

PUBLIC CITIZEN'S
CRITICAL MASS ENERGY PROJECT
NUCLEAR POWER SAFETY REPORT
1979-1985

1979

NUCLEAR MISHAPS

- ✓ There were 2,310 mishaps at the nation's 68 nuclear power plants in 1979.
- ✓ A quarter of the events were due to human error.

OUTSTANDING EVENTS

Sequoyah I. Crucial valves in the emergency core cooling system were too heavy to open properly in the event of an accident.

Three Mile Island II. In January, debris clogged the water intake valve rendering the service water system inoperable.

Prairie Island. Important checks of valve leaks were not performed because maintenance personnel were on vacation.

Three Mile Island II. In March, the worst nuclear accident in history caused massive radiation releases measured as far away as Maine; one third of the nuclear core melted down.

Salem. A door leading to a storage area for radioactive waste was left unlocked.

OTHER FINDINGS

- ✓ North Anna I plant in Virginia reported 130 incidents, four times the national average. One third of these events were caused by human error.
- ✓ Boiling Water Reactors (BWR), the report found, had the worst safety records.

1980

NUCLEAR MISHAPS

- ✓ There were 3,804 accidents at the nation's 69 nuclear power plants in 1980.
- ✓ Leading this list was Sequoyah I, with 238 accidents.

OUTSTANDING EVENTS

Crystal River. In February, a control room loss of instrumentation dumped tens of thousands of gallons of contaminated water into the reactor containment building.

Fitzpatrick I. In May, during refueling operations there was a release of radioactive iodine-131, approximately 30 percent in excess of environmental technical specifications.

Browns Ferry III. In June, the plant experienced an "anticipated transient without scram" (ATWS). Seventy six out of 185 control rods (the only way a nuclear plant can be "shut off") failed to fully insert while the unit was at 30 percent power.

Oyster Creek I. In September, a leaking cooling system pump was removed from service. The leak was caused by personnel using a pipe related to the pump as a foothold.

Oconee II. In December, a pump related to the cooling system was declared inoperable. The cause, according to an NRC document, was "personnel being confused and doing the wrong thing."

Pilgrim I. In December, mussels near the plant were found to contain in excess of ten times the lower regulatory limit of Cobalt-60.

OTHER FINDINGS

- ✓ The NRC named 104 "especially significant mishaps."
- ✓ Two thirds of the plants accounted for all of the "especially significant mishaps" and just seven plants accounted for over half.
- ✓ Many events weren't reported to the NRC. In August, for example, an NRC inspector at the Dresden Station found two of four licensed operators asleep when he entered the control room. Units II and III were in operation at the time. The operating utility didn't report the incident to the NRC, yet the NRC chose to include it among the most dangerous events of 1980.

1981

NUCLEAR MISHAPS

- ✓ There were 4,060 mishaps at 74 nuclear power plants in 1981.
- ✓ 140 of the events were singled out as being especially serious.

OUTSTANDING EVENTS

Palisades. In January, with the plant at full power, workers left switches in the wrong position bringing about a "major degradation of essential safety related equipment," according to the NRC.

Rancho Seco. In March, parts of the Emergency Core Cooling System were 80 to 90 percent clogged by corrosion.

Brunswick 1 & 2. In April, important cooling systems were blocked by oysters, mussels, barnacles and tube worms. The Residual Heat Removal system was affected and the heat exchangers were completely inoperable.

San Onofre I. In June, the flow of cooling water was slowed and a valve malfunctioned because of an infestation of barnacles on the heat exchanger discharge pipe.

Pilgrim. In August, a heat exchanger was declared inoperable due to a design error as well as the growth of mussels in cooling system pipes.

San Onofre I. In September, trouble was detected in the emergency core cooling system. Investigation revealed that a crucial part of the system was inoperable and had probably been disabled for four years.

OTHER FINDINGS

- ✓ Using NRC rankings, 22 plants were either "below average" or "far below average" in terms of safety.
- ✓ The average capacity factor for nuclear plants was 59 percent.
- ✓ Worker exposure to radiation reached an all time high of 54,555 person-rems, with over 83,000 nuclear workers receiving doses of radiation.

- ✓ There was an unreasonably high annual limit on worker exposure (10 times that for the general public).
- ✓ There were numerous violations such as the exposure of one worker at Illinois' Dresden 3 plant to 21 rems, an amount of radiation comparable to 1,050 chest X-rays.

1982

NUCLEAR MISHAPS

- ✓ There were 4,500 mishaps at 74 nuclear power plants in 1982.

OUTSTANDING EVENTS

Ginna. In January, the plant suffered the largest steam generator tube rupture in history, causing violent fluctuations of pressure throughout the reactor system and the release of a substantial amount of radioactivity to the atmosphere.

Quad Cities 2. In June, the plant, which almost suffered a "station blackout" accident, lost all off-site power and all but one emergency diesel generator. This would have left the plant without the power necessary to run the plant's safety systems had they been called upon.

Salem. In August, the plant did not shutdown when it should have. This Anticipated Transient Without Scram (ATWS) accident is one of the most feared by the NRC and the industry.

Farley. In October, crucial valves which must open to keep radioactive steam from escaping to the atmosphere in an accident, were locked shut for a year and a half. This was due to human error and a design by Westinghouse that made the valves look open when in fact they were shut.

San Onofre. In November, a technician knocked a power cord out of its socket, causing a sharp drop in feedwater flow. The plant was shutdown and then the cord plugged back in. This caused sudden heating and cooling, potentially causing inadequate cooling of the reactor core.

Arkansas. In December, rain knocked out communication equipment. If any accident had occurred, emergency communications from the site would have been practically impossible.

Dresden. In December, a flood nearly disabled electrical circuitry and vital equipment needed for fire protection and shutdown cooling.

OTHER FINDINGS

- ✓ 253 of the events were considered particularly significant by the NRC.
- ✓ Human error accounted for more than 25 percent of the mishaps.
- ✓ A record 84,322 nuclear workers were exposed to radiation.

continued