery of new cracks, and worsening of old ones. Since Dec. 2010, a coalition including Beyond Nuclear, CEA, DWM, and the Green Party of OH have resisted D-B’s 20-year license extension. The coalition won admission of contentions regarding: the ability of renewables, such as wind and solar, to replace D-B; and challenges to Severe Accident Mitigation Alternatives analyses (that is, spend a relatively little now on safety upgrades, to prevent unimaginably costly and harmful catastrophic radioactivity releases later). In 2012, the coalition, again represented by Terry Lodge, filed a contention on the cracked containment, based on revelations made public by U.S. Rep. Dennis Kucinich (D-OH). In 2012, with Gundersen again serving as expert witness, the coalition, this time including OH Sierra Club, also challenged D-B’s experimental steam generator replacement. However, the NRC and ASLB ultimately have rejected all those challenges. In 2014, the coalition also raised a pending contention about D-B’s Shield Building wall gaps.

Plum Brook is a failed NASA research reactor located mid-way between Toledo and Cleveland. Despite being permanently closed down for decades, its contaminated landscape along the Lake Erie shore is reflective of much bigger radioactive messes throughout the Great Lakes at commercial reactors, including both those still operating and permanently shutdown.

Perry is another FE atomic reactor, northeast of Cleveland on the Lake Erie shore. NRC recently ranked it one of the 4 or 5 worst run in the U.S., due to safety violations involving serious radiological risks to its own workers. Perry is a GE boiling water reactor with a Mark III containment.

Given so much nuclear activity along OH’s Lake Erie shore, the relation of artificial radioactivity releases to documented childhood cancer clusters nearby must be thoroughly investigated, but has not yet been. Yet another nuclear threat on the Lake Erie shore, “NewGreen,” has been permitted by the State of OH. It is located near Perry, and proposes to “process” radioactively contaminated metals and other radioactive wastes, an inherently dirty business, “poisoning” metal recycling streams, and releasing yet more radioactivity into the Great Lakes.

Bruce Nuclear: Making a Killing, While Getting Away with Murder

A tremendous grassroots environmental victory has been the years-long “keeping at bay” of Canadian Bruce Nuclear’s proposed radioactive steam generator shipment on the Great Lakes, bound for Sweden, for so-called “recycling.” The shipment would open the floodgates for precedentated radioactive waste shipping on the Great Lakes, with little to no emergency preparedness, or even environmental assessment, of what such a shipment’s sinking would signify for the drinking water supply of 40 million people in the U.S., Canada, and a large number of Native American/First Nations. In fact, the St. Clair and Detroit Rivers represent narrow, shallow “bottlenecks” within which the breach of a single of the 64 proposed radioactive steam generator shipments, contaminated with ultra-hazardous plutonium and other radioactive poisons, would activate a federal radiological emergency under Canadian law, due to its threat to drinking water intakes. This shipment of so-called “low-level” radioactive waste (LLRW; what an oxymoron!) would set the precedent for HIGH LRW shipments on the Great Lakes, something the U.S. Department of Energy itself has proposed. (The latest “Mobile Chernobyl” proposal involves precedentated liquid HLRW truck shipments from Ontario’s (ON) Chalk
River Nuclear Lab, to South Carolina, which could pass through MI.)

ON’s Bruce Nuclear is one of the single biggest nuclear power plants operating in the world. It is located a mere 50 miles east of the tip of MI’s Thumb, across Lake Huron. Bruce comprises a total of 9 reactors altogether, on one site. Kashiwizaki-Kariwa in Japan had 8, larger-sized reactors, but have mostly remained shutdown since an unexpectedly large earthquake damaged the plant in 2007. Although the prototype Douglas Point reactor has long been closed, and a couple more Bruce reactors have remained shutdown for over a decade due to safety violations, it remains among the biggest nuclear power plants in the world, in terms of number of reactors operating on a single site. Recently, a release of ultra-hazardous alpha particle emitting radionuclides within the plant exposed hundreds of Bruce Nuclear workers to harmful internal contamination.

Given so many reactors, Bruce, with the blessing of the rubberstamp Canadian Nuclear Safety (sic) Commission, has concentrated radioactive waste processing, storage, and disposal activities for all 20 of ON’s atomic reactors at Bruce’s already leaking WWMF (Western Waste Management Facility). That is, LLRWs and “intermediate” LRWs from 12 atomic reactors just east of Toronto, as well as Bruce’s own reactors, are concentrated on the Lake Huron shore. LLRWs, frighteningly, have even incinerated at Bruce for over 40 years.

Incredibly, Canada is proposing a “DUD,” a deep underground dump, at Bruce for L&ILRWs. Given that Canada has only 2 additional commercial reactors outside ON, chances are the Bruce DUD would become a national dumpsite. The DUD is proposed for less than a mile from the Lake Huron shore, upstream of s.e. MI. A very bad sign is the fact that the Canadian Nuclear Waste Management Organization (NWMO), run by the nuclear utilities, is in charge of the DUD. The NWMO was originally formed to deal with HLRW, not LLRW.

Thus, as long feared, the NWMO is now sniffing around Bruce for a potential HLRW dump. If both the DUD and a HLRW dump are proposed at or near Bruce, chances are the two astronomically expensive dumps would be merged, in order to save money. Several Bruce area towns, populated mostly by nuclear workers, have “volunteered” to “host” Canada’s national HLRW repository near Bruce, as long as it is “compensated.” A Yucca Mountain type dump for HLRWs immediately adjacent to the Great Lakes shore, more than 20% of the world’s, and more than 90% of North America’s, surface fresh water, is highly objectionable on its face. As shown by Fukushima’s unprecedented, ongoing radioactive releases into the ocean, transportation or storage accidents at a Bruce radioactive waste dump could ruin the irreplacable, priceless, sacred Great Lakes forevermore.

For more information, please contact Kevin Kamps, Radioactive Waste Watchdog at Beyond Nuclear: kevin@beyondnuclear.org, (301) 270-2209 ext. 1, www.beyondnuclear.org.

For the “Great Lakes Region Nuclear Hotspots” map of uranium fuel chain facilities throughout the Basin, by John Jackson of GLU & Anna Tilman of IICPH, see: http://concernforhealth.org/wp/wp-content/uploads/2013/06/NuclMap_IN_lock_May20_2013.pdf