U.s. nuclear plants located in earthquake active zones

Engineering

American Nuclear Plants and the Risk Associated with locating them in Hazard Zones The purpose of this essay is to argue some of the risks associated with locating a nuclear power plant in active earthquake zones. The format that this paper will utilize is to first identify how the damage to the Sendai reactor came about as a result of the earthquake and tsunami, then argue that the same can happen here in the U. S. After this point some possible alternatives will be proposed. Without question the 2011 Tohoku earthquake and resulting tsunami that struck Japan had devastating consequences in terms of loss of life, destruction of personal property, crippling of infrastructure as well as long term consequences for the environment. However, it could be argued that one of the most severe consequences of this natural disaster is the damage to the Fukushima I Nuclear Power Plant in Sendai. One of the most interesting points to consider about this nuclear power plant is that it was built to withstand a 9. 0 Magnitude or greater earthquake or a tsunami, yet it was never intended to withstand the effects of both. Moreover it is the cast that there were a number of extra safeguards in place to protect the plant in the event of a natural disaster. The cooling system utilized by the reactor was self powered by the reactor itself (Effectively being able to cool itself indefinitely). However, once the earthquake struck, the power generated by the plant was effectively shut down. The first line of backup defense was for the reactor to be cooled by electricity from the grid; however this was also knocked out of commission. The final line of defense was for independent diesel generators to power the cooling system, which survived the earthquake yet were permanently disabled by the tsunami. The important fact to consider is that

even a plant that was designed to withstand such a disaster, which had numerous safeguards in place, was and is still vulnerable to catastrophic disasters the result of which is serious, long-term consequences for the people and the environment around Sendai. From a geological perspective one can postulate that it is not only likely that a major earthquake (Or other natural disaster) will strike the United States but it is a near mathematical certainty. As such, if we know that there can be such great consequences for a nuclear power plant from a natural disaster, and we know that these disasters will strike it is logical that we should take whatever steps to prevent a catastrophe from happening. There are basically three options available which are to either permanently decommission the nuclear power plants in United States “ Danger Zones”, relocate these nuclear power plants to less dangerous locations, or find some sort new protective method that ensures that there would be no sort of ecological damage if a nuclear power plant were to be destroyed. It is ultimately my belief that these power plants should be moved to more appropriate locations throughout the United States where the risk of natural disaster is minimized. Even though it is the case that this may carry with it significant costs this may represent only a small cost when faced with a total ecological disaster as an alternative.