

Disaster In The Soviet Union The Chernobyl Nuclear Meltdown

In the Western region of the former Soviet Union, at that time the only Superpower in the world other than the United States, disaster struck the sleepy Ukraine town of Pripyat. On April 26, 1986, in the cold early morning hours, the Chernobyl Nuclear Power Plant exploded. The resulting disaster hit a level 7 on the International Nuclear Event Scale, the only incident in the history of atomic energy to do so. Following the initial explosion, fire and subsequent explosions from the site sent radioactive plumes of smoke into the air and contaminated much of the surrounding area. Reports came from many European countries of increased radioactivity levels in the atmosphere, and detailed reports thereafter picked up changes in the radioactivity as far away as the United States. It is estimated that the fallout was up to forty times that of the Hiroshima nuclear bomb.

How It Happened

Reactor 4 at the Chernobyl Nuclear Power Plant was scheduled for a shutdown to perform routine maintenance on April 25th, the day before the disaster. This shutdown was to take place, in part, so an experiment could be undertaken. The engineers at the plant intended to test the turbines running the generators in the reactor to see if they would continue to run even if there was an external power outage. This would be an important safety component, as the reactor type used at Chernobyl requires a constant spray of water in order to remain cool. Of course, the turbines could not turn forever under their own momentum (or else there would be no need for a nuclear power plant). There was a forty second delay between the shutdown of the electricity and the initiation of the backup generators. The engineers needed to test if the turbines could continue to turn for a minimum of forty seconds, thus producing a seamless transition in the event of a power outage.

In a twist of fate, the grid controller in the area requested that the reactor stay online, however, rather than decreasing power output. This was due to a regional power station going offline that day, and the controller anticipating the need for the electricity during the peak hours of the day. Chernobyl agreed, and the power decrease did not start until nearly 11:00 that night. Thus, the safety test was put into the hands of the less experienced and understaffed night shift. The new crew was not made aware of the fact that they had postponed the power decrease, and thus followed the plan for shutdown as if it had been decreasing throughout the day.

Without getting into the scientific aspects of the disaster, suffice to say that this lack of knowledge (and the plant's unacceptable safety systems), led directly to the meltdown. While trying to complete the experiment, the staff removed the manual control rods for the reactor, since they were not getting the desired results from their shutdown. The reactor, set inexorably towards a runaway reaction, was left without anything to prevent it. By the time systems began to show instability on the computers, it was too late. The staff tried to reinsert the rods, but they melted and broke. Fire and explosion quickly blew the roof off the reactor, and a disaster was born.

Taking The Measure

The Chernobyl disaster and its aftermath has been difficult to quantify. Conflicting reports exist as to the extent of the damage. It is known that there were fifty-seven deaths as an immediate result of the radiation, mostly concentrated on power plant staff and fire and rescue workers who were not told of the severity of the risk. Almost five miles of forestry in the vicinity of the plant changed colors and died due to the radiation. The animals were destroyed. It has been estimated that as many as 10,000 cases of fatal cancer among the surrounding residents as a result of the contamination, making it one of the most deadly manmade accidents in history.

The incident slowed greatly the Soviet Union's abilities to carry on with a nuclear program, and it forced the government to be more open in future dealings with the press. The disaster may have been less serious had the government been prompt with its acceptance of what had happened and dispersed correct information more rapidly.

It is interesting to note that it was not until the year 2000, some fourteen years after the incident that Chernobyl finally shut down. Today, workers are still there around the clock, as the nuclear core cannot be left unsupervised. The town of Pripyat has been a ghost town ever since, and has actually become a haven for wildlife in the absence of humans.