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17 Estates Lane
Shoreham, NY 11786
March 11, 1987

Secretary of the Commission
Nuclear Regulatory Commission, Docketing and Service Branch
Washington, D.C. 20555

Dear Sir,

Nothing that happens in this ongoing fiasco of attempting to get the Shoreham plant operational surprises me anymore, nothing that is until this latest declaration of a desire to infringe on the rights of the people that to my knowledge is unprecedented and unconscionable.

At best nuclear plants pose a threat that your commission seems to be unable to grasp, but this particular plant has already been shown to be in the hands of possibly the worst company to elicit trust. Lilco has been fined, has been caught in dishonesty, and is even under investigation for illegal construction costs. Plant workers, personally known to me, joke about the ineptness of their employer and the safety of the plant.

In losing the credibility of your Commission, and that certainly has happened, you help to undermine the authority of the entire federal bureaucracy, so the repercussions of your activities seem to be negative on every level. Every level, that is, except putting power into hands incapable of wielding it and money into pockets already stuffed with ill-gotten gains.

I believe the attached, written by a famous physicist, says it all. Why not try to read it and then think about how nobly you are performing "regulatory" services.

Sincerely,

Raymond Gorman

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Our ever increasing energy needs reflect the general expansion of our economic and technological systems; they are caused by the patterns of undifferentiated growth that deplete our natural resources and contribute significantly to our multiple symptoms of individual and social illness. Energy, then, is a significant parameter of social and ecological balance. In our present, highly unbalanced state, more of it would not solve our problems but would make them worse. It would not only accelerate the depletion of our minerals and metals, forests and fish, but would also mean more pollution, more chemical poisoning, more social injustice, more cancer, more crime. What we need to overcome our multifaceted crisis is not more energy but a profound change of values, attitudes, and life styles.

Once these basic facts are perceived, it becomes evident that the use of nuclear power as an energy source is sheer folly. It surpasses the ecological impact of large-scale energy production from coal, which is already devastating, by several orders of magnitude, threatening not only to poison our natural environment for thousands of years but even to extinguish the entire human species. Nuclear power represents the most extreme case of a technology that has got out of hand, propelled by an obsession with self-assertion and control that has reached highly pathological levels.

In describing nuclear power in such terms, I am referring to both nuclear weapons and reactors. It is an intrinsic property of nuclear technology that these two applications cannot be separated. The term "nuclear power" itself has two linked meanings. "Power" has not only the technical meaning of "source of energy," but also the more general meaning of "possession of control or influence over others." In the case of nuclear power, these two kinds of power are inseparably connected, and both of them represent today the greatest threat to our survival and well-being.

Over the past two decades the U.S. Defense Department and the military industry have succeeded in creating a series of public hysterias about national defense in order to be granted regular increases in military spending. To do so military analysts have perpetuated the myth of an arms race in which the Russians are ahead of the United States. In reality the United States has been leading the Soviet Union in this insane competition ever since it began. Daniel Ellsberg has shown convincingly, by making available classified information, that the American military knew it was vastly superior to the Russians in strategic

nuclear weapons throughout the 1950s and early 1960s.[5] American plans, based on this superiority, contemplated first use of nuclear weapons—in other words, initiating a nuclear war—and several American presidents made explicit nuclear threats, all of which were kept secret from the public.

In the meantime the Soviet Union has also built up a massive nuclear force, and today the Pentagon is again trying to brainwash the American people into believing that the Russians are ahead. Actually there is now a balance of power; equivalence in armament is a fair description of the current situation. The reason why the Pentagon is again distorting the truth is that it wants the American military to regain the kind of superiority it had from 1945 to about 1965, which would enable the United States to make the kinds of nuclear threats it was making then.

Officially the American nuclear policy is one of deterrence, but a closer look at the present American nuclear arsenal and at the new weapons being designed shows clearly that the Pentagon's current plans are not aimed at deterrence at all. Their only purpose is a nuclear first strike against the Soviet Union. To get an idea of the American force of deterrence it is sufficient to consider the nuclear submarines. In the words of President Jimmy Carter, "Just one of our relatively invulnerable Poseidon submarines—less than two percent of our total nuclear force of submarines, aircraft, and landbased missiles—carries enough warheads to destroy every large and medium-sized city in the Soviet Union. Our deterrent is overwhelming."[6] Twenty to thirty of these submarines are always at sea, where they are virtually invulnerable. Even if the Soviet Union sends its entire nuclear force against the United States, it cannot destroy a single American submarine; and each submarine can threaten every one of its cities. Thus the United States at all times has the power to destroy every Russian city twenty to thirty times over. Seen against this background, the current increase in armament clearly has nothing to do with deterrence.

What American military designers are now developing are high-precision weapons, such as the new cruise and MX missiles, which can strike their targets from a distance of 6,000 miles with highest accuracy. The purpose of these weapons is to destroy an enemy missile in its silo before it is fired; in other words, these weapons are to be used in a nuclear first strike. Since it would make no sense to aim laser-guided missiles at empty silos, they cannot be regarded as defensive weapons;

they are clearly weapons of aggression. One of the most detailed studies of the nuclear arms race which comes to that conclusion has been published by Robert Aldridge, an aeronautical engineer who formerly worked for the Lockheed corporation, America's largest producer of weapons.[7] For sixteen years Aldridge helped to design every submarine-launched ballistic missile bought by the U.S. Navy, but he quit Lockheed in 1973 when he became aware of a profound shift in American nuclear policy, a shift from retaliation to first strike. As an engineer he could see a clear discrepancy between the announced purposes of the programs he was working on and their intrinsic design. Since then Aldridge has found that the trend he detected has continued and accelerated. His deep concern about American military policy led him to write his detailed report, which ends with these words:

> I must reluctantly conclude from the evidence that the United States is ahead now and is rapidly approaching a first-strike capability—which it should start deploying by the mid-1980s. The Soviet Union, meanwhile, seems to be struggling for a second best. There is no available evidence that the U.S.S.R. has the combined missile lethality, anti-submarine warfare potential, ballistic missile defense, or space warfare technology to attain a disabling first-strike before the end of this century, if then.[8]

This study, like Ellsberg's, shows clearly that the military's new weapons, contrary to what the Pentagon would make us believe, no longer increase American national security. On the contrary, the likelihood of nuclear war becomes greater with every weapon that is added.

In 1960–61, according to Ellsberg, there were American plans for a nuclear first strike against the Soviet Union in case of any direct military confrontation with the Russians anywhere in the world. This was the only, and inevitable, American response to direct Russian involvement in some local conflict. We may be sure that such planning is still going on in the Pentagon. If it is, this means that in response to some local conflict in the Middle East, in Africa, or anywhere else in the world, the Defense Department intends to initiate an all-out nuclear war in which there would be half a billion dead after the first exchange. The entire war could be over in thirty to sixty minutes, and almost no living thing would survive its consequences. In other words, the Pentagon is planning to extinguish the human species as well as most others.

This concept is known in the Defense Department as "mutually assured destruction"; its acronym, very appropriately, is MAD.

The psychological background to this nuclear madness is an overemphasis on self-assertion, control and power, excessive competition, and an obsession with "winning"—the typical traits of patriarchal culture. The aggressive threats that have been made by men throughout human history are now being made with nuclear weapons, without recognition of the enormous difference in violence and destructive potential. Nuclear weapons, then, are the most tragic case of people holding onto an old paradigm that has long lost its usefulness.

Today the outbreak of a nuclear conflict depends no longer on the United States and the Soviet Union alone. American nuclear technology—and with it the raw materials to make nuclear bombs—is being exported all over the world. Only ten to twenty pounds of plutonium are required to make a bomb, and each nuclear reactor produces four hundred to five hundred pounds of plutonium annually, enough for twenty to fifty atomic bombs. Through plutonium, reactor technology and weapons technology have become inseparably linked.

Nuclear technology is now being promoted especially in the Third World. The aim of this promotion is not to satisfy the energy needs of Third World countries, but those of multinational corporations extracting the natural resources from these countries as fast as they can. Politicians in Third World countries often welcome nuclear technology, however, because it gives them a chance to use it for building nuclear weapons. Current American sales of reactor technology abroad guarantee that by the end of the century dozens of countries will possess enough nuclear material to manufacture bombs of their own, and we can expect those countries not only to acquire the American technology but also to copy the American patterns of behavior and use their nuclear power to make aggressive threats.

The potential of global destruction through nuclear war is the greatest environmental threat of nuclear power. If we are unable to prevent nuclear war, all other environmental concerns will become purely academic. But even without a nuclear holocaust, the environmental impact of nuclear power far exceeds all other hazards of our technology. At the beginning of the so-called peaceful use of atomic energy, nuclear power was advocated as cheap, clean, and safe. In the meantime we have become painfully aware that it is none of those. The construction and maintenance of nuclear power plants is becoming ever more expensive owing to the elaborate safety measures imposed on the nuclear industry by public protest; nuclear accidents have threatened the health and safety of hundreds of thousands of people; and radioactive substances continually poison our environment.

The health hazards of nuclear power are of an ecological nature and operate on an extremely large scale, both in space and in time. Nuclear power plants and military facilities release radioactive substances that contaminate the environment, thus affecting all living organisms, including humans. The effects are not immediate but gradual, and they are accumulating to more dangerous levels all the time. In the human organism these substances contaminate the internal environment with many medium- and long-term consequences. Cancer tends to develop after ten to forty years, and genetic diseases can appear in future generations.

Scientists and engineers very often do not fully grasp the dangers of nuclear power, partly because our science and technology have always had great difficulty dealing with ecological concepts. Another reason is the great complexity of nuclear technology. The people responsible for its development and applications—physicists, engineers, economists, politicians, and generals—are all used to a fragmented approach and each group concerns itself with narrowly defined problems. They often ignore how these problems interrelate and how they combine to produce a total impact on the global ecosystem. Besides, most nuclear scientists and engineers suffer from a profound conflict of interest. Most are employed by the military or by the nuclear industry, both of which exert powerful influences. Consequently the only experts who can provide a comprehensive assessment of the hazards of nuclear power are those independent of the military-industrial complex and able to adopt a broad ecological perspective. Not surprisingly, they all tend to be in the antinuclear movement.[9]

In the process of producing energy from nuclear power, both the workers in the nuclear industry and the whole natural environment are contaminated with radioactive substances at every step of the "fuel cycle." This cycle begins with the mining, milling, and enrichment of uranium, continues with the fabrication of fuel rods and the operation and maintenance of the reactor, and ends with the handling and storage or reprocessing of nuclear waste. The radioactive substances that escape into the environment at every stage of this process emit parti-

cles—alpha particles,* electrons, or photons—that can be highly energetic, penetrating the skin and damaging body cells. Radioactive substances can also be ingested with contaminated food or water and will then do their damage from within.

When considering the health hazards of radioactivity, it is important to note that there is no "safe" level of radiation, contrary to what the nuclear industry would have us believe. Medical scientists now generally agree that there is no evidence of a threshold below which radiation may be said to be harmless;[10] even the smallest amounts can produce mutations and diseases. In everyday life we are continually exposed to low-level background radiation, which has been impinging on the earth for billions of years and which also comes from natural sources present in rocks, in water, and in plants and animals. The risks from this natural background are unavoidable, but to increase them means to gamble with our health.

The nuclear reaction that takes place in a reactor is known as fission. It is a process in which uranium nuclei break into fragments—most of which are radioactive substances—plus heat, plus one or two free neutrons. These neutrons are absorbed by other nuclei which, in turn, break up, thus setting in motion a chain reaction. In an atomic bomb, this chain reaction ends in an explosion, but in a reactor it can be controlled with the help of control rods, which absorb some of the free neutrons. In this way the rate of fission can be regulated. The fission process releases a tremendous amount of heat that is used to boil water. The resulting steam drives a turbine that generates electricity. A nuclear reactor, then, is a highly sophisticated, expensive, and extremely dangerous device for boiling water.

The human factor involved in all stages of nuclear technology, military and nonmilitary, makes accidents unavoidable. These accidents result in the release of highly poisonous radioactive materials into the environment. One of the worst possibilities is the melt-down of a nuclear reactor, in which the whole mass of molten uranium would burn through the container of the reactor and into the earth, possibly triggering a steam explosion that would scatter deadly radioactive materials. The effects would be similar to those of an atomic bomb. Thousands of people would die from immediate radiation exposure; more deaths would occur after two or three weeks from acute radiation illness; large areas of land would be contaminated and made uninhabitable for thousands of years.

* Alpha particles are compounds of two protons and two neutrons.

Many nuclear accidents have already happened, and major catastrophes have often been narrowly avoided. The accident at the Three Mile Island nuclear power plant near Harrisburg, Pennsylvania, in which the health and safety of hundreds of thousands of people were threatened, is still vivid in our memory. Less known, but not less frightening, are accidents involving nuclear weapons, accidents that have become more and more frequent as the number and capacity of those weapons have increased.[11] By 1968 there were more than thirty major accidents involving American nuclear weapons that came close to an explosion. One of the most serious occurred in 1961, when an H-bomb was accidentally dropped over Goldsboro, North Carolina, and five of its six safety devices failed. That one safety device protected us from a thermonuclear explosion of twenty-four million tons TNT, an explosion one thousand times more powerful than that of the Nagasaki bomb and, in fact, more powerful than the combined explosions of all the wars in human history. Several of these twenty-four-million-ton bombs have been dropped accidentally over Europe, the United States, and other parts of the world, and these accidents are going to occur even more frequently as more and more countries build nuclear weapons, probably with much less sophisticated safety devices.

Another major problem of nuclear power is the disposal of nuclear waste. Each reactor annually produces tons of radioactive waste that remains toxic for thousands of years. Plutonium, the most dangerous of the radioactive byproducts, is also the most long-lived; it remains poisonous for at least 500,000 years.* It is difficult to grasp the enormous length of this time span, which far exceeds the length of time we are used to contemplating within our individual lifetimes, or within the lifetime of a society, nation, or civilization. Half a million years, as shown on the chart below, is more than one hundred times longer than all of recorded history. It is a time span fifty times longer than that from the end of the Ice Age to the present day, and more than ten times longer than our entire existence as humans with our present

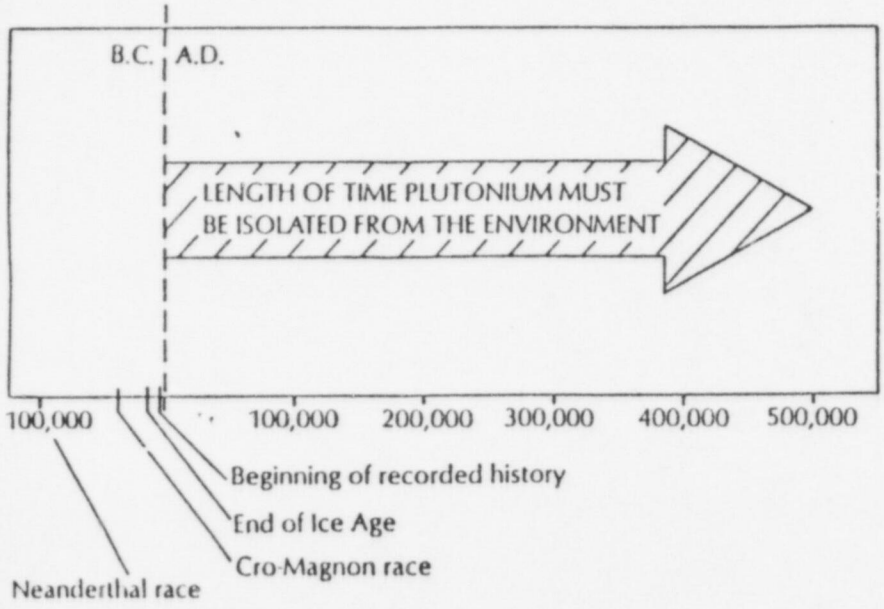
* The half-life of plutonium (Pu-239)—the time after which one-half of a given quantity has decayed—is 24,400 years. This means that if one gram of plutonium is released into the environment, about one-millionth of a gram will be left after 500,000 years, a quantity which is minute but still toxic.

physical characteristics.* This is the length of time that plutonium must be isolated from the environment. What moral right do we have to leave such a deadly legacy to thousands and thousands of generations?

No human technology can create safe containers for such an enormous time span. Indeed, no permanent safe method of disposal or storage has been found for nuclear waste, in spite of millions of dollars spent during three decades of research. Numerous leaks and accidents have shown the shortcomings of all current devices. In the meantime, nuclear waste keeps piling up. Projections by the nuclear industry anticipate a total of 152 million gallons of intensely radioactive, "high-level" waste by the year 2000, and while the precise amounts of military radioactive waste are kept secret, they can be expected to be enormously larger than those from industrial reactors.

Plutonium, named after Pluto, the Greek god of the underworld, is by far the most deadly of all nuclear waste products. Less than one-millionth of a gram—an invisible dose—is carcinogenic. One pound, if

* The ancestors of the European races are usually identified with the Cro-Magnon race, which appeared about 30,000 years ago and possessed all modern skeletal characteristics, including the large brain.



uniformly distributed, could potentially induce lung cancer in every person on earth. Given these facts, it is truly frightening to know that each commercial reactor produces four hundred to five hundred pounds of plutonium per year. Moreover, tons of plutonium are routinely transported along American highways and railroads and are flown into airports.

Once created, plutonium must be isolated from the environment virtually forever, since even the tiniest amounts will contaminate it for eons to come. It is important to realize that plutonium does not simply vanish with the death of a contaminated organism. A contaminated dead animal, for example, may be eaten by another animal, or it may decay and rot away, its dust scattered by the winds. In any case the plutonium will remain in the environment and will continue its lethal action, on and on, from organism to organism, for half a million years.

Since there is no hundred-percent-safe technology, some plutonium inevitably escapes when it is handled. It has been estimated that if the American nuclear industry expands according to projections made in 1975, and if it contains its plutonium with 99.99 percent perfection—which would be something of a miracle—it will be responsible for 500,000 fatal lung cancers per year for about fifty years following the year 2020. This will amount to a 25 percent increase in the total death rate in the United States.[12] In view of these estimates, it is difficult to understand how anybody can call nuclear power a safe source of energy.

Nuclear power also creates many other problems and hazards. They include the unsolved problem of disassembling, or "decommissioning" nuclear reactors at the end of their useful lives; the development of "fast breeder reactors," which use plutonium as a fuel and are far more dangerous than ordinary commercial reactors; the threat of nuclear terrorism and the ensuing loss of basic civil liberties in a totalitarian "plutonium economy"; and the disastrous economic consequences of the use of nuclear power as a capital- and technology-intensive, highly centralized source of energy.[13] The total impact of the unprecedented threats of nuclear technology should make it abundantly clear to anyone that it is unsafe, uneconomical, irresponsible, and immoral: totally unacceptable.

If the case against nuclear power is so convincing, why is nuclear technology still promoted so heavily? The deep reason is the obsession with power. Of all the available energy sources nuclear power is the

one that leads to the highest concentration of political and economic power in the hands of a small elite. Because of its complex technology it requires highly centralized institutions, and because of its military aspects it lends itself to excessive secrecy and extensive use of police power. The various protagonists of the nuclear economy—the utilities, the manufacturers of reactors, and the energy corporations*—all benefit from a source of energy that is highly capital-intensive and centralized. They have invested billions of dollars in nuclear technology and continue to promote it vigorously in spite of its steadily growing problems and hazards. They are not prepared to abandon that technology, even if they are forced to ask for massive taxpayer subsidies and to use a large police force to protect it. As Ralph Nader says, nuclear power has become in many ways America's "technological Vietnam."[14]