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A Geographer's Response to the 1982 Nuclear Waste Policy Act

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The Nuclear Waste Policy Act

Public Law 97-425, The Nuclear Waste Policy Act, was passed by Congress on January 7, 1983. The purpose of the Act is "to provide for the development of repositories for the disposal of high-level radioactive waste and spent nuclear fuel, to establish a program of research, development, and demonstration regarding the disposal of high-level radioactive waste and spent nuclear fuel, and for other purposes" (1). (The "other purposes" I will return to later.) The need for high-level nuclear waste disposal is not questioned, rather the lack of knowledge of the "safest" geologic media for such disposal is at issue.

The Act is specific in its guidelines for siting which ". . . shall take into consideration the proximity to sites where high-level radioactive waste and spent nuclear fuel is generated or temporarily stored. . . ." The Act also goes on to ". . . require the Secretary to consider. . . the advantages of regional distribution in the siting of repositories," and a later portion states, "Such guidelines shall require the Secretary to consider the various geologic media in which sites for repositories may be located and, to the extent practicable, to recommend sites in different geologic media" (1).

The Department of Energy (DOE), does not know, in fact no one knows, the "safest" long term storage media for high-level nuclear waste. This should come as no great surprise. The Act requires a rather extensive program of research, development, and demonstration — a legislative admission of the lack of a scientifically defensible "safe" solution to this problem. One should question the propriety of allowing site characterization to proceed prior to some indication that a particular geologic media is "best" suited to the long term (10,000 years) storage of high-level radioactive waste.

A more important issue in the "safest" geologic media problem rests with the manner in which these questions, difficult though they may be, are addressed in the public spotlight with various regions, or states, or counties within states, all maneuvering with one another to be eliminated as a poetentially certifiable site. That has a nice ring to it, doesn't it? "Potentially certifiable site." In fact, there are far more questions than answers, so the Act does not mention a "safest" site, merely one which can be certified under the General Guidelines which were promulgated by DOE (2).

However, one must go beyond the citation of applicable laws, rules and regulations. The comments that follow represent the impressions of a geographer who has worked half his career as a planning professional, and half as an academician.

Analysis of Geologic Sites

Figure 1 indicates the first-round sites chosen in the western and southern regions of the United States. Geologically, these are basalt, tuff, and salt sites. Figure 2 shows those crystalline sites that survived a national search. These second-round sites match, in a general way, the distribution of nuclear power plants shown in Figure 3. By itself, this juxtaposition is seemingly in keeping with the Act; everything to this point is straightforward and should pose few questions to a reasonable person.

I am, however, a geographer, and I guess, not reasonable. We geographers are burdened with lots of maps in our heads. We tend to look at other people's maps to discern patterns. We ask these images to inform and educate, to allow us to analyse and interpret patterns and to allow a search for linkages and interactions. Certainly if a picture is worth a thousand words, a map must be worth at least a few hundred.

Take Figure 1, for example, which shows a definite clustering of sites to the west and south. Likewise Figure 2, shows clustering, this time to the southeast, northeast and north central, three distinct subregions. Figure 2 does reflect the concentration of nuclear plants as presented in Figure 3. No problem, right? Wrong. A perusal of crystalline sites compiled during the early phase of the national search found comparable sites in the following states, none of which are included in the current second-round repository list: Washington, Oregon, Idaho, Montana, Wyoming, South Dakota, Arizona, Texas, and Oklahoma. For various reasons these western sites were excluded from the published final list, the national survey was never released to the public, and the public was therefore led to believe the only suitable granite was to be found at the second-round repository sites seen in Figure 2 (3).

The disposal of radioactive waste is a contentious, but necessary, national undesirable land use issue. The United States has an electorate which does not care to be in proximity to radioactive waste. The "not in my backyard" syndrome is prevalent. With this in mind, the Act, I believe, was designed to politicize this issue so a legislative decision would be forced. Decision making is enhanced by public outcry generated at the various widely dispersed sites; the maximum number of Congressmen will have districts or states involved in the program; and, when a site is finally recommended, the balance of Congress will vote for the repository site and thank goodness it is not in their state or district. An unfortunate side

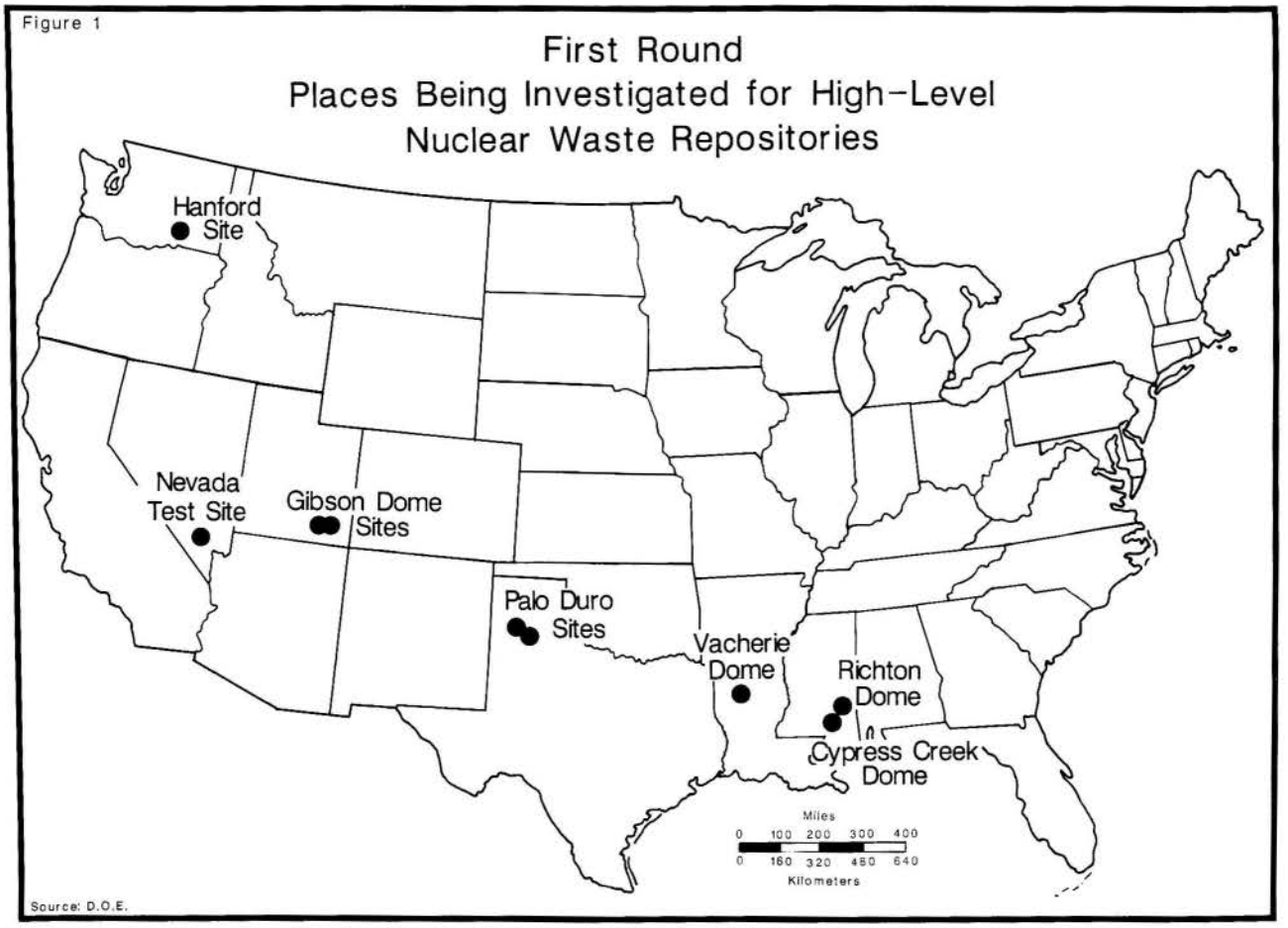

Figure 1. First-round sites under investigation for high-level nuclear waste repositories.

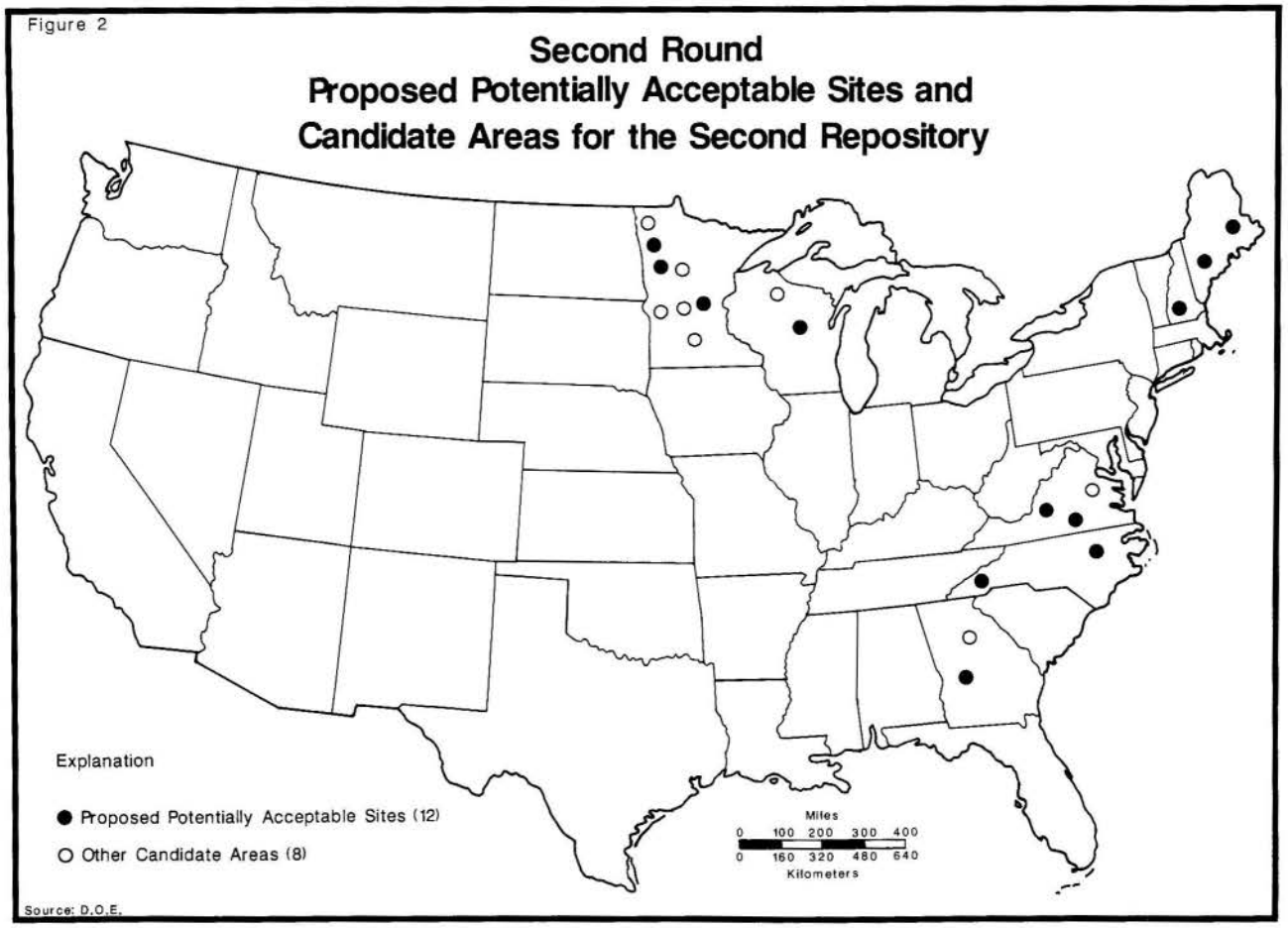

Figure 2. Proposed sites and candidate areas for the second repository.

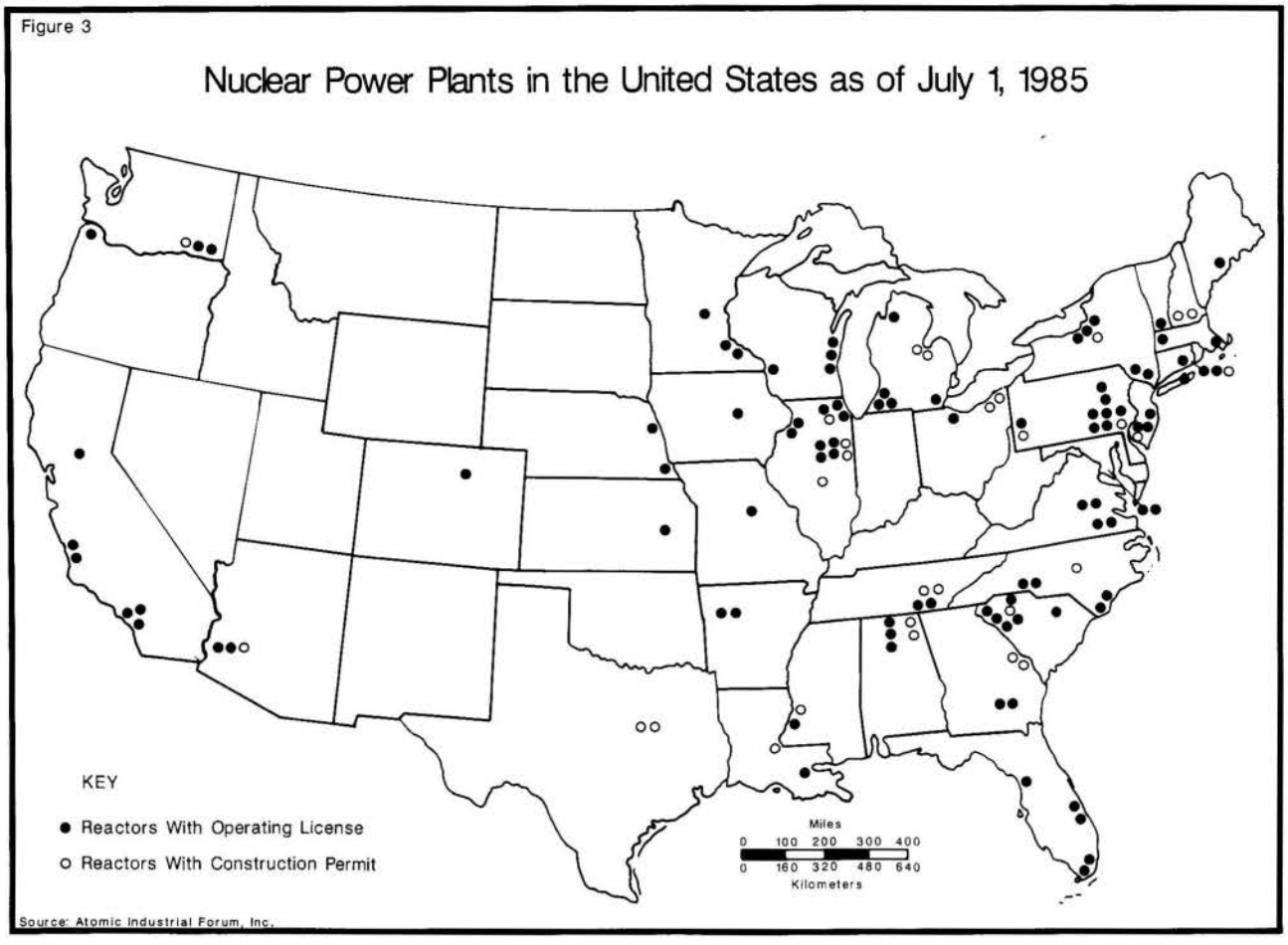

Figure 3. Nuclear power plants in the United States as of July 1, 1985.

effect of this process is to unintentionally antagonize great numbers of the nation's citizenry.

Several additional comments are now appropriate. The Act, in its implementation and public hearing process, does not allow the type of questioning which is necessary to reveal the full impact of the national program. Is this intentional or a defect in the Act? Are the public in each of the four geologic media areas to be kept in the dark about the others? Are these some of the "other purposes" of the Act?

Finally, and this is my last point, it seems to be that when a final resting place for material that will be hazardous to human health for at least 10,000 years is being sought, that search should be commensurate with the time frame of the hazard, not a rushed process, which appears to be the case with the present Act. To justify the current process, a new rigorous national search must be undertaken and then only *after* a "safe" geologic media is identified. The present shotgun approach has far too many deficiencies to be continued.

References

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3. Minnesota Governor's Nuclear Waste Council. 1986. *Review of the U.S. Department of Energy's National Survey of Cystalline Rocks.*