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HST495

Chernobyl

The Chernobyl accident was an absolute catastrophe by any measure. It is one of the only two level 7 nuclear events classified by the International Nuclear Event Scale in history – the other was Fukushima. Much of the Soviet Union and Europe was subjected to radiation in the air, and over 200 people suffered from acute radiation sickness. Over 500000 workers were needed to decontaminate the surrounding area at a cost of almost 20 billion rubles. The incident was shocking enough to motivate safety upgrades to all similar reactors, and prompted the world to look closely into the safety of nuclear reactors. The event may have contributed to a negative stigma towards nuclear energy, which is slightly unfair as the incident was caused by a combination of failed failsafes and mismanagement; the incident occurred during a systems test wherein certain safety systems were disabled, checklists were not followed, and with hardware that was proven to be unsafe. I believe the incident was due to human error, as the safety systems and checklists would have likely prevented this type of incident had they been used properly. However, further technological advancements have made human error less likely to cause an accident of this magnitude, which is a great sign of improvement.

There were many things wrong with the Chernobyl reactor. The incident that happened may not have been caused by some of them, but something was likely to go wrong with the reactor sooner or later. There was an issue with water in fuel assemblies that could cause massive overheating issues that was brought to the Soviets’ attention, but was suppressed in the interest of cost savings and overconfidence. The reactor was put online before it was fully ready, and multiple emergency systems had not been fully tested. Finally, certain incidents were kept secret to preserve the image of the USSR, which robbed certain professionals of potential knowledge to help mitigate disaster. These were all problems even before the train wreck that was April 26, 1986.

Tests had been run before on Chernobyl, and it had failed them two years running. With a track record like that, one would expect the utmost care would be put into the preparation and planning of the ’86 test. Unfortunately, that was not the case. The test was scheduled on a day when the reactor’s fuel was particularly radioactive, increasing danger. It was very complicated, and coordination was not fully planned. Many people in charge were not aware of the several ways things could go awry. One of the worst parts was that, at the last minute, the whole test got postponed, and the less experienced evening crew was put in charge of the test. They messed up in the very first steps of the test, and, instead of aborting the test, disabled safety systems and attempted to continue, inadvertently triggering other problems in the reactor and eventually causing the steam explosions and large plumes of fallout.

There’s no question that Chernobyl was a disaster waiting to happen. Unfortunately, despite that, I believe the workers were the ones to cause the accident; so many portions of the test were performed incorrectly, were poorly planned, or were otherwise lost in communication that even if the water feedback loop issue hadn’t existed, things would have still probably gone wrong in some fashion. The entire chain of communication was a disaster and was bound to cause some sort of catastrophe. While more modern safety systems are better suited to handle mismanagement and are designed to fail-safe, I still think that the fault lies mostly with the chain of command that so incredibly poorly handled a critical safety test.