

# village view

by Andrea Leonard

Though largely unpublicized, the development of the nation's nuclear energy industry over the past three decades is characterized by an incredible series of near-disasters, worker deaths, lost fuel supplies, terrorist attacks, plants damaged by acts of God, and leakages of atomic wastes.

Proponents of nuclear energy claim their industry is among the safest in existence.

In spite of these claims, in the year ending June 30, 1974, the Atomic Energy Commission found a total of 3,333 violations in 1,288 of the 3,047 installations that they examined. Ninety-eight of these violations were considered to be the most serious of three categories of violations, but punishments were imposed in only eight instances.

In 1973, the AEC reports reveal, there were 861 abnormal incidents; of these, 371 were potentially significant and involved small radiation releases or were caused by "natural disasters"; 18 were directly significant inasmuch as they involved large radiation releases or caused major property damage.

Forty percent of the occurrences were traceable to design or fabrication-related deficiencies while the balance were due to operator error, improper maintenance, administrative deficiencies, and "random failure."

During the past 32 years there have been 26 occasions when the power level of fissile systems became uncontrollable; that is, a nuclear accident either occurred or was just avoided.

The first experimental breeder reactor suffered a core melt-down in November, 1955. The reactor came within a half-second of exploding before being brought under control by the actuation of a back-up, fast-acting reactor shut-down system.

In 1966 the "Fermi I" Breeder Reactor in Michigan suffered a partial fuel meltdown when several pieces of sheet-metal broke off the bottom of the reactor vessel and were swept up by the coolant flow into two of the 105 fuel elements in the core.

The sheets choked off coolant flow into two of the 105 fuel elements in the core. The elements overheated and melted as the reactor was being operated at 15% power level.

A severe nuclear explosion is potentially possible following rapid core compaction which could occur by gravity collapse of a molten or weakened core. An operator who happened to be present averted a crisis (in which as many as 115,000 of the 2,000,000 people living in the area might have been killed). He shut down the power manually. The shut-down of the plant after only 378 hours of operation cost \$352,000 per hour to operate the facility.

Near Pittsburgh in 1964 support hangers holding up several new heavy steam generators proved faulty and broke when the generators were being filled with coolant in preparation for reactor operation at higher power levels. An alert workman sounded the alarm and prevented the total fall of the generators.

Had the hangers failed during power operations, the connected main coolant pipes would have been ripped off and disastrous loss-of-coolant accident would have ensued.

Workmen in Athens, Alabama, were routinely plugging air leaks in the outside wall of the cable room under the control room at the Brown's Perry reactor complex in 1975. They were using candles to test for leaks.

The flames ignited a plastic sealing material and the fire spread into the cable room through the air leak, igniting the cables. Most were destroyed rendering most of the safety system inoperable.

The reactors were both operating at full power at the time and control of one reactor was temporarily lost, but regained just in time to avert uncovering the reactor core of water, thereby preventing a possible core-meltdown accident and possible major nuclear accident.

After the fire was put out, operators struggled for sixteen hours to bring the reactors under control. It seems it was only a matter of luck the fire didn't knock out the few safety devices that remained operable. The accident caused \$50 million in damages.

The official report, when released, concluded that at the time the plant was built the government program to prevent and control such fires "was essentially zero". The report charged that two parts of the reactors were badly designed, inadequately tested, and not built according to plan, although under government supervision.

Major nuclear accidents in other countries have also occurred. In Ontario in 1958 there was a serious fire caused by defective equipment at the Chalk River Atomic Center. It took 600 men from Canada and the United States two months to clean up the resulting destruction; escaping radioactive gases were traced as far as central New York State.

In Switzerland a reactor built inside a mountain suffered a loss of coolant accident in 1969. The core suffered limited damage, but a heavy amount of radioactivity was released in the reactor cavern requiring a permanent sealing of the cavern and converting it to a waste storage site.

At what was then the largest atomic system in the world, located in Windscale, England, 11 tons of uranium fuel caught fire in a reactor in 1957. The fire raged out of control for most of a day. One of the reactors overheated and released large quantities of volatile iodine radioactivity over a 30 mile radius.

The resulting fall-out cloud drifted over all of Britain and most of Western Europe. Over 670,000 gallons of milk was contaminated, a \$20 million loss of local farmers: Dairying was banned for 60 days over 200 square miles of land.

AEC Studies conducted in 1974 and 1975 reveal that since 1947 nearly 2 million AEC personnel have been exposed to whole body penetrations of radiation and the incidence of radiation exposure for U.S. atomic workers is increasing. The General Account Office has warned the AEC that some of the agency's women employees were being exposed to radiation ten times higher than is considered safe, raising the possibility of radiation-induced mutations in children born to these women.

The AEC's 1975 report reveals that in the preceding 32 years there were 10,086 disabling work injuries at AEC facilities, including 321 fatalities. A Consumer Protection Administration study reports an additional 600-1100 men who have worked in uranium mines are expected to die of radiation-induced cancer by 1990.

The projection is reinforced by a recent study by Ralph Nader's Health Research Group. It reports the death rate from cancer found among plutonium workers is almost twice as high as the cancer rate for all white males, and that virtually all plutonium workers who died had been exposed to amounts of plutonium well below the levels established by the government as safe.

The facts reported above are taken from one-and-one-half pages of a four-page article in Vol. II, No. 12, of PEOPLE & ENERGY, a bulletin published by the Center for Science in the Public Interest, 1757 S Street, N.W., Washington, D.C. 20009.

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