

GEOLOGICAL ISSUES IN SITING U.S. NUCLEAR FACILITIES

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Over the last 40 years, much effort in the United States has been devoted to siting, or attempting to site, facilities related to the civilian use of nuclear power and its byproducts. The facilities include more than 100 nuclear power plants, several low-level-waste disposal facilities, and one high-level-waste repository. Geological investigations have been extensive, and the general scientific data base has been greatly expanded as a result of these efforts. Geological issues often have played a critical, or apparently critical, role in siting and operating decisions. These issues include, among others, seismic hazard in regions of both high and low seismicity, volcanism, and ground water flow. A frequently cited concern has been the uncertainty associated with a specific scientific conclusion or statement. The acceptable level of uncertainty often is determined by an unspecified mix of social and policy factors, as well as by purely scientific considerations. We will discuss several examples of geological issues at nuclear facilities, emphasizing the scientific controversies, the efforts made to resolve these controversies, and any generally applicable lessons learned.