

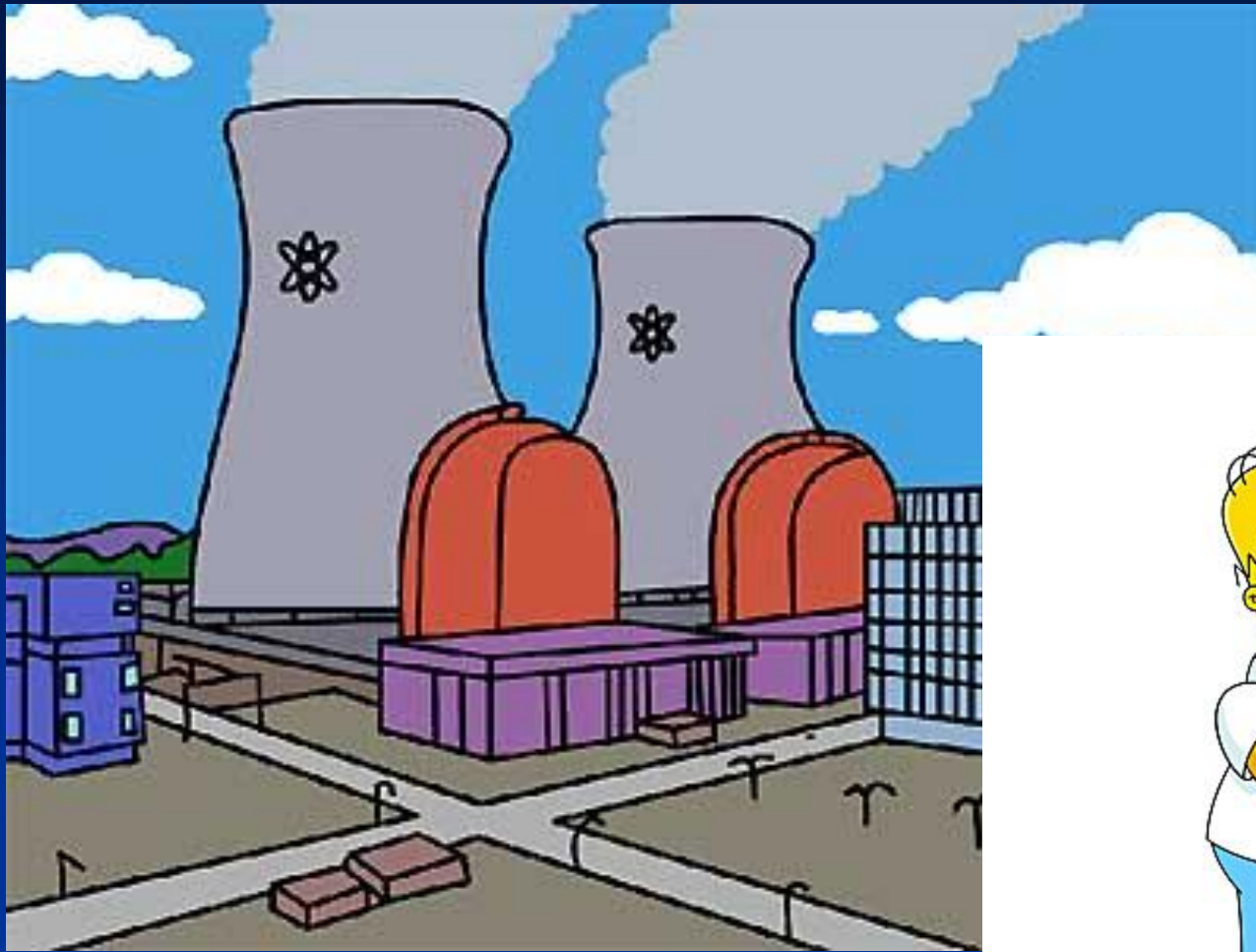
Nuclear Disaster: Chernobyl, Ukraine

SS6G9 The student will discuss environmental issues in Europe

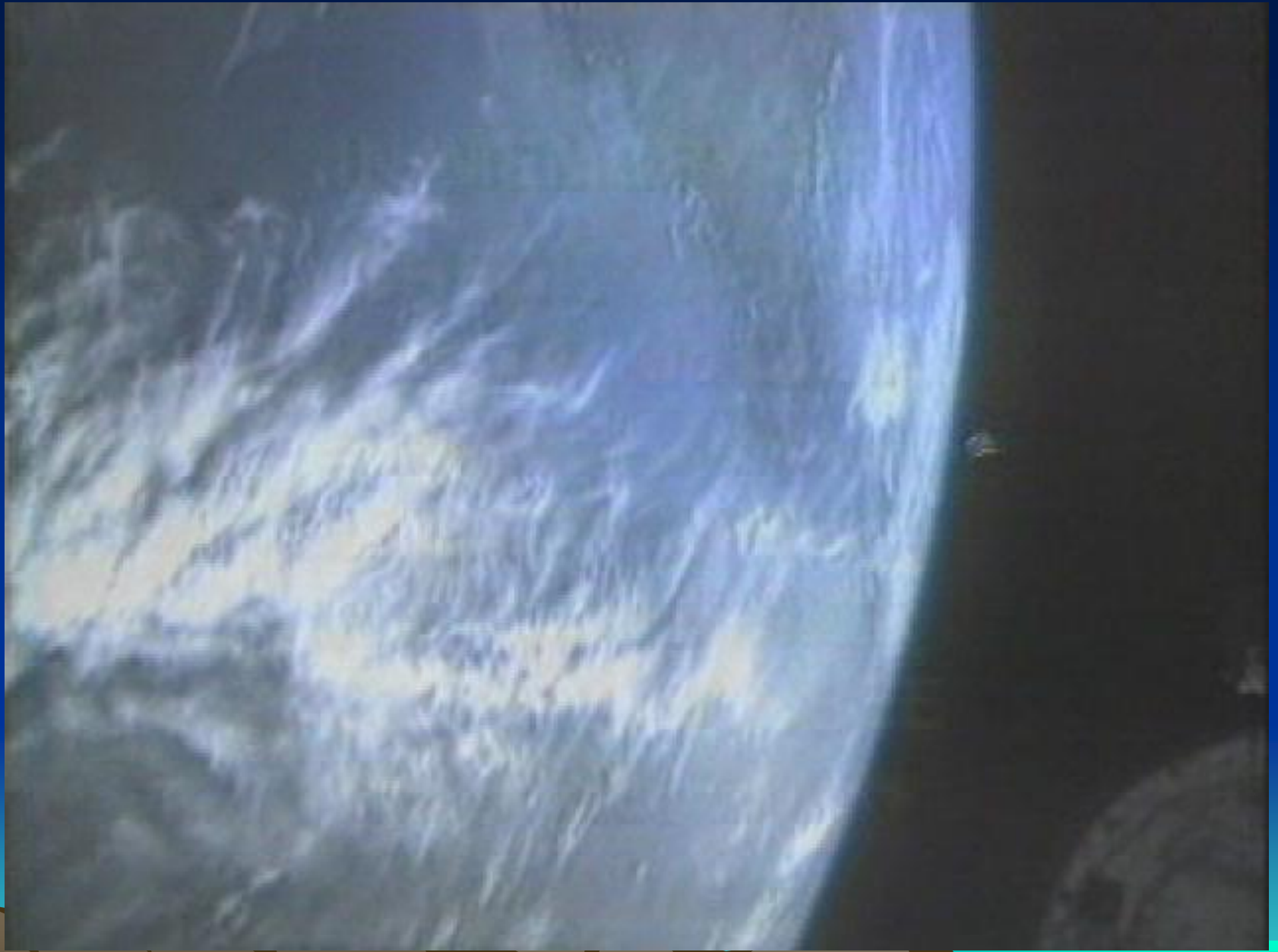
- a. Explain the major concerns of Europeans regarding the issues such as acid rain in Germany, air pollution in the United Kingdom, and the nuclear disaster in Chernobyl, Ukraine

<http://www.history.com/audio/chernobyl-nuclear-disaster>





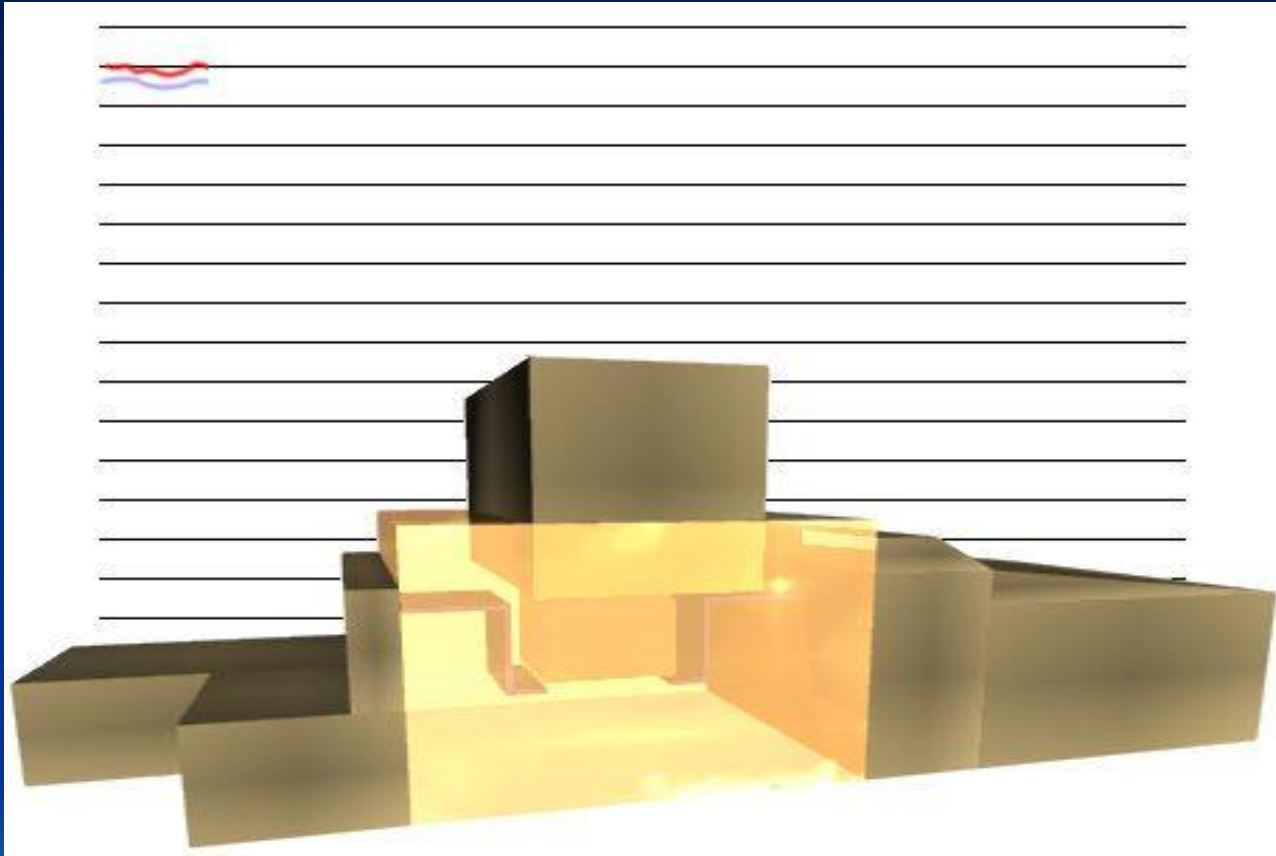




Nuclear Disaster

- April 1986 -- Ukraine
- A nuclear power plant in the city of Chernobyl exploded, releasing large amounts of deadly radiation.
 - Many people in Chernobyl died of due to radiation-caused cancer and other sicknesses
 - 200,000 people were evacuated to decrease radiation exposure
 - People in other parts of Europe got sick as well
 - Winds carried radiation beyond Ukraine
 - Livestock (Cows, chickens) produced contaminated meat and milk.

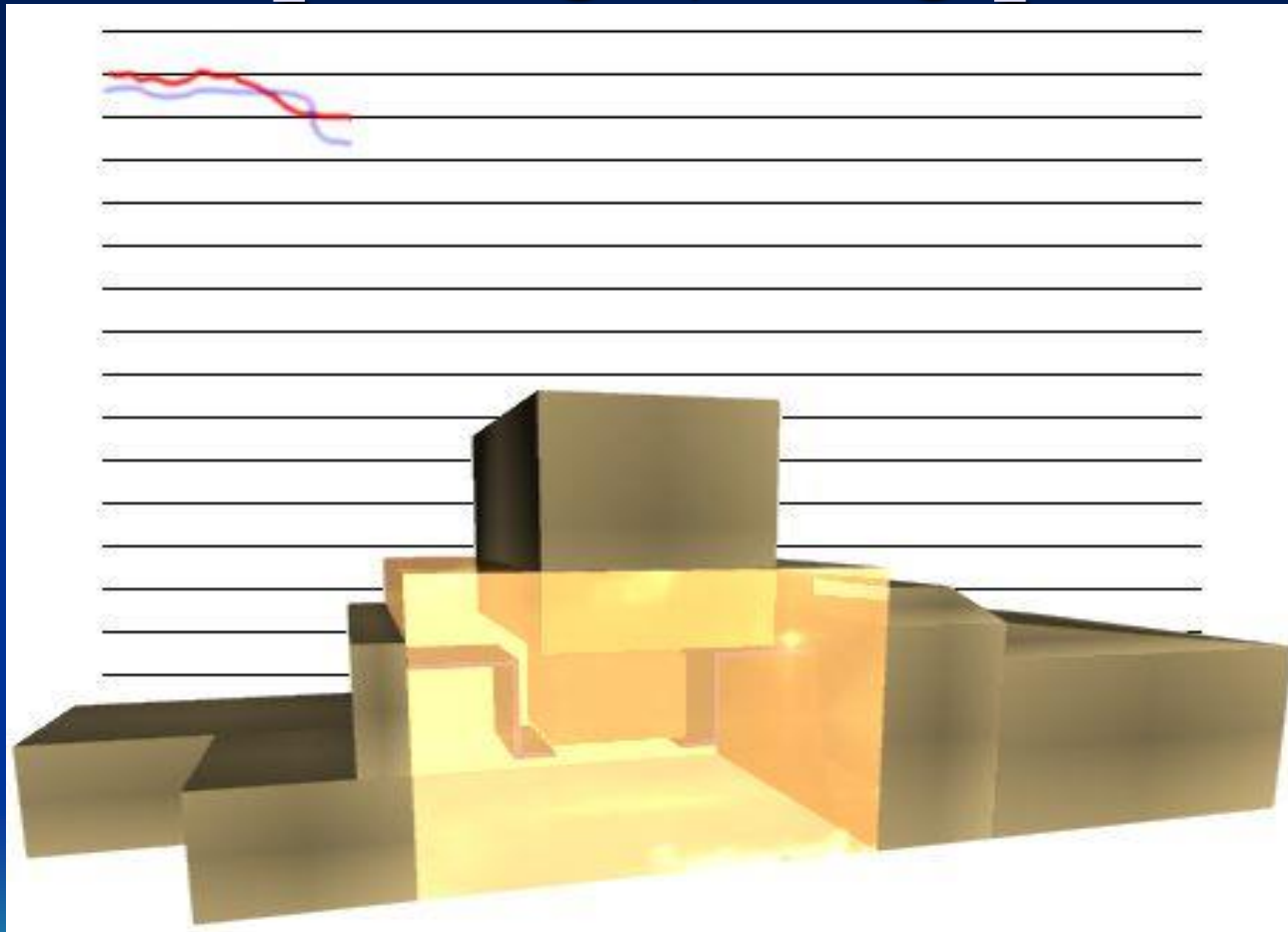
What went wrong?



April 25th, 1:00 am

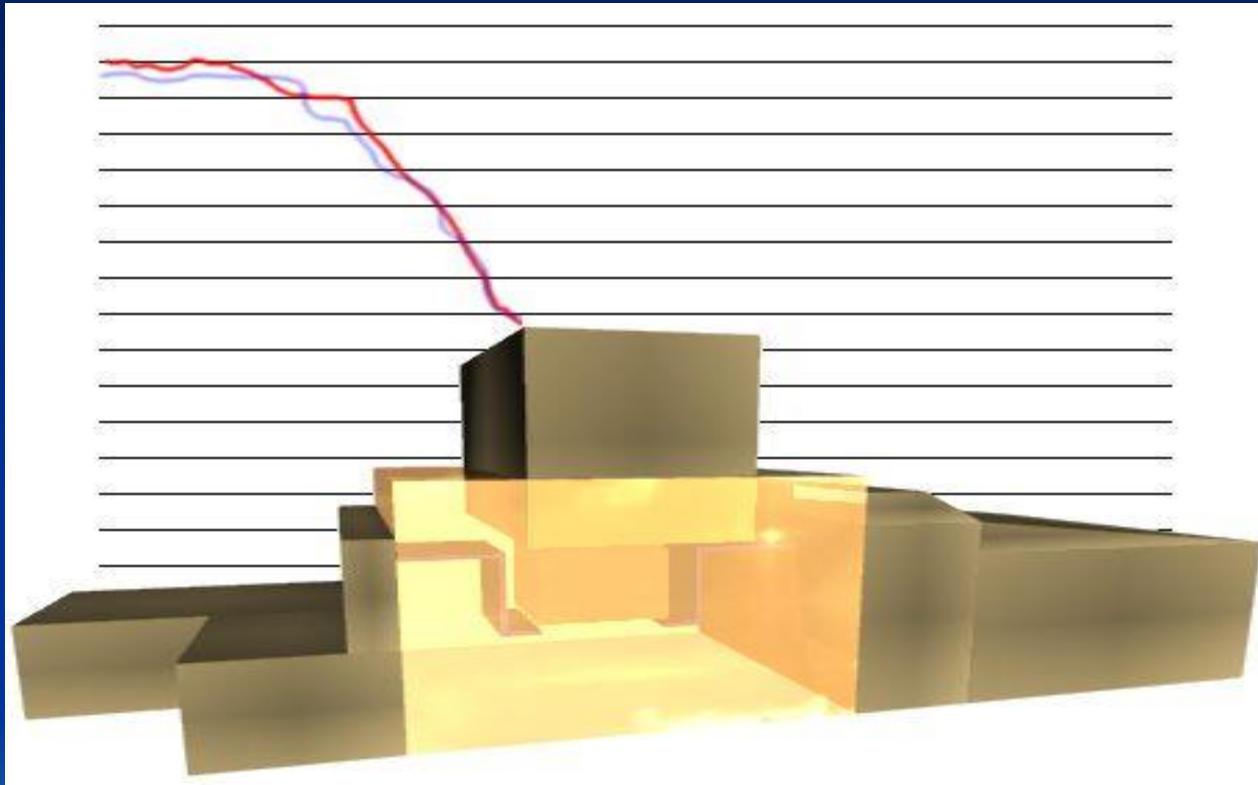
The reactor was scheduled to shut down for maintenance. While preparing for the shutdown, the operators wanted to perform a test to see how long the turbines could run the emergency cooling system if power is interrupted by an accident.

April 25th, 1:05 pm



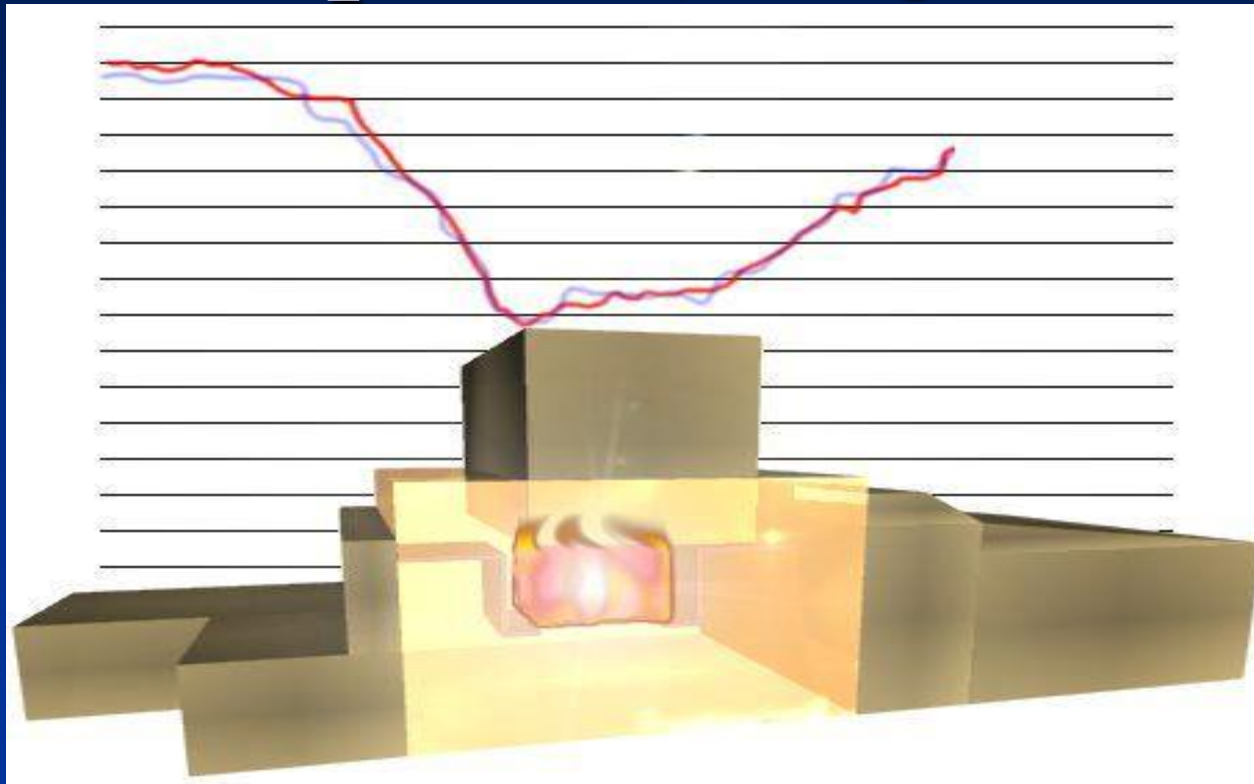
With the reactor "slowing" down in preparation for the shutdown, the power in Reactor No. 4 drops to about 1600 mega watts. The operators make a simple but fatal error by setting the regulator improperly.

April 26th, 12:28 am



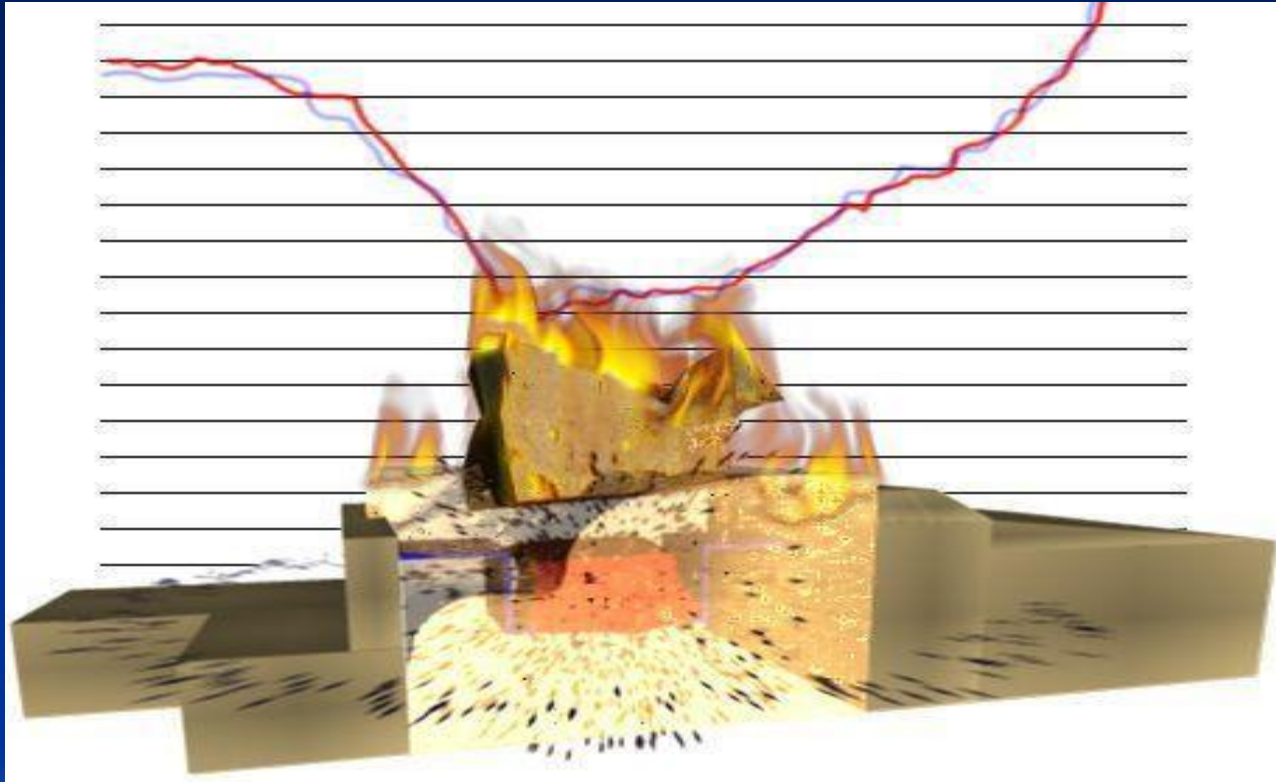
The power crashes down to only 30 mega watts.
The reactor is becoming hard to control.

April 26, 1:23am



- Thirty-six seconds after the test had begun, the shift supervisor attempts to drop all control rods back into the reactor realizing the power was rising beyond its limits. In four and a half seconds, the power level inside the reactor rises 120 times the reactor's capacity.
- The first explosion broke the pressure tubes, releasing steam which blew the containment lid off the reactor.

April 26, 1:24am

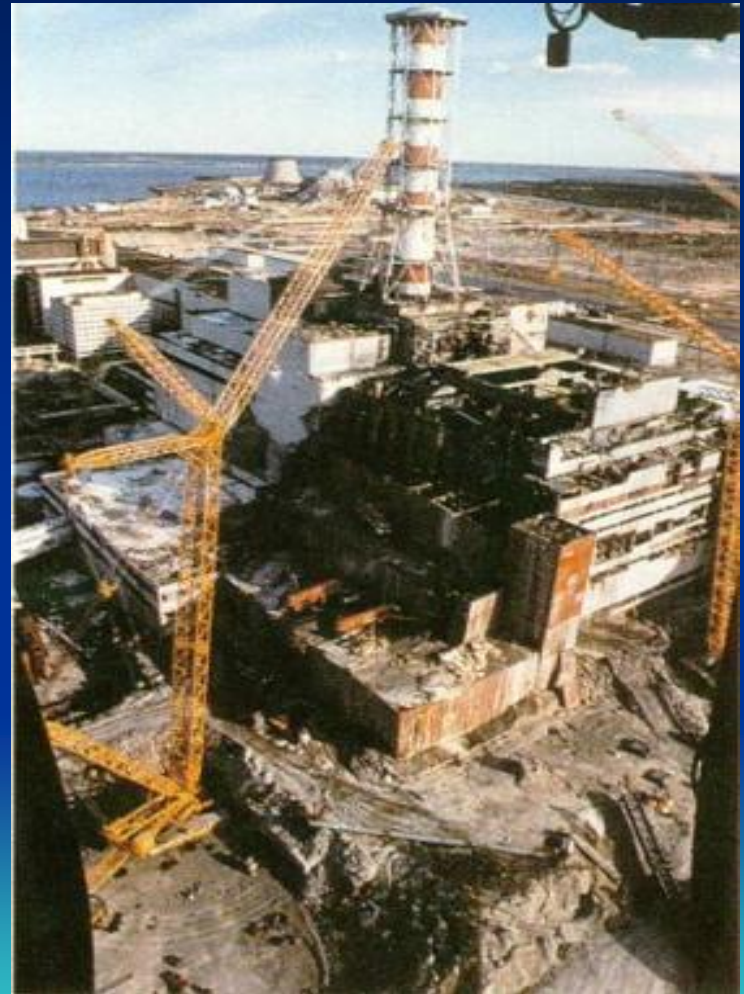


The second explosion was the reactor fuel and graphite inside the core exploding, sending chunks of graphite and other radioactive elements flying. It destroyed the building, and caused more than 30 roof fires.

What did it look like?

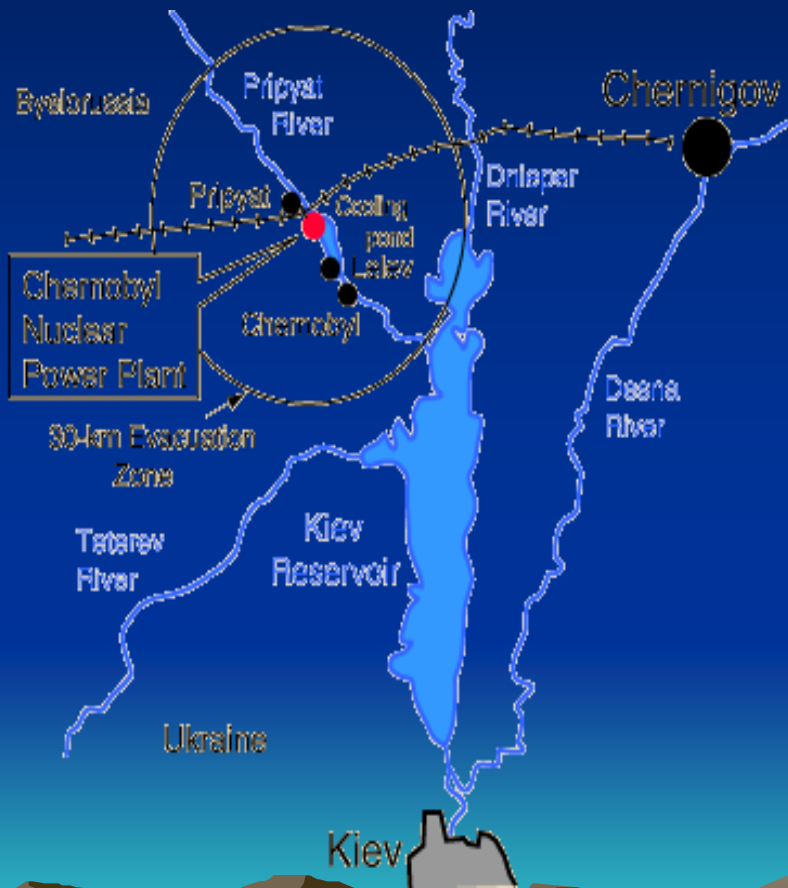


Before



After

How did the country react?



- The morning after the explosion, there was no hint of a disaster.
- After **36 hours** of being exposed to radiation, people were told to pack their clothing and evacuate their homes.
- There was a 30 kilometer or 18 mile evacuation.

What was the effect on other countries?



- Nearly nine tons of radioactive material - 90 times as much as the Hiroshima bomb - were hurled into the sky.
- Winds over the following days, mostly blowing north and west, carried fallout into Belarus, as well as Russia, Poland & other countries around the world.

What about the environment?



- At the nuclear power station itself, several attempts were made to clear away and contain chunks of graphite and other radioactive solids.
- They sent in volunteers.
- The volunteers were only allowed to be in the power station for 90 seconds or less.
- The radiation levels were 15,000 times greater than a normal person's exposure in a year.

What about the environment?




- Any movable objects near the plant were buried; cars, trucks, and even topsoil.
- Some 60,000 buildings had to be washed with special chemicals, and even some roofs had to be replaced.
- A special solution was sprayed throughout the danger zone on streets and walkways to prevent radioactive dust from blowing and further contaminating the area.
- Nearby trees that had absorbed the radiation were all cut down and buried in concrete pits.

Is it still working?

- Chernobyl continued to produce electricity for another 14 years, until international pressure forced its closure in 2000.
- An official exclusion zone around the plant remains in place, extending for 30 kilometers (18 miles). It is one of the most radioactive spots on Earth.



- In the first months after the accident, 28 emergency workers died from acute radiation syndrome
 - Doctors have noticed an increase in cases of cancer who lived nearby
 - Many animals died or suffered thyroid damage
 - Fish in nearby rivers were unsafe to eat for many years
 - Millions of acres of farmland have been poisoned
 - Causes food shortages; hurts economy
- 



Chernobyl remains abandoned to this day



<http://www.bing.com/videos/watch/video/chernobyl-remembered/6q2975k?cpkey=0d438f49-f206-4c76-9e70-75e1e4c66419%7c%7c%7c%7c>

- Interested in learning more about this horrible event?
- <http://www.pixelpress.org/chernobyl/index.html>



Credits

- Nuclear Disaster, Chernobyl, Ukraine. Retrieved from www.slideshare.net. Nov. 5, 2011.
- <http://www.history.com/audio/chernobyl-nuclear-disaster>
- <http://www.bing.com/videos/watch/video/chernobyl-remembered/6q2975k?cpkey=0d438f49-f206-4c76-9e70-75e1e4c66419%7c%7c%7c%7c>
- *Meltdown at Chernobyl*. Prod. WPA Film Library . WPA Film Library , 1991. *Discovery Education*. Web. 5 November 2011. <<http://www.discoveryeducation.com/>>.
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