

# EIR Science & Technology

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## France's nuclear industry still world's best, safest

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*Although it has been under attack, both by green terrorists and in the mainstream and ecologist press, two official reports prove its solidity. Emmanuel Grenier reports from Paris.*

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On Dec. 22, 1989 at 9:30 p.m., the transmission tower that connects the Golfech nuclear plant in southwestern France to the nearest transformer center exploded. Broken into three pieces, 50 tons of steel collapsed, bringing down with it power lines that were carrying a 400-kilovolt current.

The power plant immediately went into emergency procedures, quickly bringing down the power from 1,300 megawatts to 50, a very delicate procedure (like suddenly bringing a horse at full gallop to a walk). If this operation had not been successful, two separate backup diesel generators would have kicked in to supply the necessary electricity to feed the coolant cycle pumps. In such a situation the point is to keep the temperature of the nuclear fuel from rising extremely quickly in a shutdown. Although this shutdown process succeeds only two out of three times, at Golfech, everything went well.

But the saboteurs knew what they were doing. As with previous attacks of the same type in Italy, claimed by the ecologist organization Figli della Terra (Sons of the Earth), the *modus operandi* was one of professionals who had expertise in blowing up metallic structures. The bolts at the base of the tower at Golfech had been removed, for example, which made it easy to topple, given the force of the charge.

"If Chernobyl made you laugh, don't miss Golfech," proclaimed anonymous leaflets on the scene that advertised the availability of "alternative" groups ready to talk terror to express their opposition to "nuclear fascism." Then, on Dec. 25, three days after the Golfech attack, there was a new bomb threat by telephone, but this turned out to be a fake.

The Golfech nuclear site, with four units of 1,300 megawatts each, is still under construction and has experienced more controversy than any other of France's 55 plants. In June 1989, the cooling cycle for the power plant was attacked with explosives. Fortunately, there was minor material damage, but the threat was a serious one. The attack was claimed

by a group called the "Joyful Rod of Espalais," whose representative proclaimed uncouthly over the phone, "A fart in the water is better than cesium in the prunes." (Golfech is near France's famous prune-producing region, Agan.) The attack followed a ferocious anti-Golfech campaign led by the magazine *Les Réalités de l'Ecologie (Ecology Facts)*.

In its February issue, *Les Réalités de l'Ecologie* wrote, "When respect for democracy is violated by the state and the nuclear lobby, it is understandable that individuals are considering sabotage as the only way available of expressing their resistance."

### Propaganda as weapon of terror

The anti-nuclear crowd has brandished its terrorist attacks as proof that the French nuclear program is not safe. With great self-satisfaction, the Greens have bragged that it takes only "a snap of the fingers to bring down a whole installation." For example, Guy Benhamou, an anti-nuclear journalist for the national newspaper *Libération*, headlined a recent article on the terrorism, "The Achilles heel of the nuclear power plants."

The environmentalists have thus created an atmosphere of fear around the power plants, not because of intrinsic safety problems, but because of the technology's terrorist enemies. The latest Golfech incident, and an earlier strike at a transmission tower linked to the Superphénix breeder reactor, mark the reemergence in France of hard-core ecoterrorism, which is prepared to cause a serious accident to prove that nuclear plants are unsafe.

The anti-nuclear groups have made their goals very clear. Activist William Soubiran gloated in an article in *Les Réalités de l'Ecologie* back in March 1990 about the Anti-Golfech Carnival: "This day represents a real success for us and constitutes a first for France. Three thousand people [demonstrat-

ed] outside an already-built power plant are indicative of the growing hostility in the population the utilization of nuclear energy. . . . The potential for mobilization exists; the anti-nuclear opinion is in the majority; the different reports, such as the Rouvillois report and the Tanguy report, have simply bolstered our arguments. The anti-nuclear movement is in the streets: That is the road to take, victory is not far."

### Positive reports kept under wraps

The two official reports mentioned, that of the Rouvillois Commission on the nuclear program overall, and that of Pierre Tanguy, the inspector general for safety at the state-run utility Electricité de France (EDF), both exemplify the problem of the way in which the nuclear establishment is dealing with the anti-nuclear groups. The reports were kept secret, although they were largely positive. Therefore, the anti-nuclear crowd and the press were able to "leak" news of the contents as though the government had wanted to hide the results.

Of course, the press reported only the few criticisms of the nuclear program. What was most regrettable was to see the public authorities sitting there inert, tongue-tied, hoping for the best.

In addition, for the first time, there is the whiff, coming from the corridors of power, of a plan to appease the environmentalists. That was, of course, what cut short the life of the U.S. nuclear industry. The U.S. utilities were "nice" and conciliatory to their attackers, listening to their "criticisms" and trying to build a "consensus," instead of aggressively sticking to the truth of the matter—that nuclear plants are the safest, cleanest source of energy. Rather than base decision on scientific fact, "public opinion" and "public perception" became predominant.

And so, in France, given the anti-nuclear press campaign, Prime Minister Michel Rocard postponed for a year making any decision on the storage of long-lived nuclear waste. Similarly, the president of the Atomic Energy Commission (CEA), Philippe Rouvillois, included in the recent report that bears his name support for the environmentalist demand to generate energy from windmills.

Overall, the Rouvillois report is positive and reasonable. A number of its criticisms were justifiable and the remedies proposed were positive: once more to give a clear mission to CEA and an internal dynamic; to make COGEMA, the reprocessing agency, an autonomous industrial enterprise; to assure the survival of Framatome, the nuclear reactor producer; and to take the time to explain France's nuclear policy, without waiting for crisis.

What the report lacks is audacity—the audacity of those who, quite rightly, bore the French nuclear program to the baptismal font many years ago. To carry this program forward, the population must be told the truth. In particular, the nuclear industry must compare the risk of nuclear energy—extremely minimal—with the risk of *not going nuclear*.

French nuclear power plants are among the most secure

in the world, and the series of incidents in 1989 will not change this fact. Pierre Tanguy, inspector general for EDF, in his report quite rightly denounced the suggested plans to restructure the nuclear safety apparatus on the American model, as the environmentalists have demanded. "The sole real preoccupation put forward," he said, "bears on the perceptions of these questions by public opinion."

The French safety system is now entirely under the control of the CEA. The Institute for Nuclear Protection and Safety is charged with overseeing the security of personnel and installations. The Central Security Office for Nuclear Installations, attached to the Industry Ministry, oversees the proper functioning of procedures and issues operating licenses. For example, this office recently ordered a freeze on operations at the Superphénix when engineers at the Phénix breeder, its little brother, were unable to explain how argon bubbles could have escaped on four separate occasions. The Central Security Office, however, relies on the expertise of the Institute for Nuclear Protection and Safety.

It is this "closed loop" in the French safety system, whose origins go back to the beginnings of nuclear power in France, that the anti-nuclear groups are attacking. But it is just this kind of centralized system that has allowed France to attain its status of excellence and world nuclear leadership.

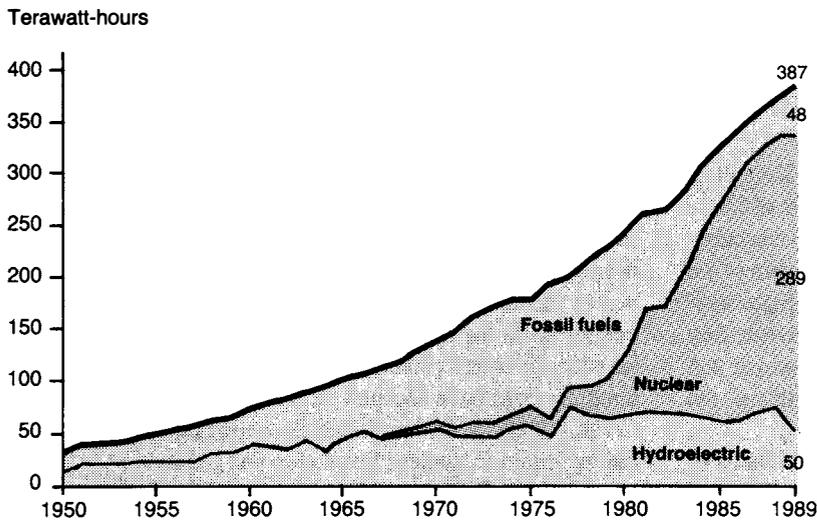
### Luxembourg's ecologists attack

Accusations made against French safety standards have also come from the ecologists in neighboring Luxembourg. A report by 55 municipalities representing 80% of the population of the Grand Duchy was released in Luxembourg on March 30, 1989. It accused France of having standards for radioactive effluents that are 17 times higher than those in Luxembourg or Germany (0.3 millisievert—a measure of radiation). However, France's standards are well within those set by the European nuclear agency Euratom and the international nuclear community.

The Luxembourgish are trying to drag France before the administrative court in Strasbourg to make it adopt more stringent standards. Similar court cases by anti-nuclear activists went as far as the European Court of Justice, which rendered an unfavorable ruling against France in 1987. Has the nuclear industry asked what the Luxembourgish would do without the nuclear-generated electricity that they import from France? Or have they publicized the fact that less than 0.1% of the average amount of radiation to which the public is exposed yearly comes from nuclear plants? The rest is "natural" or from consumer products like smoke detectors.

Perhaps the French nuclear industry should aggressively publicize what Italian Prime Minister Giulio Andreotti said after Italy's anti-nuclear environmentalists killed off Italy's nuclear power plants in a 1989 referendum. Speaking to the industrialists' association, Andreotti expressed regret that Italy had chosen this dead-end street for its energy policy. "I am ashamed to see anti-nuclear demonstrations in my coun-

FIGURE 1  
**French electricity generation by source**



Source: Electricité de France.

*France is second only to the United States in total nuclear-generated electricity, producing 289 terawatt-hours for its consumption. However, as a percentage of electricity produced, the United States generates only 19.1% of its electricity from nuclear, while 75% of France's electricity is nuclear generated. France exports another 42 terawatt-hours, above what it consumes. The rapid nuclear growth in the 1980s followed France's 1973 decision to "go nuclear" and gain energy independence and an inexpensive source of power for future growth.*

try, while we are importing our kilowatt-hours from France for several hundreds of billions of liras," he said.

### Cowardice in parliament

The French National Assembly seems to be taking lessons from the greenest of the American congressmen. One might legitimately ask, after the Oct. 9, 1990 Assembly debate, if France's elected representatives have retained any semblance of independent thinking, or if they just echo the scare stories in the English-language press.

That Deputies Michel Barnier (from the Gaullist RPR party) and Marie-Noëlle Lieneman (from the Socialist Party) demanded—with applause from all party benches—a parliamentary commission of inquiry into the safety of the French nuclear industry is nothing less than treason. Nor can they even plead ignorance, since numerous parliamentary reports demonstrate that the French safety system is the best in the world, far ahead of the Americans and British.

And as good as it is, the industry is not complacent about safety; it is constantly seeking to improve the system (for example, the problem with faulty filters on the 1,300-megawatt plants). Recently, French teams from Framatome, CEA, and EDF, who were in the process of replacing a steam generator, broke the world record for speed and limited exposure of personnel, previously held by Germany.

In particular, the demand to copy the American safety system, where regulatory bodies include the opinions of people who are opponents of nuclear energy but who are absolutely incompetent scientifically, would be a death sentence to nuclear power in France. The Swedes, who similarly limited their nuclear program in a referendum 10 years ago, have

had to suffer the supreme humiliation of having to import electricity. In fact, Sweden recently decided, based on the need for electricity, to postpone the referendum's mandated 1995 phaseout of nuclear plants.

In the wake of the safety debate, the nuclear agencies did not counterattack, nor state the truth: namely, that if French parliamentarians are honest and truly concerned with preserving nature, they must fight tooth and nail to save clean, non-polluting nuclear technology!

Unfortunately, the critics of environmentalism on the benches of the Gaullist UDF and RPR parties ignore both this positive line of argument, and any effective exposure of the aims of the radical environmentalists. Instead they attack the nuclear program's "centralization" and administrative bureaucracy.

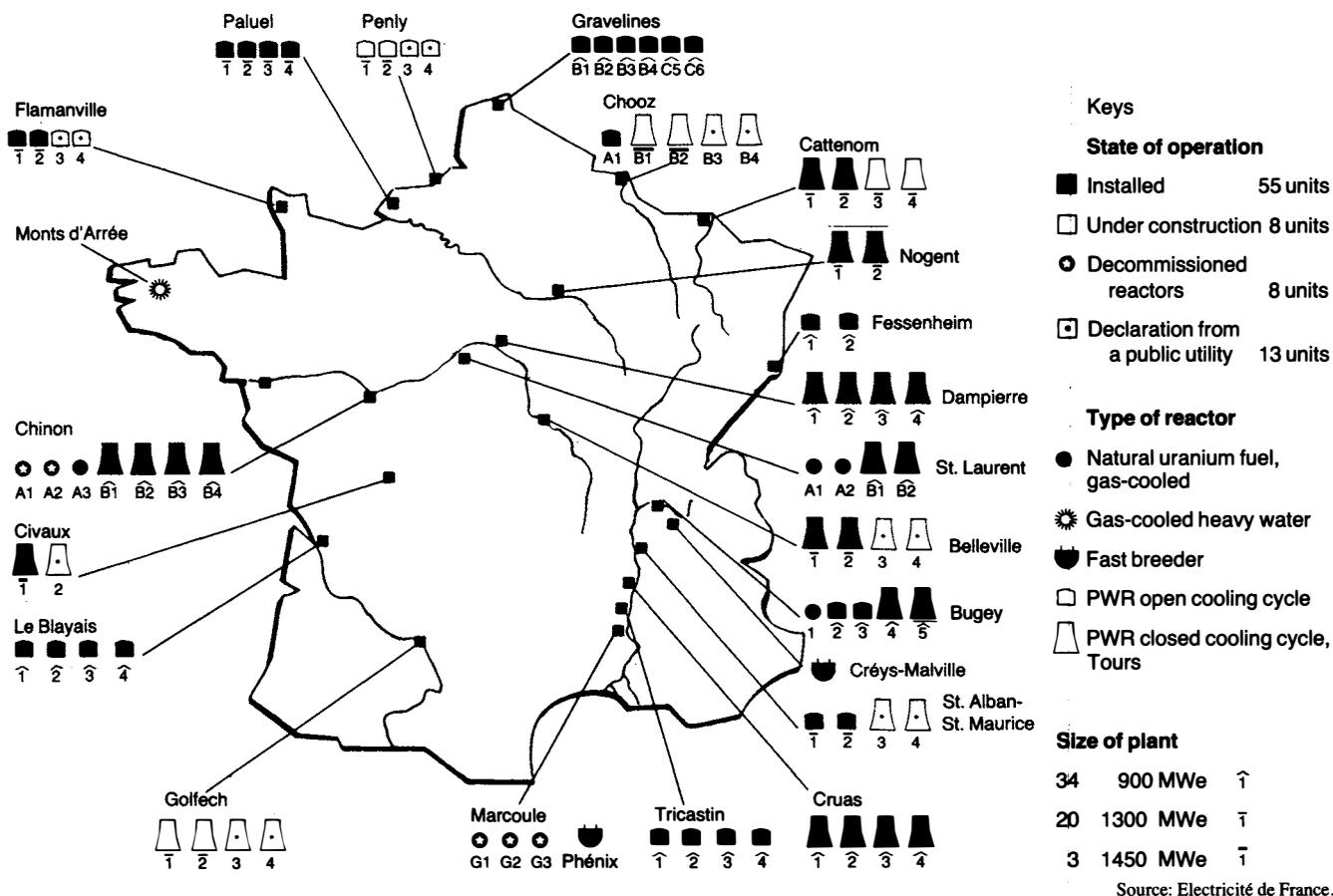
The only voice of sanity in this debate was that of Jean-Pierre Sueur, a Socialist deputy allied with Prime Minister Michel Rocard. He raised the debate to a higher level, reminding the Assembly that ecology must, above all, be preoccupied with the well-being of humanity.

The National Assembly debate on nuclear safety produced silence from the nuclear authorities, but plenty of scare stories from the national press. The irreverent weekly *Canard Enchaîné* told us about the "little blisters that threaten to explode the Superphénix." The national dailies *Libération* and *La Croix* reported on an incident in which radioactivity escaped into the Loire River. The *Parisien*, *Libération*, and *France-Soir* ran headlines on another discharge at Saint-Auban where radioactive waste had been discovered. And so on.

After this spurt of nuclear scare stories, Jean-Luc Mélançon, the Socialist senator from l'Essonne, demanded the

FIGURE 2

## Where France's nuclear electric generating plants are located



In total, at least 64 reactors are now operating, under construction, or on order. They use three different technologies:

**Natural uranium/graphite-gas cooled reactors (MAGNOX).** This was the original French technology. Six reactors have been built and two were shut down in 1973 and 1985.

**Fast breeder reactors.** Two such reactors have been completed, Phénix and Superphénix. One is a prototype and one is a predemonstration unit. They have made it possible to collect significant data which, in the long run, have helped to prepare for a new generation of breeder reactors within what has now become the European framework.

**Pressurized water reactors (PWR).** Besides the Chooz-A1 plant, 48 PWRs are now operating. By 1996 nine other units will be connected to the network to complete the program.

dissolution of the Central Office for Protection against Ionizing Radiation (SCPRI). According to him, this office proved "either its incompetence, or its willingness to protect those responsible for the eventual failures linked to the operation of nuclear energy, rather than the people who would end up its victims."

At the head of the SCPRI is Prof. Raymond Pellerin, a favorite scapegoat of the environmentalists. He is the one who tried to put the 1986 "Chernobyl cloud" into proper perspective, at a time when hysteria reigned in Europe. The effect of the passage of the cloud over France in terms of extra radiation received, he said, was the equivalent of a

week's vacation in Brittany. Was it necessary to mobilize the whole country for this? he asked.

The anti-nuclear groups attacked the professor outrageously, equating him with a mad Nazi doctor wanting to perform experiments on the population. The statement by Mélanchon is of the same caliber and shows to how great an extent the survival of nuclear energy in France is at stake in the present assault.

### Poverty is the real ecological disaster

Both the environmentalists and the nuclear industry should take note of energy expert Edouard Parker, who inter-

vened late last year in France's Estates General (Senate). "The real ecological problem," he said, "is that there are more people living in extreme poverty in the world today (2.5 billion), than there were people in 1930 (2 billion). . . . To distract the attention of the public from this real problem, in excessively focusing their capacities for examination on hypothetical dangers . . . is a sure-fire deadly path. You are trading off hypothetical inconveniences for certain death. That is an aristocratic choice."

Parker also pointed out that there never could have been a crisis like the one in the Persian Gulf today, if the U.S. nuclear program had continued at the pace at which it began in the 1960s. European environmentalists who sincerely want a peaceful, protected planet should be out demonstrating with signs reading "Make Nuclear Energy, Not War."

*Emmanuel Grenier is the editor-in-chief of the Paris-based magazine Fusion and the newsletter Industrie & Environnement. His article was translated from the French by Katherine Notley and adapted from the Spring 1991 issue of 21st Century Science & Technology by its editor, Marjorie Mazel Hecht.*

## France is number one in nuclear

by Marjorie Mazel Hecht

Nuclear energy now provides France with 75% of its electricity, making the country number one among the world's nuclear nations. It is also number one in terms of its nuclear growth rate. During 1981, 1982, and early 1983, an average of six nuclear units were connected to the power grid per year—one every other month.

Although France is only about the size of Texas, its 55 nuclear plants, with a capacity of 53 gigawatts-electric, produced 306 terawatt-hours in 1989, second only to the United States (529 TWh) in terms of total nuclear terawatt-hours. (1 TWh equals 1 billion kilowatt-hours.)

As the world's leading nuclear nation, France is a special target of the anti-nuclear environmentalists, who over the last decade have crippled the West German nuclear program and shut down the Italian nuclear program. Their aim is to use terrorist attacks on nuclear plants to frighten the French population into believing that nuclear plants are not safe—and to frighten the nuclear industry into retreat at home and in the export market.

For the Greens, creating an anti-nuclear success in France is like capturing the crown jewel of the nuclear nations. Such

a campaign, including terrorism, has taken on even more importance for the anti-nuclear groups since the Green Party in neighboring Germany suffered heavy electoral defeats, both East and West, Dec. 2.

### How France took the lead

With no oil or gas resources, France embarked in 1973 on a crash program to go nuclear and gain energy independence. The success of this program means that France has the advantage of low-cost electricity generation and now exports 10% of its electricity to neighboring countries. France also exports nuclear technology. There are nine French-built nuclear plants abroad, and France has joined with the German firm Siemens/KWU to market nuclear technology internationally.

A high level of standardization is the key to the French success. The 18 plants that came on line in the early 1980s, for example, were identical and their major components were produced in assembly-line fashion by two companies: Framatome constructed the nuclear reactors and steam generators, while Alsthom-Atlantique built the conventional equipment. The regulatory process is also streamlined, so that once a particular standardized design is approved, subsequent reactors of the same design do not have to repeat the approval process.

The result is that France can construct a nuclear plant in just six years (and in some cases as little as 55 months), far less than half the time it takes the United States to put a nuclear plant on line.

France's Atomic Energy Commission (CEA), created by Charles de Gaulle in 1945, sought from the beginning to complete the nuclear fuel cycle, developing the nation's capability for isotope separation and uranium enrichment, fuel reprocessing, waste disposal, and of course breeding nuclear fuel in the fast breeder.

The French commercial-size Superphénix breeder highlights the difference between de Gaulle's program and that of the United States. The 1,200 megawatt Superphénix came on line in the mid-1980s and cost just over \$1 billion. The United States pioneered in breeder reactor development, putting an experimental breeder on line in 1951. Lacking the sense of national purpose that President de Gaulle instilled in the French program in 1945, the United States spent four decades and more than \$4 billion, but allowed the breeder program to be killed politically.

Because de Gaulle organized the French population from the top down to support the nuclear program as a national mission and the key to energy independence and fiscal soundness, the anti-nuclear movement was never able to gain a firm foothold in France. Even today, much of the movement is orchestrated from outside the country by anti-science, zero-growth groups familiar to Americans—the Natural Resources Defense Council, Friends of the Earth, Greenpeace, and the German Green Party.