

The French Nuclear Myth

by Michael Welch

Nearly every time I write about the impracticality of nuclear energy being a realistic solution to our energy problems and to human-caused climate change, I receive responses from readers saying that nuclear energy works well for other countries, most notably France.

The French nuclear program is often touted as a shining example of how well nuclear energy can be done—but in reality, the program is not all that it's cracked up to be. Even if it were, nukes are problematic, no matter which country they are in. The mere fact that nuclear radiation is unhealthy is often enough for any detractor to make a strong case. After all, containing the dangerous and deadly radiation during power plant operation relies entirely on the human element—all the way from humans designing the systems to having humans operate those systems properly. It is a given that humans are fallible, and mistakes or lapses happen. When it comes to nuclear energy, a small mistake can quickly grow into a deadly, widespread catastrophe.

Among the several holy grails of the nuke industry is to design a fail-safe reactor system that will make sure radiation is not released. Here in the United States, that quest has been fueled by billions of tax dollars and more than half a century spent on research and failed efforts. In France, a similar but expanded effort is in place—this lack of success is the reality of the nuclear situation, and only far-fetched speculation could claim that the goal will ever be reached.

Another holy grail is to find a satisfactory means of dealing with highly poisonous and long-lasting nuclear waste, which is a by-product of both nuclear energy and nuclear weapons materials-making. Again, both countries have equally failed efforts, but with different methodology and results.

French Energy

In the middle of the twentieth century, France began to adopt a mind-set that was becoming common around the world: Nuclear power would be “too cheap to meter” and be able to meet all electricity needs in the developed world, even into the unforeseeable future. In 1945, France established the Commissariat à l’Energie Atomique (Commission for Atomic Energy, or CEA) to oversee all research and development of both nuclear military weapons and the nuclear generation of electricity.

Construction of the first energy reactor site began in 1952, with commercial production getting underway in

1956—about the same time that U.S. reactors came on-line. But France’s bigger move toward nuclear energy occurred in the 1970s, when the Arab oil embargo started a worldwide push for alternatives to oil. French officials took advantage of the situation by greatly overestimating growth in electrical usage, eventually saddling the small country with 59 nuclear reactors, which now provide approximately 80% of the country’s electrical energy.

Taxpayer money flowed freely into the coffers of nuclear R&D, reactor design, and construction, subsidizing the industry to make France’s electricity rates far lower than the cost of producing the energy. Today, France is the world’s largest net exporter of electricity, due to its very low (subsidized) cost of generation.

But the agencies involved were only partly interested in building plants for France. The plan was, and still is, for France to be far ahead of other countries not only in nuclear usage, but also in the export of reactors to other regions of the world. France hoped to export one reactor for every one built in France—but those sales expectations never materialized. Only nine reactors have been exported and finished to date.

Like any organization involved in such a massive plan, the French agencies were shrouded in secrecy, releasing little information to the rest of the world. The government owns a controlling interest in the agencies and organizations that operate France’s nuclear business, and the nuclear industry has morphed into a quasi-governmental/industrial monolith called Areva.

French Disconnect

Huge subsidies laid the groundwork for the U.S. nuclear industry, with a public relations machine that continues to tout France as a prime example of a successful nuclear power program. But without a watchdog agency, like the marginally effective Nuclear Regulatory Agency here in the United States, problems with nuclear energy generation in France aren’t readily publicized.

The French push for electricity “too cheap to meter” resulted in the French myth of energy autonomy. According to an article in *The Bulletin of Atomic Scientists*, fossil fuel provides more than 70% of France’s final energy (which includes more than just electricity), all of which is imported from outside the French borders.

Another mythically successful part of the French nuke industry is how they deal with nuclear waste, which is really

irradiated fuel. France “reprocesses” the waste into more usable fuel and isotopes that can be made into bombs. The United States used to reprocess fuel, but it is a very dirty process that is difficult to contain. And some by-products from processing the irradiated fuel are exactly what some developing countries would love to have to make nuclear weapons.

The U.S. government has a strong policy of discouraging bomb-making materials, and has long intended to be an example for the world in that regard. So while France reprocesses irradiated fuel, the United States has chosen to store its nuclear waste. Across our nation, at all nuclear power plants and at some interim storage sites, sit tons of irradiated fuel waiting for a national repository. Our repository was planned for Yucca Mountain in Nevada, but state opposition there has been effective and the facility will likely never open.

The U.S. nuke plant owners would love nothing more than to pass the waste on to the government so they do not have to deal with it. In their corporate, bottom-line minds, any method of removal is better than local storage. So once again, they are promoting the use of reprocessing, and guess who they hold up as another shining example of what can be done in that field? Correct: the mythical France.

But reprocessing is fraught with problems, and French have their share. By the end of 2004, nearly 900,000 cubic meters of nuclear waste had been made in France. Of this amount, 40% has been through reprocessing. According to Greenpeace, an organization that keeps a close eye on what is being dumped into the seas, about 12,000 cubic meters of radioactive processing by-products were dumped into the English Channel by the nuclear reprocessing plant on the coast at Marcoule in the late 1960s.

If fuel is not reprocessed, there is basically only one waste stream to deal with—the irradiated pellets. Reprocessing is the separation of those pellets into more usable fuel, isotopes that can be used in bombs, and other radioactive waste streams. While reprocessing decreases the end-volume of the nuclear waste (by 1% or so), it requires extra handling of the irradiated fuel, handling multiple waste streams at multiple facilities, and the extra transportation that comes with it.

France uses acid to extract plutonium and enriched uranium. The process releases massive amounts of radioactive gases and liquids that should be contained but often are not—releasing thousands of times more amounts into the environment than the everyday operation of nuclear reactors. Even after reprocessing, large amounts of different radioactive wastes remain. According to Beyond Nuclear, an advocacy group promoting alternatives to nuclear power, the “low-level” radioactive waste from the reprocessing facility at LaHague is disposed of in the English Channel—a legal quirk, since putting it in barrels and dumping at sea would violate the 1970 London Dumping Convention. LaHague reprocessing also releases radioactive gases, including krypton-85, and now local environmental contamination is 90,000 times higher than what is found in nature. The site also discharges carbon-14, considered to be one of the most damaging radioactive isotopes to human health, as well as radioactive carbon dioxide. The list of reprocessing problems goes on and on...



Local & Export Problems

Radioactive accidents and releases are not limited to the reprocessing facilities. The mythically safe French reactors have been the site of many nuclear “incidents,” such as the 2008 release of liquids containing uranium at the Tricastin Nuclear Power Center, which contaminated the Gaffière and Lauzon rivers. French officials banned the use of this water for drinking and watering crops, as well as swimming and water sports in the rivers.

Areva’s reactor export program is also having serious problems. They currently have two reactor export projects in development. A French reactor type called the European pressurized reactor (EPR) is under construction in Finland. As of July 2009, the reactor is at least three years behind schedule and 60% over budget, due to technical flaws, including substandard parts.

Two EPRs for China are also on hold, though the reasons and potential outcome is not being publicized. China negotiated a \$12 billion deal with Areva to build two reactors, but the planned August groundbreaking ceremony was not held, and construction was not approved by China—Areva

is claiming the delay is due to Chinese officials being too busy with weather problems. But French activists with Sortir du Nucléaire are speculating that the project may never go forward, claiming that contrary to French official statements, the Chinese had informed Areva in June that the ceremony would not be held on the August date.

Speculative, yes, but after failing for decades to come up with an exportable technology, France has put all of its export eggs in the EPR. At this point, and with the Finnish reactor's problems, the only country to ever get an EPR is France.

Too Hot

According to French environmentalists, the country's rabid promotion of electricity usage (to help use up the oversupply from too many nuke plants) has made super-consumers of the French public. There is little movement toward conservation and efficiency so far, although new proposals for green businesses, including efficiency and renewables, are working their way through government. Sure, they have lots of electricity to use, but cutting back in France would allow other countries to buy the excess energy, which would reduce the demand for greenhouse gas-producing fossil fueled electricity in the other nations, and mean fewer new power plants. With France being such an avid promoter of expensive nuclear technologies, little funding or other impetus for renewable energy is left. France is surrounded by nations that have long opted for RE, but the country has been living in the energy Dark Ages.

Another fact surrounding climate change is that river temperatures are rising, and water is crucial to cooling nuclear reactors. During the 2003 heat wave, 17 French reactors were forced to shut down or decrease power because of too-high water temperatures. France allowed the discharge of hotter water during the 2006 heat wave, but high-temperature discharges are damaging to a river ecosystem, and can kill aquatic life or force river dwellers away from their habitat.

The final myth to be addressed is that the French people love and want nuclear energy. This has been true to a degree—it is to be expected from a populace that has built up such pride in their nation and government since World War II. They want to believe in their government and have been sold a bill of goods by regulators that are entrenched in the idea of nuclear energy.

But that is changing, as the citizenry has been discovering the mythology of French nuclear power. According to a recent poll, about 60% favor a phaseout of nuclear energy. In April 2006, more than 25,000 people demonstrated against new nuke plants in Cherbourg. In 2007, another 60,000 rallied against nuclear power in five cities. More than 50,000 signed a petition asking for a referendum on a nuke dump in northeastern France, which was ignored by French politicians. Today, the activist group Sortir du Nucléaire includes 820 non-governmental organizations.

According to a March 2009 *Wall Street Journal* article which reported on a survey from the consulting firm Accenture. "hardcore French support for nuclear power stands at just 20%, similar to levels in anti-nuclear Germany. Over the past three years, opposition to nuclear power has grown in France more than in any of the other countries in the survey."

Fewer and fewer French are in support of their failing nuclear experiment, and in spite of Areva's and the U.S. nuclear industry's promotion of the French nuclear myth, the emperor's clothes are decaying and falling off. It is only a matter of time before the world recognizes the French fable, which will lead to a worldwide decline in the use of nuclear energy, freeing up resources to allow the RE future we all need and deserve.

Access

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