Poisoned Pacific

The legacy of French nuclear testing

The first test rained dead fish from a lagoon. Others spread radiation through the region. Now, 159 tests later, the French have used up the atolls and the patience of the Polynesians.

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France hosted a summit meeting of the seven wealthiest nations on earth last summer during the celebration of the bicentenary of the French revolution. The French delegation introduced a new subject to the economic summit--the global threat to the environment posed by industrial pollution, nuclear waste, and the greenhouse effect. But President François Mitterrand and Prime Minister Michel Rocard said nothing about the radioactive poisoning of the islands and islanders in French Polynesia resulting from French nuclear tests. Since 1966, France has conducted 44 nuclear tests in the atmosphere and 115 underground tests on two tiny South Pacific atolls, Moruroa and Fangataufa. [See map, page 28.]

During the pomp and ceremony, Mitterrand and Rocard also boasted that the French revolution was the historical event that had lit the torch of freedom. But they failed to mention France's stubborn refusal to grant independence to the native peoples in France's South Pacific colonies, New Caledonia and French Polynesia.

The irony of it all is that the godfather of the French nuclear enterprise, Gen. Charles de Gaulle, became a hero to the Polynesians during World War II by promising to give all the French colonies freedom as soon as the war was over. But in 1958, when he returned to power in France--with dictatorial powers in order to solve the "Algerian problem"--his nuclear ambitions took precedence.

At first, de Gaulle chose the Sahara for a nuclear test center, but when Algeria won independence in 1962, that site had to be abandoned. Shopping around for a new location, de Gaulle followed the earlier American example and ordered his bomb technicians to pursue their tests in the Pacific, where France still had several colonies. The ideal place seemed to be the tiny atoll of Moruroa in French Polynesia. When the 30 elected members of the local parliament, the Territorial Assembly, objected, they were simply told by the French governor that since they lived in a colony, all questions relating to defense matters were outside their competence.

Preparations for the test site were made hurriedly, with no attempt to soften the blow to the islanders. Eighteen thousand troops--including 3,000 Foreign Legionnaires--were sent to the rear base in Tahiti, where they soon created a variety of social and economic problems. And in the general rush and confusion, the commanding officer got the name of the test site wrong. Refusing to admit the mistake, French authorities have ever since called the atoll "Mururoa."

Despite the British, Soviet, and American agreement in 1963 to ban testing in the atmosphere, under water, and in space, General de Gaulle had no qualms about letting his technicians carry out atmospheric testing. Nor was he moved by the continued protests of the elected representatives of the Polynesian people, who tried to persuade him that detonating atomic bombs in the middle of islands then inhabited by 140,000 people could create serious health problems. These fears were played down by French cabinet ministers, admirals, and generals, who swore that French bombs would be exploded only when the wind was blowing from the north, toward the empty ocean between Polynesia and Antarctica.

After three years of feverish preparations, on July 2, 1966, the French tried out their new atomic test site at the Moruroa atoll. The first bomb, a plutonium fission device, was placed on a barge anchored in the lagoon. When it was detonated, all the water in the shallow lagoon basin was sucked up into the air, and then rained down. The islets on the encircling reef were all covered with heaps of irradiated fish and clams, whose slowly rotting flesh continued to stink for weeks. [1]

Trying a different tack, on July 19 the French dropped the next bomb from an airplane flying 45,000 feet above the empty ocean, 60 miles south of the atoll. Since no technicians or equipment were present to record the results, this exercise was uninformative. Two days later, an untriggered bomb on the ground was exposed to a "security test." While it did not explode, the bomb's case cracked and its plutonium contents spilled over the reef. The contaminated area was "sealed" by covering it with a layer of asphalt.

But these experiments were merely a prelude to the grand opening bang of the *Centre d'Expérimentation du Pacifique* (CEP), as the French called the Moruroa test site, in the presence of General de Gaulle himself.

For this blast, the technicians and troops were evacuated to another island, as they had been for the two preliminary tests. On the appointed day, September 10, de Gaulle embarked on a warship equipped with protective iron shields and sprinklers for washing away radioactive dust. This ship remained close enough to Moruroa to allow him to watch the test from the bridge. This time the "bomb," actually a box containing the 120-kiloton device, was suspended from a helium-filled balloon anchored to the reef and floating 600 meters above the lagoon.

Unfortunately, the sky was completely overcast and the wind easterly. There was nothing to do but postpone the test. On the following day, however, when the weather was even worse, so was the temper of de Gaulle, who was in a great hurry to return to Paris. So the box-like nuclear charge--the French technicians were still far from their goal of a sleek, operational bomb--was exploded. Monitoring stations set up by the New Zealand National Radiation Laboratory in the Cook Islands, Niue, Samoa, Tonga, Fiji, and Tuvalu--to the west of French Polynesia--immediately registered heavy radioactive fallout. In Apia, Western Samoa, the concentration of fission products in the rain water was 135,000 picocuries per liter. [2]

During the next eight years another 44 French bombs, including five hydrogen bombs, were detonated in the Pacific skies above Moruroa and Fangataufa, another small atoll 40 kilometers further south. The monitoring stations New Zealand operated on other Polynesian islands regularly registered heavy fallout. But the French government each time claimed that the patriotic particles emanating from Moruroa managed to avoid all the islands of French Polynesia.

It was easy for the French government to brush aside local protests against atmospheric testing. But the vociferous opposition that continued to grow in Australia, New Zealand, and the other Pacific islands was harder to ignore. The outcry culminated in 1973 in widespread boycotts of French goods, airlines, and shipping lines. That year Australia and New Zealand also instituted proceedings against France in the international. Court of Justice at the Hague. As a result, in 1974 the new French president, Valéry Giscard d'Estaing, ordered the tests moved underground.

U.S. and British testing had long since moved out of the Pacific--the last British tests were conducted in 1958, as were the last U.S. tests on Bikini and Eniwetok. (The last U.S. tests in the Pacific were at Christmas and Johnson Islands in 1962.) No other nuclear weapon state had tried the technically difficult, costly, and dangerous task of conducting underground tests in the narrow base of a porous coral island. The French technicians sent out to Polynesia in 1962 had excluded this option in favor of atmospheric tests. Nevertheless, instead of moving the test program to France, where many suitable underground test sites existed, the CEP began in 1976 to detonate high-yield bombs in the narrow base of Moruroa atoll. The first experimental shafts were drilled at Fangataufa in 1975, but when the engineers mastered the technique, they chose to use Moruroa.

The only portion of Moruroa available for underground testing was a 23-kilometer strip of the southern half of the reef ring, since the rest of the island was covered with laboratories, warehouses, airstrips, and living quarters. Over the next five years, according to official statements, 46 shafts were drilled, 800-1,200 meters deep, depending on the size of the bomb to be tested. In other words, bomb blasts were spaced at 500-meter intervals along the available strip. Official documents reveal that the majority of the explosions hollowed out combustion chambers more than 100 meters in diameter and produced cracks 300-400 meters long, extending in all directions. [See map, page 24.] In addition, accidents ripped gaping holes in the flank of the atoll. The volume of material torn out by the biggest of these accidents, which occurred on July 25, 1979, was estimated at one million cubic meters by the French commissioner for natural disasters, volcano expert Haroun Tazieff, who visited Moruroa in 1982. [3] The full extent of the leakage of radionuclides into the ocean is unknown, mainly because technicians have been unwilling and unable to undertake studies at the depths where the explosions take place.

By 1980, the base of the atoll along the south coast was used up. Again, the most sensible solution would have been to transfer the testing apparatus to France. But President Giscard d'Estaing rejected this solution for political reasons, fearing that French voters would object to testing in their own backyards, despite official assurances that underground testing is harmless. Instead, barges and derricks were dispatched to Moruroa for drilling bomb shafts in the shallow lagoon in the center

of the atoll, where most tests have been conducted since 1981.

When civilian and military authorities decided to keep testing at Moruroa, they did not take into account an additional risk that many critics mentioned at an early stage: the possible exposure of the atoll to severe storms. Up to 1980, typhoons were extremely rare in French Polynesia; the last one had occurred in 1906. French army engineers therefore completely disregarded the risk when they selected Moruroa in 1962, although like most atolls, Moruroa is only a few meters above sea level. However, before 1980 was out, a typhoon hit the island. The only reaction in Paris was to order the construction of huge refuge platforms for the 3,000 men and 12 women employed and living at Moruroa.

These were not completed when, against all odds, the island was hit by giant waves stirred up by an even bigger typhoon during the night of March 11-12, 1981. This time, the civilian technicians employed at Moruroa, fearing for their lives, leaked a secret report to the French press, revealing that the storm had washed out to sea the huge amounts of nuclear waste that had been allowed to accumulate on the north coast. As the technicians, who were members of the socialist CFTD trade union, told the story, this waste included 10-20 kilograms of plutonium which had been spilled out on the reef between 1966 and 1974 during the so-called "security tests," and later covered by asphalt. The 1981 storm tore off the asphalt and scattered the plutonium over the lagoon. [4]

These revelations, which were also reported in the foreign press, led to punitive action against the talkative technicians, and a bold promise by Defense Minister Charles Hernu to clean up the atoll. Nothing further has been heard about the cleanup in the last nine years; meanwhile, Moruroa has been hit by five more typhoons.

When the Territorial Assembly at an early date expressed concern about possible accidents and the effects high-yield blasts might have on the health of the islanders, the CEP high command told the assemblymen that inspectors would circulate among the islands, check radiation levels, and ban any food items that presented the slightest health hazard. No inspectors have ever been spotted. Even more shocking, the French National Radiation Laboratory, which measures the radioactive pollution of the environment, the food, and the population in France, has never been allowed to send any experts to French Polynesia. Instead, all radiation studies have been conducted by French army doctors in the pay of the CEP, who refuse to divulge the facts and figures on which they base their frequent assurances that the tests are harmless. Reports on radiation sent in the early days of testing to the U.N. Scientific Committee on the Effects of Atomic Radiation show only average fallout figures, usually from samples taken from islands farthest away from the test site. The committee has therefore constantly complained about the sketchy data.

The only published studies of any relevance to the radiation problem in French Polynesia were conducted by T. Yasumoto and A. Inoue, working for the World Health Organization. They collected data on ciguatera fish poisoning in French Polynesia in the late 1970s. [See the following article.] This type of fish poisoning, which results in vomiting, headache, fever, trembling, and paralysis, is a result of the multiplication of microscopic algae occurring when corals are killed. CEP doctors have always taken pains to point out that ciguatera has been known to exist since the days of Captain Cook and refused to see any link with the French nuclear tests.

Yasumoto and Inoue demonstrate, however, that ciguatera became a serious problem in French Polynesia only after the nuclear tests began; that the annual number of reported cases--between 700 and 800--is higher than in all the remaining islands south of the equator taken together; [5] and that ciguatera epidemics occur most frequently in the islands nearest to Moruroa--Mangareva (Gambier), Reao, and Pukarua, where radioactive fallout was the heaviest and huge portions of the coral reefs are dead. The French army also dumped waste and cleaned contaminated warships at Mangareva.

French authorities have managed to distract attention from these health problems by focusing all interest on Moruroa and the controversy about how much radioactivity the cavity-riddled atoll is leaking and when it will sink into the sea. There seems little doubt that leakage from the underground testing initiated in 1976 has led to irradiation of the sea fauna around Moruroa, and that many contaminated fish, shellfish, squids, and sea turtles have been consumed by the inhabitants of nearby islands. But a greater danger to the health of Pacific islanders in a more extended radius is the plutonium waste dispersed by typhoons. And after 20 years, none of these health problems has been addressed.

In addition, all inhabitants of French Polynesia, who now number 188,000, face the insidious hazard of the steady absorption of radioactive fallout resulting from the 44 nuclear tests in the atmosphere between 1966 and 1974. As surveys made in Micronesia show, it takes 10-15 years before the effects of fallout become apparent. [6] The most common radiation-induced diseases are leukemia, brain tumors, and thyroid cancers. As could be expected, it is from the early 1980s that a sharp increase in the number of these three types of cancer has occurred in French Polynesia. [7] The French government has not only continued to keep cancer statistics secret, it has also constantly brushed aside the numerous requests made by the Territorial Assembly and government for a health survey by impartial foreign doctors. Private investigators, journalists, and TV teams have tried to pierce the official veil of secrecy. [See page 27.]

To counteract the widespread criticism of these blackout policies, the new socialist government of France invited a team of foreign scientists to visit Moruroa in 1983. The five members of this "inspection team," as it was called, were two New Zealand radiation experts, an environmental scientist from Australia, and an Australian marine biologist from the University of Papua New Guinea. They spent four days on Moruroa.

The head of the team, Hugh R. Atkinson, did not report whether he asked to observe a detonation, but none occurred during the visit. Nor was a submarine put at the group's disposal, although a fully equipped submarine suitable for the needed underwater research was cruising in Pacific waters at the time. Nothing could therefore be learned about venting, seepage, and leakage taking place at 800-1,200 meters, the depths where the bombs are exploded.

Had they been allowed to make the 15-minute trip from their living quarters in the CEP village to the "safety trial area" on the north coast, the team's one day of sample-taking could at least have provided information about the amount of plutonium and other radioactive waste still left there after the destructive 1981-83 typhoons. This was not the case, however; Atkinson remarked in the report published in July, 1984: "As the Mission was not permitted to sample sediments from the lagoon, nor take any types of samples from the safety trial area, this avenue of verification was denied." [8]

To placate the frustrated scientists, on the last day of their visit the base commander let them make a boat trip into the surrounding ocean to take water samples. Since the last small bomb blast had taken place three months earlier at a depth of 800 meters, the surface water was not particularly contaminated.

Despite the paralyzing restrictions imposed by the CEP directors, which prevented the Atkinson team from making useful observations, France's minister for the overseas territories, Georges Lemoine, interpreted the group's findings six months before the Atkinson report was released. He told the National Assembly in December 1983: "After thorough investigation of the Mururoa site, lasting eight days, and after having taken all the samples they needed and desired, the members of the team have admitted that France has adopted all necessary safeguards to assure that the tests are harmless. These words are uttered by scientists, whereas the opinions expressed by churchmen only have moral value. It can therefore be concluded that the tests of Mururoa are not dangerous." None of the applauding deputies asked when, where, and to whom the members of the Atkinson team had made the alleged statements.

The Atkinson report, which was finally released at the beginning of July 1984, was highly critical regarding such subjects as radiation venting, leakage, and breakage occurring at Moruroa, on which the researchers were more or less expert. But the report also contained a section on "cancer incidence and statistics for French Polynesia," a subject outside their competence. As is explained in the report, all the data reproduced in this section were supplied by the French army doctors who run the health service of the colony. But health service statistics represent only a small portion of the actual cases of cancer in French Polynesia. These statistics exclude all patients who are treated in the local military hospital, or by the 80 private practitioners, or by native healers and quacks, or by private doctors in countries like New Zealand, the United States, and France, as well as those who live on the numerous small islands where there are no doctors. The health department claims that these incomplete figures prove that cancers like leukemia and thyroid tumors are extremely rare and have not increased since the nuclear tests began in 1966. Unfortunately, these figures are widely believed because French officials often claim that these statistics are based on independent studies undertaken by the Atkinson team.

This is not the whole story, however, for nuclear testing has also been a political disaster for

Polynesians. Above all, it has kept Polynesia under colonial rule long after French colonies in Africa gained independence. Despite the Polynesian political parties' determined efforts for more than 30 years to achieve self-government, all important decisions are still made by the French government and carried out by its local representative, the high commissioner, who is appointed by and responsible only to the French cabinet in Paris. Paris controls not only foreign affairs and defense, but also the police, justice, immigration, information, communications, foreign commerce, international air and sea traffic, currency, research, and higher education.

Local political parties and leaders are clamoring for more say in their own affairs, and pro-independence movements represent about two-thirds of the voters, but the colonial government is overpowering. About 8,000 troops and police maintain order. Bribes and subsidies are widely distributed. And the rapid development of a European-style money economy, based mostly on tourism, has made Polynesia more and more dependent on the "mother country."

French expenditures for the nuclear program far exceed monies for other Polynesian concerns. Up to 1974, when nuclear tests moved underground, the CEP spent more than twice the amount allocated for the territorial budget. Meanwhile the local economic base has eroded. As a result of the French nuclear testing program, agricultural production has sagged: exports of coffee and vanilla have ceased, and exports of copra and coconut oil have fallen substantially. Once nearly self-sufficient, French Polynesia now imports 80 percent of its food. [9]

All French governments since 1963 have strongly encouraged Frenchmen to settle and make a living in the colony. The total intake is over 30,000, and about 1,000 new immigrants come to stay every year. The situation is not yet as bad as in New Caledonia, where the Kanaks today are a minority in their own country; the Polynesians still outnumber the French by six to one. But since the French settlers are better educated and economically more powerful than the native Polynesians, they wield disproportionate power in the colony. The prospect of a more unified Europe in 1992 has raised other fears in French Polynesia. Influential local politicians worry about an influx of new settlers, or that all of Western Europe will use the territory as a dumping ground for nuclear and toxic wastes.

Several other, more subtle methods are used to make the islands politically safe for continued nuclear testing. For instance, the Polynesian population is daily indoctrinated by the government-operated radio and TV stations, which offer only the official French version of events and deny access to any individual or organization critical of colonial rule or nuclear testing.

Shortly after General de Gaulle made his fateful decision to use "his" islands for nuclear testing, an educational scheme with a curriculum taught exclusively in French was launched. Gradually, kindergartens have been built, staffed by French-speaking personnel. Today, most Polynesian teenagers have seven to 10 years of French schooling behind them, and many accept the existing system, because they have never known any other.

The French government obviously regards the islands as critical to its nuclear weapons program. Moruroa atoll may be nearly used up from nuclear testing, but as French officials have pointed out, there are 75 more atolls in the Tuamotu group.

1. "Coco de l'atoll et poissons du large pour le poisson cru de Moruroa," *La Dépeche de Tahiti*, Papeete, March 29, 1963.

2. G.E. Roth, et al., *Fallout from Nuclear Weapons Tests Conducted by France in the South Pacific from June to August 1971* (Christchurch: New Zealand National Radiation Laboratory, 1972).

3. Haroun Tazieff et al. *Rapport sur l'ensemble de la mission scientifique en Polynésie française* (mimeographed report published by the French Ministry of Defense, Paris, 1983).

4. CFDT, Section B-111, *Contamination à Moruroa* (typewritten report, Paris, October 19, 1981).

5. T. Yasumoto, *Assignment Report on Ichthyosarcotoxism in French Polynesia* (World Health Organization, Regional Office for the Western Pacific, 1976).

6. Thomas E. Hamilton, Gerald van Belle and James P. LoGerlo, "Thyroid Neoplasia in Marshall Islanders Exposed to Nuclear Fallout," *Journal of the American Medical Association*, vol. 258, no. 5. (Aug. 7, 1987); "Report on the Investigation of Damage Done by the Bikini Hydrogen Bomb Test to the People of the Marshall Islands," *Gensuikin News*, (Feb. 1973); Glenn H. Alcalay, "The Aftermath of Bikini," *Ecologist*, vol. 10, no. 10 (Dec. 1980).

7. Bengt Danielsson and Marie-Thérèse Danielsson, "Half-truth, Glaring Omissions, Downright Lies, Critics Claim," *Pacific Islands Monthly* (Aug. 1983); Bengt Danielsson and Marie-Thérèse Danielsson,

"Ambassador Puissant's Nuclear Fiction," *Island Business* (Oct. 1983); Bengt Danielsson, "French Polynesia, Nuclear Colony," in *Politics in Polynesia* (Suva, Fiji: University of the South Pacific, 1983).
8. H. Atkinson et al. *Report of a New Zealand, Australian and Papua New Guinea Scientific Mission to Moruroa Atoll* (Wellington: mimeographed report published by the New Zealand Ministry of Foreign Affairs, 1984).
9. Tilman Ruff, "Fish Poisoning in the Pacific: A Link with Military Activities," Working Paper no. 63 (Canberra: Peace Research Centre, Australian National University), p. 22.

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