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Utilities: De Facto Repositories for High-Level Radioactive Waste

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Utilities: De Facto Repositories for High-Level Radioactive Waste?

I. Introduction

Utilities operating nuclear reactors were unconcerned with the storage of spent nuclear fuel until the late 1970s.[1] The utilities believed that the spent nuclear fuel would be reprocessed, and, thus, there would be no long-term problem.[2] However, the private reprocessing industry collapsed in the mid-1970s for both economic and regulatory reasons.[3] As a consequence of the collapse of the private reprocessing industry and the failure of the federal government to develop an adequate nuclear waste management program, thousands of tons of spent nuclear fuel have accumulated and remain in temporary storage on utility property.[4] Several of the nation's 110 operating nuclear power plants are reaching their on-site storage capacity,[5] and it is predicted that by 1998 twenty-six will have exhausted their storage capacity.[6] Although nuclear power constitutes approximately twenty percent of our nation's power supply, it will not remain a viable energy option unless the waste issue is resolved.[7]

In an attempt to address the dangers of this unanticipated nuclear waste accumulation, Congress in 1982 enacted the Nuclear Waste Policy

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[1] Idaho v. U.S. Dept. of Energy, 945 F.2d 295, 298 (9th Cir. 1991), *cert. denied*, 504 U.S. 956 (1992).

[2] *Id.* Spent nuclear fuel is the intensely radioactive material withdrawn from the core of a nuclear reactor following irradiation but before constituent elements are separated by reprocessing. 42 U.S.C. § 10101(23) (1994). High-level radioactive waste is the intensely radioactive fission products that comprises the major heat source in spent nuclear fuel. 42 U.S.C. § 10101 (12).

[3] *Idaho* at 298 (*citing* H.R. REP. NO. 491, 97th Cong., 2d Sess., pt.1, at 27 (1982), *reprinted in* 1982 U.S.C.C.A.N. 3792-93).

[4] An Environmental Protection Agency study estimated that in 1981, 71 billion gallons of liquid hazardous waste was being produced annually in this country. Alvin, Alm, *Siting of Hazardous Waste Facilities & Transport of Hazardous Substances*, 15 ENVTL. L. REP. 10233 (1985), available in Westlaw, Database ELR. According to the Department of Energy, "[t]oday's 30,000 metric tons of spent fuel from civilian nuclear plants will grow to 85,000 metric tons by 2033." W. Lynn Garner, *Nuclear Waste: How The Issue Falls Out*, PUB. UTIL. FORT., Apr, 15, 1995, at 37.

[5] Richard H. Rosenzweig, *The Energy Bill*, PUB. UTIL. FORT., Jan. 1, 1993, at 16.

[6] Garner, *supra* note 4. The Nuclear Regulatory Commission estimates that only about a dozen of today's more than 100 operating reactors will have adequate spent fuel storage capacity after the turn of the century. MARK HOLT & JAMES E. MIELKE, CONGRESSIONAL RESEARCH SERVICE, CRS REPORT FOR CONGRESS, CIVILIAN RADIOACTIVE WASTE MANAGEMENT: TECHNICAL AND POLICY ISSUES 7 (1991).

[7] Garner, *supra* note 4.

Act.[8] The NWPA was directed toward both the immediate and long-term problems associated with storage of nuclear waste.[9]

This Comment will examine the federal Nuclear Waste Policy Act program implemented to eliminate the hazards posed by the accumulation of high-level radioactive waste[10] on utility premises. Part II will discuss long-term, high-level nuclear waste storage and the Nuclear Waste Policy Act. Part III will evaluate the Department of Energy's refusal to accept high-level radioactive waste for disposal by January 31, 1998. Finally, Part IV will address the ramifications of the Department of Energy's refusal to accept high-level radioactive waste for disposal by January 31, 1998.

II. Long-Term Storage of High-Level Nuclear Waste and the Nuclear Waste Policy Act

Nuclear power plants and nuclear technology have been used in the United States for over thirty years. Until the late 1970s, the standard procedure for handling waste was to use a system of on-site storage subject to government regulation.[11] By 1980, however, it had become apparent that although such an approach was adequate as a short-term solution, a permanent method of disposal was needed.[12]

A. The Nuclear Waste Policy Act

Congress enacted the Nuclear Waste Policy Act (NWPA) in 1982 to establish a national program for disposal of high-level nuclear waste, including provisions for siting, constructing, and operating two repositories for permanent storage of such waste.[13] A fundamental principle of the

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[8] Garner, *supra* note 4.

[9] *See generally* 42 U.S.C. §§ 10101-270 (1994).

[10] For the purposes of this Comment, the terms "high-level radioactive waste," "nuclear waste," and "spent nuclear fuel" are used interchangeably.

[11] *See* S. REP. NO. 282, 97th Cong., 1st Sess. 3-7 (1981). Although this is still the procedure today, the goal of the NWPA is for this waste to eventually be placed in a permanent repository.

[12] Jay E. Silberg, *Storage and Disposal of Radioactive Wastes*, 13 TULSA L.J. 788, 792-94 nn. 7-11 and accompanying text (1978).

[13] Pub. L. No. 97-425, 96 Stat. 2201 (1983) (codified as amended at 42 U.S.C. §§ 10101-270 (1994)). For the last twenty years, scientific consensus has advocated the construction of a permanent underground nuclear repository as the most effective means to deal with the problem of nuclear waste storage. Silberg, *supra* note 12, at 788. "[t]here is a general consensus in the scientific community, backed up by numerous studies, that disposal in geologic media is the safest and most fully explored way of permanently disposing of high-level radioactive wastes." *Id.* This is especially true because "spent nuclear fuel must be isolated from the biosphere for up to 250,000 years." Eric Charles Woychik, *California's Nuclear Disposal Law Confronts the Nuclear*

NWPA is that those receiving the benefit from the production of nuclear waste, in other words, the utilities which generate the waste, will bear all costs of waste disposal. Since the enactment of the NWPA, utilities that will use the disposal facilities have been making payments into this fund at a rate of one mill per kilowatt-hour produced with nuclear fuel.[14] These payments have gone into a Nuclear Waste Fund established in the Treasury Department.[15] The government will recover all costs incurred in the disposal program from this Nuclear Waste Fund.[16]

Although the concept of a permanent repository for nuclear waste has been widely accepted, much controversy has resulted regarding the decision about where to locate the repository. The NWPA called for the Department of Energy (DOE) to investigate a large number of potential sites and then to narrow the list to the three most scientifically viable locations.[17]

The NWPA was amended in 1987. The 1987 NWPA amendments authorize the Secretary of the DOE to enter into contracts with the owners and generators of spent nuclear fuel of domestic origin (a category which includes utilities) for the acceptance and disposal of spent nuclear fuel.[18] The 1987 amendments also provide that the contracts require the Secretary of the DOE to take title to the spent nuclear fuel as expeditiously as practicable after a repository commences operation.[19] In return for the payment of fees that go into the Nuclear Waste Fund, the 1987 NWPA amendments also stipulate that the Secretary, beginning no later than January 31, 1998, will dispose of such spent nuclear fuel.[20] In addition, the 1987 NWPA amendments direct the DOE to investigate only Yucca Mountain,[21] Nevada as a potential site for a permanent repository.[22]

Waste Management Dilemma: State Power to Regulate Reactors, 14 ENVTL. L. 359, 405 (1984).

[14] *See* §10222(3). This unit was chosen as a measure of the benefit derived from the fuel.

[15] *See* § 10222(c).

[16] ROBERT E. BERLIN & CATHERINE C. STANTON, RADIOACTIVE WASTE MANAGEMENT 87 (1989); Carl R. Hoskins & James E. Russell, *Geologic and Engineering Dimensions of Nuclear Waste's Forage, in* NUCLEAR WASTE: SOCIOECONOMIC DIMENSIONS OF LONG-TERM STORAGE (Steve H. Murdock et al. eds., 1983).

[17] § 10132.

[18] *See* § 10222(a).

[19] 60 Fed. Reg. 21793, sec. I (1995).

[20] *Id.* at 21795. The DOE implemented the provisions of section 302(a) by promulgating the Standard Contract for Disposal of Spent Nuclear Fuel and/or High Level Nuclear Waste (Standard Contract), which set forth the contractual terms under which the Department would make its disposal services available. *Id.* at 21794 (*citing* C.F.R. § 961 (1995)). Under the terms of the final rule promulgating the Standard Contract, all civilian nuclear utilities desiring to dispose of spent nuclear fuel signed individual versions of the Standard Contract. *Id.*

[21] Yucca Mountain is located in southern Nevada approximately one hundred miles northwest of Las Vegas. It is an arid region with mountains and valleys. This region also does not have surface drainage outside of the Great Basin within which it is located. HOLT &

Congress decided to abandon the process of careful scientific investigation of a few sites as originally required by the NWPA when it was enacted because pressure to deal with the issue of nuclear waste was growing. Under the 1987 amendments, if the DOE determines that the Yucca Mountain site should not be recommended after the site characterization[23] is completed, the Yucca Mountain site will not be selected as the site of the nuclear repository.[24] Congress would then have to amend the NWPA again to allow for another site to be selected to host the repository.

B. Nevada's Concern

Nevada is concerned, however, that the same political pressures that led to the 1987 NWPA amendments will lead to the acceptance of Yucca Mountain as the repository site, regardless of the results of the site characterization process.[25] A poll taken in Nevada when the 1987 NWPA amendments were being debated revealed that seventy-five percent of the people in Nevada opposed the creation of a high-level repository in the state.[26] In fact, all of Nevada's representatives and senators also vehemently opposed the selection of Yucca Mountain.[27] Nevada, unfortunately, had less political clout than did Texas and Washington, the other states then being considered to host the repository under the 1982 NWPA site selection scheme.[28]

MIELKE, *supra* note 6, at 32.

[22] *See* 42 U.S.C. §§ 10133-34. Theoretically, the 1987 NWPA Amendments did not actually select Yucca Mountain as the site; they only selected it as the sole site for site characterization.

[23] Site characterization means testing to determine whether the site meets the myriad of requirements set forth in the regulations for the long-term disposal of spent fuel and high-level waste. NUCLEAR WASTE TECHNICAL REVIEW BOARD, FIFTH REPORT TO THE U.S. CONGRESS AND THE U.S. SECRETARY OF ENERGY Glos-2 (1992), as further explicated, *Id.* at App. F-3, F-4 (testimony of Dr. Don U. Deere). The characterization process will cost an estimated $2 billion. Jenifer Warren, *Monument to Nuclear Age: Dump for Nuclear Waste*, LOS ANGELES TIMES, Mar. 19, 1989, at 1, 3.

[24] *See* § 10134(a)(1).

[25] *See* 136 CONG. REC. S13,465 (daily ed. Sept. 20, 1990) (statement of Sen. Reid) ("Under today's ground rules, the Federal Government has little alternative but to attempt to justify the viability of the Yucca Mountain site as the Nation's nuclear garbage pile.").

[26] David H. Topol, Note, *Rethinking Who is Left Holding the Nation's Nuclear Garbage Bag: The Legal and Policy Implications of* Nevada v. Watkins, 1991 UTAH L. REV. 791, 800 (1991) (*citing* UPI, BC CYCLE, Dec. 8, 1988 (LEXIS, Nexis library, upstat file)).

[27] *Id.* (*citing Nevada Loses Congressional Power Struggle*, UPI, BC CYCLE, Dec. 30, 1987 (LEXIS, Nexis library, upstat file)).

[28] *Id. See also*, Mark E. Rosen, Nevada v. Watkins: *Who Gets the Shaft?*, 10 VA. ENVTL. L.J. 239, 250 (1991) (calling the maneuver "undemocratic").

The state of Nevada claims that the decision to place the nuclear repository at Yucca Mountain is scientifically unsound and politically suspect.[29] The DOE argues, to the contrary, that the Yucca Mountain site is a well-chosen location for the repository.[30] At the very least, the DOE believes the government should be permitted to conduct extensive investigation of Yucca Mountain to make further scientific assessments.[31] The DOE contends that the only basis for Nevada's complaints is that the state does not want the repository in its "back yard."[32]

The 1987 NWPA amendments attempt to pacify Nevada by providing for financial payments. The Secretary of the DOE was directed to enter into an agreement to pay Nevada and affected local communities up to $20 million a year.[33] In order to receive this money, though, Nevada would have to agree to "waive its rights . . . to disapprove the recommendation of a site for a repository . . . ."[34] A second provision provides for the payment of Nevada's cost of participating in the site characterization process.[35]

Thus, the NWPA and the 1987 NWPA amendments are an attempt to eliminate the problem of on-site accumulation of high-level radioactive waste by providing for the creation of a permanent repository.

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[29] *Id.*

[30] *Id.*

[31] *Id.*

[32] *Id.*

[33] § 10173a(a)(1).

[34] § 10173a(b)(2).

[35] § 10136(c). Of course, this does not pay for the externalities that will be imposed on Nevada citizens from the construction and operation of the repository. The nuclear repository proposed for Nevada is expected to hold 70,000 tons of highly radioactive nuclear waste. Nevada residents bear the risk of an accident occuring on the site. In addition, Nevada residents will be put at risk by the numerous trucks which will transport the waste over Nevada's highways. *See* Cass Peterson, *The Ten Thousand-Year Decision; Nevada Mountain is Ground Zero For Nuclear Dump Controversy*, WASHINGTON POST, Feb. 17, 1988, at A1 [herinafter "*Ten Thousand-Year Decision*"]. Apart from the risk of accident, Nevada citizens will also "bear the psychic and economic costs" of having nuclear waste stored in their state. *See* Laurence H. Tribe, *California Declines the Nuclear Gamble: Is Such a State Choice Preempted?*, 7 ECOLOGY L.Q. 679 (1979). People do not have a strong desire to live in or visit areas located near a nuclear repository regardless of whether the government declares that the repository is perfectly safe. A study by the Nevada Nuclear Waste Project Office found that this negative view of nuclear waste is likely to be compounded by the media. Topol, *supra* note 26. As a result, the repository could have a significant harmful effect on Nevada's tourism industry and immigration for business and retirement. *Id.*

III. DOE's Refusal to Begin Disposal of High Level Nuclear Waste by January 31, 1998

The language in section 302(a)(5)(B) of the 1987 NWPA amendments provides that "in return for the payment of fees established by this section, the Secretary, beginning not later than January 31, 1998, will dispose of the high-level radioactive waste or spent nuclear fuel involved as provided in this subchapter."[36] Although the 1987 NWPA amendments originally envisioned that a geologic repository would be in operation and that DOE would be prepared to begin accepting spent nuclear fuel by January 31, 1998, a repository constructed under the NWPA will not be available by 1998.[37] The DOE currently projects the year 2010 as the earliest date that waste possibly might be accepted for disposal at a repository.[38]

Despite the language in section 302 (a)(5)(B), the DOE has concluded that without a repository or interim storage facility constructed under the NWPA it has no legal obligation, under either the 1987 NWPA amendments or the Standard Contract,[39] to begin disposal of spent nuclear fuel by January 31, 1998.[40] The DOE reasons that although section 302(a)(5)-(A), the so-called "take title" provision of the 1987 NWPA amendments, requires that each contract executed by the DOE under the 1987 NWPA amendments provide that "the Secretary shall take title to the high-level radioactive waste or spent nuclear fuel involved as expeditiously as practicable upon request of the generator or owner of such waste or spent fuel,"[41] the obligation to take title applies only "following commencement

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[36] § 10222(a)(5)(B).

[37] 60 Fed. Reg. 21793, 21794 (1995).

[38] *Id.*

[39] The Standard Contract, 10 C.F.R. § 961.11, Art. II (1995) [hereinafter "Standard Contract"], is included in the regulations that implement the provisions of section 302 (a)(5) of the 1987 NWPA amendments. § 10222(a).

[40] 60 Fed. Reg. 21793, 21794 (1995). The Department's preliminary view on this issue varied slightly from its final declaration. The Department's preliminary view was that it has no statutory obligation to accept spent nuclear fuel beginning in 1998 in the absence of an operational repository or other facility constructed under the NWPA, although the Department in implementing the Standard Contract may have created an expectation that it would begin accepting such spent nuclear fuel in 1998. *Id.* Accordingly, the Secretary has indicated her intent to explore various options with affected parties and methods for sharing the costs related to the financial burden associated with continued on-site storage. *Id.* Any form of cost sharing offered through the Nuclear Waste Fund is not intended to fulfill the Department's ultimate obligation under the Standard Contract to take title to and physical possession of spent nuclear fuel once a facility constructed under the NWPA is operational. *Id.*

[41] § 10222(a)(5)(A).

of operation of a repository."[42] The DOE concedes that the 1987 NWPA amendments require the DOE to take title "expeditiously"; yet the DOE maintains that the obligation applies only upon "commencement of operation of a repository."[43]

The second reason articulated by the DOE for concluding that it has no obligation to accept the waste by 1998 is that the mandate to dispose of spent nuclear fuel beginning on January 31, 1998, like the duty to take title to spent nuclear fuel, is contingent upon the existence of an operating repository.[44] Section 302(a)(5)(B), the "dispose" provision of the NWPA, requires that each contract executed by the DOE shall also provide that, "in return for payment of fees established by this section, the Secretary, beginning not later than January 31, 1998, will dispose of the high-level radioactive waste or spent fuel involved as provided in this subtitle."[45] The NWPA does not define the word "dispose," but does define "disposal."[46] The DOE believes that the words "dispose" and "disposal" are merely different grammatical forms of the same word, and that the NWPA's definition of "disposal" also defines the DOE's obligation to "dispose" under section 302 (a)(5)(B) of the NWPA.[47] The DOE contends that it cannot "dispose" of the spent nuclear fuel without an operating repository[48] because the NWPA defines "disposal" as "emplacement in a repository . . . with no foreseeable intent of recovery."[49]

According to the DOE, the logic, language, and structure of section 302(a) require that the duties to take title and dispose of high-level radioactive waste must be evaluated in the context of the entire NWPA.[50] The DOE maintains that sections 302 (a)(5)(A) and 302 (a)(5)(B), when read in conjunction with the other NWPA provisions, clearly do not

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[42] *Id.*

[43] 60 Fed. Reg. 21793, 21795 (1995).

[44] The DOE notes that the statutory language in the "dispose" provision quoted above uses "will" rather than "shall" in setting forth the Secretary's duty to dispose of nuclear waste. 60 Fed. Reg. 21793, 21795 (1995). The DOE believes the use of the predictive term "will" in the disposal provision of the NWPA, rather than the mandatory term "shall" which is used in the take-title provision, indicates that the January 31, 1998, date expresses the sense of Congress as to when the Department should strive to have a repository in operation, rather than an unconditional legal obligation to initiate acceptance of spent nuclear fuel by a certain date. *Id.*

[45] § 10222(a)(5)(B).

[46] §10101(9). "The term 'disposal' means the emplacement in a repository of high-level radioactive waste, spent nuclear fuel, or other highly radioactive material with no foreseeable intent of recovery, whether or not such emplacement permits the recovery of such waste."

[47] 60 Fed. Reg. 21703, 21795 (1995).

[48] 60 Fed. Reg. 21793, 21795 (1995).

[49] § 10101(9).

[50] 60 Fed. Reg. 21793, 21795 (1995).

contemplate nuclear waste disposal by the DOE beginning January 31, 1998 without an operational repository.[51] The DOE cites the "Findings and Purposes" section of the NWPA to support its interpretation. The "Findings and Purposes" section states that "the Federal Government has the responsibility to provide for the permanent disposal of nuclear waste,"[52] and that the purpose of the NWPA is "to establish a schedule for the siting, construction, and operation of repositories that will provide a reasonable assurance that the public . . . will be adequately protected from the hazards posed by high-level . . . waste and such spent nuclear fuel as may be disposed of in a repository . . . ."[53]

The DOE also points to numerous prerequisites on its ability to develop a repository and dispose of spent nuclear fuel that, according to the DOE, demonstrate that the NWPA did not contemplate that the DOE would have an unconditional duty to begin disposing of spent nuclear fuel in 1998. For instance, the NWPA specifically recognizes that the Yucca Mountain site may be found unsuitable for development of a repository, and provides that "[i]f the Secretary at any time determines the Yucca Mountain site to be unsuitable for development as a repository, the Secretary shall terminate . . . all site characterization activities at such site . . . ."[54] In such an instance, no repository would exist in which the DOE could dispose of the waste.

The DOE's other putative conditions precedent to its duty to begin disposing of spent nuclear fuel by January 31, 1998 involve the actual development of Yucca Mountain as a repository if it proves to be a suitable site.[55] For example, the NWPA provides that the Secretary must decide whether to recommend that the President approve the site.[56] Next, the President must determine whether he considers the site qualified.[57] Finally, if the President ultimately recommends development of the site to Congress, the host state may disapprove that recommendation for any reason at all,[58] in which case an entirely new law must be enacted by Congress to override the host state's disapproval.[59] If the site is suitable, a favorable Presidential recommendation is given, and a new law is enacted

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[51] *Id.*
[52] § 10131(a)(4).
[53] § 10131(b)(1).
[54] § 10133(c)(3).
[55] 60 Fed. Reg. 21793, 21795 (1995) (*citing* §§ 10134-5).
[56] § 10134(a)(1).
[57] § 10134(a)(2).
[58] § 10135(b).
[59] §§ 10134-35.

by Congress to override any state notice of disapproval, only then is the DOE is required to take title and dispose of spent nuclear fuel by January 31, 1998.[60]

The DOE additionally asserts that the legislative history of the 1987 NWPA Amendments supports the interpretation that commencement of operation of a repository is a condition precedent to taking title.[61] With regard to what emerged as subparagraph (A) of section 302 (a)(5), the House Committee Report stated:

> Paragraph 4(A) requires that under such contracts the Secretary will be required to take title to high level waste or spent fuel, at the request of the generator, as expeditiously as practicable following the commencement of operation of a repository.[62]

As support for its determination that it has no obligation to begin disposal of spent nuclear fuel by January 31, 1998, the DOE cites the floor statement made during the Senate's debate on the NWPA by Senator James McClure, then Chairman of the Senate Energy and Natural Resources Committee and a primary sponsor of the Act.[63] Senator McClure co-sponsored an amendment to section 302(a)(5) which brought the Senate version[64] of that provision into conformity with the House version.[65] Senator McClure described the effect of this amendment as follows:

> Mr. President, this amendment amends section 302(a)(5) of the substitute amendment to provide that the Secretary of Energy take title to high-level waste or spent fuel as expeditiously as practicable upon the request of the generators of such waste. In addition, this amendment direct s the Secretary to begin, not later than January 31, 1998, to begin to dispose of the high-level radioactive waste or spent nuclear fuel from those generating such waste. Under the substitute amendment, there was some concern that, in directing the Secretary to take title to and dispose of such wastes no later

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[60] Although the NWPA provides that the DOE must provide interim storage, the DOE states that this obligation is very limited as well. 60 Fed. Reg. 21793, 21795 (1995).

[61] *Id.* at 21796.

[62] H.R. Rep. No. 491, 97th Cong., 2d Sess., pt. 1, at 55 (1982), *reprinted in* 1982 U.S.C.C.A.N 3792.

[63] 60 Fed. Reg. 21793, 21795 (1995).

[64] S. 1662.

[65] H.R. 3800.

> than December 31, 1996, we might not be giving the Secretary enough flexibility to tailor his schedule for accepting such wastes to the availability of a repository. This amendment simply directs the Secretary to take title to such wastes as expeditiously as practicable, upon the request of the generator of those wastes, after commencement of repository operation.[66]

The last reason advanced by the DOE in support of its belief that without an operational repository it is not obligated to take title to the nuclear waste by January 31, 1998, is that the Standard Contract contains the specific condition that the services to be provided by the DOE "shall begin after commencement of facility operations."[67] The preamble to the Standard Contract provides:

> Whereas, the DOE has the responsibility, following commencement of operation of a repository, to take title to the spent fuel or high-level radioactive waste involved as expeditiously as practicable upon the request of the generator or owner of such waste or spent nuclear fuel.[68]

Thus, despite the plain language of the 1987 NWPA Amendments requiring that the DOE begin accepting high-level radioactive waste for disposal by January 31, 1998, the DOE claims that its duty to accept the waste is conditioned upon the commencement of the repository's operations.

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[66] 60 Fed. Reg. 21793, 21795 (1995) (*citing* 128 CONG. REC. S15,657 (daily ed. Dec. 20, 1982).

[67] *See* Standard Contract *supra* note 34. The Standard Contract implements the provisions of section 302(a)(5) of the NWPA. Under the Standard Contract, the term "DOE facility" is defined to mean either a disposal or interim storage facility operated by or on behalf of the DOE. 10 C.F.R. 961.11, art. I (1995).

[68] 10 C.F.R. § 961.11, pmbl. (1995), *quoted in* 60 Fed. Reg. 21793, 21796 (1995).

III. Evaluation of the DOE's Refusal to Accept the High-Level Radioactive Waste by January 31, 1998

A. Statutory Construction of the DOE's Obligation

Although the DOE will not be able to begin disposing high-level nuclear waste by January 31, 1998 without a repository to accept the waste, the DOE, nonetheless, has a statutory and contractual responsibility to do so. The NWPA requires the DOE to begin accepting high-level radioactive waste by January 31, 1998. The NWPA also conditions the continued vitality of utilities and the procedures for disposal of spent nuclear fuel and high-level radioactive waste on the formation of contracts between the utilities and the DOE.

Section 302 (a)(1) of the NWPA provides that the Secretary of the DOE is "authorized to enter into contracts with any person who generates or holds title to high-level radioactive waste, or spent nuclear fuel, of domestic origin for the acceptance of title, subsequent transportation, and disposal of such waste or spent fuel."[69] Section 302(b)(1) requires that generators or owners of spent nuclear fuel or radioactive waste contract with the DOE for disposal before the Nuclear Regulatory Commission will issue or renew an operating license,[70] and section 302(b)(2) stipulates that no waste may be disposed of by the DOE without such a contract.[71]

The DOE is correct in its assertion that sections 302 (a)(5)(A) and 302(a)(5)(B) must be read together: They are joined by the conjunction "and." When read together, however, these sections require the DOE to take title and begin disposing of high-level radioactive waste or spent

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[69] § 10222(a)(1).

[70] § 10222(b)(1)(A). Section 10222(b)(1)(A) provides:

> The Commission shall not issue or renew a license to any person to use a utilization or production facility under the authority of section 2133 or 2134 . . . unless (i) such person has entered into a contract with the Secretary under this section; or (ii) the Secretary affirms in writing that such person is actively and in good faith negotiating with the Secretary for a contract under this section.

[71] Section 302(b)(2) provides:

> [N]o spent fuel or high-level radioactive waste generated or owned by any person (other than a department of the United States. . .) may be disposed of by the Secretary in any repository . . . unless the generator or owner of such spent fuel or waste has entered into a contract with the Secretary under this section . . . .

§ 10222(b)(2).

nuclear fuel by January 31, 1998. These sections do not merely condition the obligation, as the DOE concludes.[72]

Interestingly, the DOE previously recognized this obligation, or arguably imposed this obligation upon itself, when it promulgated the regulations for the Standard Contract.[73] The language of Article II of the Standard Contract provides that "[t]he services to be provided by DOE under this contract shall begin . . . not later than January 31, 1998 . . . ."[74] In fact, the Secretary of the DOE stated in 1984, the year following the promulgation of the Standard Contract, that "it is my intention that this will create an obligation for the Department to accept spent fuel in 1998 whether or not a repository is in operation."[75]

Statements by United States senators concerning the history of the monitored retrievable storage (MRS) provision of the 1987 NWPA Amendments support the assertion that the DOE has an unconditional duty to accept spent nuclear fuel for disposal beginning in 1998. Senator Bennett Johnston stated during the floor debate on the 1987 NWPA Amendments:

> The MRS is not an alternative to at-reactor storage, and it is not a substitute for a repository. Utilities are required to take care of their own storage until 1998, but the Federal Government has a contractual commitment to take title to spent fuel beginning in 1998.[76]

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[72] *See supra* Part III.

[73] *See* 60 Fed. Reg. 21793, 21796 (1995).

[74] 10 C.F.R. § 961.11, *quoted in* 60 Fed. Reg. 21793 at 21796 (1995).

[75] 60 Fed. Reg. 21793, 21796 (1995). In a written response to a question posed in a letter from Senator Johnston, Secretary Hodel stated:

> The Department is authorized to implement the Act through contractual commitments. To this end, the Department plans to incorporate into its contracts provisions which specify the minimum amount of spent fuel and waste which the Department will be obligated to accept, not later than January 31, 1998. Since these contracts have not yet been modified, it would be premature for the Department to speculate on particulars that might ultimately be incorporated in any or all of the contracts. However, it is my intention that this commitment in the Contracts, together with the overall thrust of the Act, will create an obligation for the Department to accept spent fuel in 1998 whether or not a repository is in operation.

Id.

[76] 113 CONG. REC. S16,045 (daily ed. Nov. 10, 1987), *quoted in* 60 Fed. Reg. 21793, 21796 (1995).

The following statement made by Senator James McClure from the same debate also evidences Congress' intent that the DOE have an unconditional obligation to begin accepting waste in 1998:

> Furthermore, we have an option to proceed with the construction of a monitored retrievable storage (MRS) facility for receipt and temporary storage of fuel by 1998 and thereby meet the Government's statutory obligation to begin taking spent fuel by that date.[77]

Although Senator McClure stated in 1982 when the NWPA was passed that "[t]his amendment simply directs the Secretary to take title to such wastes as expeditiously as practicable, upon the request of the generators of the waste, after commencement of repository operation," he did not say that the specific mention of the January 31, 1998 date was merely a goal date. That the amendment he proposed changed the date is evidence of Congressional intent to set a feasible date by which the DOE must begin to fulfill its obligation.[78]

The intention of the legislature is the primary object in the construction of statutory amendments.[79] In order to determine the legislature's intent, one must examine the body of the act.[80] To interpret properly the provision requiring the DOE to begin accepting high-level radioactive waste for disposal by January 31, 1998, therefore, one must analyze the intent Congress announced in the "Findings and Purposes" section of the NWPA. The "Findings and Purposes" section of the NWPA itself records the clear intent of Congress to impose a duty upon the DOE to begin accepting high-level radioactive waste or spent nuclear fuel for disposal by January 31, 1998.[81]

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[77] 113 CONG. REC. S15,795 (daily ed. Nov. 10, 1987), *quoted in* 60 Fed. Reg. 21793, 21796 (1995).

[78] This date was believed to be a feasible deadline at the time Congress passed the 1987 NWPA amendments. The DOE believes that the 1987 statement does not supplant its analysis of what Congress intended when it enacted section 302(a)(5). 60 Fed. Reg. 21793 (1995). Because Senator McClure's statement was not contemporaneous with the passage of the 1982 Act which included the MRS provisions, the DOE claims that such post-enactment views of individual legislators are entitled to little weight in construing a statute enacted by a prior Congress. However, as discussed *supra* notes 58-59 and accompanying text, the DOE's analysis is flawed, and Senator McClure's statement evidences Congress' intent to impose an obligation on the DOE to begin accepting the waste by January 31, 1998.

[79] 82 C.J.S. *Amendatory and Amended Acts* § 384 & n.30 (1995).

[80] *Id.* at § 384 & n.40.

[81] § 10131.

Congress recognized that it was imperative to "devise a permanent solution to the problems of civilian radioactive waste disposal."[82] Consistent with this goal, Congress provided that two purposes of the NWPA are (1) "to establish a schedule for the . . . operation of repositories that will . . .[adequately protect] the public . . . from the hazards posed by high-level radioactive waste . . . ,"[83] and (2) "to establish the Federal responsibility, and a definite Federal policy, for the disposal of such waste and spent fuel."[84] Thus, because the overall purpose of the NWPA is to protect the public from the dangers posed by the massive accumulation of spent nuclear fuel at commercial nuclear facilities throughout the nation,[85] one must assume that Congress balanced all of the relevant factors in designating January 31, 1998 as the date by which the DOE is required to begin accepting high-level radioactive waste for disposal.

Both the language of the 1987 NWPA Amendments and the intent of Congress, therefore, clearly indicate that the DOE must begin accepting spent nuclear fuel by January 31, 1998. Even though the DOE cannot begin disposing of the spent nuclear fuel at the Yucca Mountain site when no repository exists, lack of an existing repository does not nullify the DOE's obligation. If no repository exists by January 31, 1998, the DOE simply will be in violation of its Congressionally-mandated duty and in breach of its contractual duty.

B. Remedying the DOE's Inability to Meet Its Obligation

As discussed above,[86] section 302(a) authorizes the Secretary of the DOE to enter into contracts with the owners and generators of spent nuclear fuel and high-level waste for the acceptance and disposal of such wastes.[87] Section 302 (a)(5) further stipulates that these contracts provide that: (1) the Secretary of the DOE shall take title to the spent nuclear fuel or high-level waste as expeditiously as practicable following commencement of operation of a repository,[88] and (2) in return for payment of a fee, the Secretary will begin disposing of these wastes by January 31, 1998.[89]

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[82] § 10131(a)(3).
[83] § 10131(b)(1).
[84] § 10131(b)(2).
[85] § 10131(a)(2).
[86] See *supra* note 36 and accompanying text.
[87] § 10222(a)(1).
[88] § 10222(a)(5)(A).
[89] § 10222(a)(5)(B).

The utilities have been complying with their statutory and contractual duty to pay fees into the Nuclear Waste Trust Fund. Utilities in forty-one states have paid $6.6 billion (plus $2.5 billion in interest) into the Nuclear Waste Trust Fund.[90] (The utilities then pass this fee onto the customers they serve.) The DOE, however, most likely will not be able to fulfill its statutory and contractual obligation.[91] Because Yucca Mountain, Nevada has not yet been approved as a repository site, it is highly improbable that the DOE by 1998 will be able to fulfull its obligation by disposing of high-level nuclear waste in an operational repository.

Currently, high-level nuclear wastes are in temporary surface storage facilities on utility premises because the utility generators have primary responsibility to provide for interim storage.[92] At this moment, spent fuel assemblies from commercial nuclear power plants are being stored in pools at power plant sites under twenty feet of water.[93]

To remedy this situation, Congress should pass legislation requiring the DOE to accept the spent nuclear fuel for interim storage[94] in one or more

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[90] Garner, *supra* note 4, at 38. Because utilities pass the cost onto their consumers, also referred to as "ratepayers", the consumers, in essence, have invested the money to fund the program that was established to protect them from the hazards posed by the accumulation of nuclear waste. Courts have upheld the assessment of a fee against current ratepayers for a future permanent disposal site of nuclear waste, known as the Nuclear Waste Trust Fund assessment. *See* Consolidated Edison Co. of New York v. U.S. Dept. of Energy, 870 F.2d 694 (1989); General Electric Uranium Management Corp. v. U.S. Dept. of Energy, 764 F.2d 896 (1985); Wisconsin Electric Power Co. v. Dept. of Energy, 778 F.2d 1 (1985); Towns of Concord, Morwood and Wellesley v. Federal Energy Regulatory Comm'n, 729 F.2d 824 (1984).

[91] 60 Fed. Reg. 21793, 21794 (1995).

[92] Section 131(a)(1) provides that "persons owning and operating civilian nuclear power reactors have the primary responsibility for providing interim storage of spent nuclear fuel from such reactors, by maximizing, to the extent practical, the effective use of existing storage facilities at the site of each civilian nuclear power reactor, and by adding new onsite storage capacity in a timely manner where practical . . . ." § 10151(a)(1).

[93] HOSKINS & RUSSELL, *supra* note 16, at 22. All on-site operations involving the spent fuel are performed remotely with the fuel remaining underwater to provide both radiation shielding and cooling until the fuel eventually will be transferred to the DOE repository.

[94] The DOE has concluded that it has no authority under the NWPA to provide interim storage in present circumstances. 60 Fed. Reg. 21793, 21797 n.8 (1995). The DOE reasons that interim storage by the DOE was contemplated by the NWPA in only two situations, neither of which, according to the DOE, applies. Under the NWPA, the DOE was authorized, until January 1, 1990, to offer a limited interim storage option. § 10156(a)(1). Under the NWPA, the DOE is also authorized to provide for interim storage in a monitored retrievable storage (MRS) facility. § 10165(a). That authority, however, is linked to development of a permanent repository. §§ 10165(h) and 10168(a). The DOE maintains that because the NWPA provides for no other interim storage and expressly forbids construction or expansion of any facility, § 10222(d), using the Nuclear Waste Trust Fund without express congressional authorization, the DOE is not authorized by the NWPA to provide interim storage. 60 Fed. Reg. 21793, 21797 (1995).

of its existing facilities. In the alternative, Congress should pass legislation requiring reimbursement to utilities for the costs of on-site storage from the Nuclear Waste Trust Fund, or requiring a combining these two strategies.

A requirement that the DOE accept the waste and provide interim storage is consistent with the "Findings and Purposes" listed under the Interim Storage provision of the NWPA. Section 131(a)(3) of the NWPA provides that "the Federal Government has the responsibility to provide interim storage of spent nuclear fuel for civilian nuclear power reactors that cannot reasonably provide adequate storage capacity at the sites of such reactors when needed to assure the continued operation of such reactors."[95] As stated above,[96] several of the nation's nuclear power plants are reaching their on-site storage capacity, and it is predicted that by 1998 twenty-six will have exhausted their storage capacity.[97] For this reason, the Clinton Administration, supportive of such a remedy, is asking Congress to authorize the DOE to move forward with an interim storage facility, independent of the schedule for a permanent repository.[98]

Congress also shows support for such a remedy. Several bills pending in Congress would require the DOE to build an interim storage facility at Yucca Mountain by 1998.[99] One bill, S. 1271, was recently approved by the Senate and Natural Resources Committee, and its House companion, HR 1020, was approved last August by the Commerce Committee.[100]

In addition, several members of Congress also are supportive of the possible remedy of using the Nuclear Waste Trust Fund to offset the utilities' cost of on-site storage. Senator Richard Bryan (D-Nev.) has introduced at least two bills that provide for such a remedy. Both bills, S. 429 and S. 699, would provide financial relief to utilities that must construct on-site storage facilities for storing waste produced after 1998 by making available a credit against payments to the Nuclear Waste Trust Fund equal to the amount that the utilities spend on additional on-site storage.[101] Similarly, Senator Barbara Vucanovich (D-Nev.) has intro-

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[95] § 10151(a)(3).

[96] *See supra* notes 5 & 6 and accompanying text.

[97] *See* Garner, *supra* note 4, at 37 (stating that "spent nuclear fuel will remain in limbo at 73 reactor sites in 34 states").

[98] *Id.* at 39.

[99] *Permanent Repository Should be Determined Before Building Interim Facility, Board Says*, 26 Env't Rep. (BNA) 2261, 2261 (Mar. 29, 1996).

[100] *Id.*

[101] W. Lynn Garner, *Inside Washington*, PUB. UTIL. FORT., Apr. 15, 1995, at 38.

duced S. 496, which would credit utilities for on-site storage costs resulting from delays in the federal waste management program.[102]

If Congress cannot pass legislation to provide for the use of the Nuclear Waste Trust Fund to help defray costs of on-site storage, utilities might be entitled to such financial relief under the terms of the Standard Contract.[103] Article IX of the Standard Contract provides that neither party shall be liable for damages in the case of unavoidable delay and in the event that there is an unavoidable delay each party must adjust their schedules to accommodate the delay.[104] If an unavoidable delay occurs, the Standard Contract provides that the "charges and schedules specified by this contract will be equitably adjusted to reflect any estimated additional costs incurred by the party not responsible for or contributing to the delay."[105] If the DOE fails to begin providing disposal services in 1998, the Delays Clause would apply and Article XVI would establish the process for resolving any disputed questions of fact, such as whether a delay has occurred and, if so, whether it was avoidable or unavoidable.

Thus, because the DOE will be unable to meet its statutory and contractual obligation to accept the spent nuclear fuel from the utilities that have upheld their contractual obligation by paying fees into the Nuclear Waste Trust Fund, the DOE should either provide interim storage or reimburse the utilities from the fees it has collected.

IV. Ramifications of the DOE's Refusal to Accept High-Level Radioactive Waste For Disposal by January 31, 1998

A. On-Site Storage

As discussed above,[106] utility storage facilities for spent fuel rods originally were designed based on the assumption that spent nuclear fuel would be stored under water for about five months at reactor sites and then would be shipped away for reprocessing and final disposal of the remaining waste.[107] Since the reprocessing industry collapsed in the mid-1970s, most spent fuel rods have been stored in pools on utility property.

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[102] Garner, *supra* note 101, at 38.
[103] 60 Fed. Reg. 21793, 21797 (1995).
[104] *Id.* (*citing* 10 C.F.R. § 961.11).
[105] *Id.* (*quoting* 10 C.F.R. § 961.11).
[106] *Supra* note 2 and accompanying text.
[107] LEAGUE OF WOMEN VOTERS EDUCATION FUND, THE NUCLEAR WASTE PRIMER 38 (1993) [hereinafter "LEAGUE OF WOMEN VOTERS"].

These pools are filling up rapidly. Utilities, therefore, have been increasing their on-site, high-level radioactive waste storage capacity by reracking fuel-assembly storage modules in existing pools, by expanding on-site storage capacity, and by transshipping, or moving the spent fuel to other reactor sites to deal with the problem of on-site accumulation of high-level radioactive waste.[108] Some utilities have even begun investigating, and some are testing, alternative storage options, including a system that uses the same cask[109] both for dry storage of spent fuel at a reactor site and for transportation to the federal storage or disposal facility when such a facility becomes available.[110]

In a 1984 Waste Conference Decision, the Nuclear Regulatory Commission (NRC) found that

> if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least thirty years beyond the expiration of that reactor's operating license at that reactor's spent fuel storage basin, or at either on-site or off-site independent spent fuel storage installations.[111]

The NRC substantially reaffirmed this finding in September 1990, in a review and final revision of its Waste Confidence Decision.[112]

A number of states and localities, however, have raised concerns about the increased storage of spent nuclear fuel at reactor sites. Concerns range from the likelihood that on-site storage expansion might divert attention from the need to expedite the creation of a permanent repository, to the fear that the nuclear plants themselves will become permanent repositories.

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[108] *Id.*

[109] In Kelley v. Selin, 42 F.3d 1501 (6th Cir. 1995), *cert. denied*, 115 S.Ct. 2611 (1995), the Sixth Circuit relied upon the above discussed NRC decisions in determining that the NRC's addition of spent-fuel storage cask to its list of approved storage systems, at 10 C.F.R. § 72.214, did not violate the Atomic Energy Act, the National Environmental Policy Act (NEPA), or the Nuclear Waste Policy Act. *Id.* at 1521. The Palisades facility involved in *Kelley* had already been granted an operating license. *Id.* at 1520. In addition, an extensive environmental analysis of the Palisades site had already been performed. *Id.* The court held that the NRC evaluated the environmental consequences of its action in its environmental assessment of the rule adding the VSC-24 cask to the list of approved storage systems at 10 C.F.R. § 72. *Id.* at 1521. The court further held that the NRC's failure to prepare a site-specific environmental analysis concerning the use and operation of the VSC-24 cask at Palisades does not violate the NEPA. *Id.*

[110] *Id.*

[111] 49 Fed. Reg. 34,658 (1984).

[112] 55 Fed. Reg. 38,474 (1990).

B. On-Site Storage Diverts Attention From the Pursuit of a Permanent Repository

One commentator warns that the current necessity of storing nuclear waste on site at numerous nuclear facilities "does not move [the nation] . . . forward in trying to find a suitable site to permanently dispose of this waste."[113]

Some states even fear that the proposal to give utilities Nuclear Waste Trust Fund credits for their on-site storage of spent fuel after January 31, 1998 diverts attention from the creation of a federal permanent repository.[114] They fear that pressure on the DOE to site and complete construction of a permanent repository will slacken if the public is led to believe that utilities are able to safely manage the wastes on-site even though the hazards of on-site accumulation would remain.[115]

C. On-Site Storage May Become Permanent

States also fear that nuclear power plant sites might become de facto long-term storage or permanent disposal sites of high-level radioactive waste as more and more delays arise in the federal permanent storage program.[116] According to one commentator, it is "[a] policy which effectively creates, for an indefinite time period, more than 70 separate high-level nuclear waste storage sites in 33 states."[117] The Executive Vice President for Corporate Affairs, Northern States Power, echoed this fear when he testified in March 1992 that a federal program is needed to ensure that waste storage at nuclear plants never becomes permanent.[118]

Some states, such as Maine, allow only short-term on-site storage of nuclear waste because they fear that on-site storage may become permanent.[119] Other states do not allow on-site storage of nuclear waste.

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[113] Elaine Hiruo, *Proposed National Coalition Could Be Step Toward Making Nev. Storage Site*, NUCLEAR FUEL, Apr. 11, 1994, at 3 (*quoting* letter from members of Michigan's Congressional delegation (March 1994)).

[114] Garner, *supra* note 101, at 38.

[115] *See infra* notes 129-33 and accompanying text.

[116] LEAGUE OF WOMEN VOTERS, *supra* note 107, at 32.

[117] Hiruo, *supra* note 113, at 3 (*quoting* letter from members of Michigan's Congressional delegation (March 1994)).

[118] John Simpson, *Energy Department Recommends Sites for Nuclear Waste*, PUB. UTIL. FORT., Feb. 1, 1993, at 11.

[119] *Maine Yankee Evaluates Options on State Law*, NUCLEAR FUEL, Apr. 30, 1990, at 14. By statute, no spent fuel can be stored on-site in Maine for longer than three years after its

Minnesota has banned on-site storage to promote a policy of encouraging deep-geologic disposal of waste.[120]

California has gone even further than the other states in demonstrating its belief that the accumulation of waste at reactor sites may become a permanent situation posing a tremendous hazard. California has passed a state moratorium on new nuclear power plants.[121] In *Pacific Gas & Electric Co. v. State Energy Resources Conservation and Development Commission*[122] the United States Supreme Court upheld California's moratorium on new nuclear plants because of the economic uncertainty of nuclear waste disposal.[123]

A similar moratorium has been proposed in the United States Senate. Senator Paul Wellstone (D-Minn) introduced bill S. 473, which would prohibit the building of new commercial nuclear reactors until a federally licensed facility with adequate capacity for permanent storage of high-level radioactive waste is available.[124]

The increasing public fear that waste may never leave utility reactor sites has threatened several power plants with premature closure to avoid an unmanageable accumulation of waste at reactor sites.[125]

D. On-Site Accumulation of High-Level Radioactive Waste May Result in Early Closure of Reactors

Whether nuclear power plants prematurely close or close at the end of their license term,[126] the accumulation of waste on-site becomes a problem when plants must undergo the process of decommissioning.

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removal from the reactor. *Id.* ME. REV. STAT. ANN. tit. 35-A, § 4371 (West 1995).

[120] Elaine Hiruo, *Court Decision on NSP Dry Storage Emphasizes Need for DOE's Meeting 1998*, NUCLEAR FUEL, June 23, 1993, at 1.

[121] *See* Arthur W. Murphy & D. Bruce La Pierre, *Nuclear "Moratorium" Legislation in the States and the Supremacy Clause: A Case of Express Preemption*, 76 COLUM. L. REV. 392 (1976). CAL. PUB. RES. § 25524.1 (West1986 & Supp. 1996).

[122] 461 U.S. 190 (1983); CAL. PUB. RES. § 25524.1 (West 1986 & Supp. 1996).

[123] *Id.* at 214-17.

[124] Garner, *supra* note 101, at 38.

[125] Elaine Hiruo & Dave Airozo, *Utilities, State Officials Sue to Settle DOE's Waste Obligation*, NUCLEONICS WEEK, June 23, 1994, at 1.

[126] Nuclear power plants were anticipated to have a forty-year life span, but some are now being shut down much earlier. Michael B. Gerrard, Note, *Fear and Loathing in the Siting of Hazardous and Radioactive Waste Facilities: A Comprehensive Approach to a Misperceived Crisis* 68 TUL. L. REV. 1047, 1086 & n.273 (1994).

Nuclear plants must be properly decommissioned to protect public health and to prevent environmental damage.[127]

Since no large-scale commercial reactors have yet to be fully decommissioned, there is great uncertainty about costs, time frame, and amount and type of waste produced from the decommissioning process.[128]

Although dismantling would return the nuclear reactor site to its original state, it is a very costly process.[129] Completely dismantling a large power plant may cost more than one billion dollars.[130] These costs may be greater than the utility planned to incur for decommissioning, and thus the utility may not be able to afford to decommission its reactors. In addition, because the dismantlement process will result in wastes approximately one hundred times more radioactive than the combined total of all the low-level radioactive waste generated during the reactor's operation,[131] the lack of a repository means that the waste must remain on-site indefinitely.

E. Ratepayers Pay Double For the Storage of Waste

An additional concern is that if utilities decommission prematurely, ratepayers will pay twice to have the nuclear waste stored. First, ratepayers pay a fee for their energy service. This fee represents the cost to the utility to provide the energy service, including the cost of on-site storage of the high-level waste. Waste must be stored on-site until the utility may transport it or arrange to have it transported to a permanent repository. The spent fuel pools of retired plants must be monitored continually, with ongoing security, testing, and training, at an annual cost of several million dollars each.[132] The pools must be monitored to ensure that radioactive material remains isolated from the environment, and the pools must have surveillance to prevent anyone from accessing the storage area.[133] State utility regulatory agencies determine in ratemaking proceedings the amount of revenue that is required to cover a utility's

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[127] FRANK J. RAHN ET AL., A GUIDE TO NUCLEAR POWER TECHNOLOGY: A RESOURCE FOR DECISION MAKING 846 (1984).

[128] *Id.* at 846-47.

[129] RAHN, *supra* note 127, at 847.

[130] Gerrard, *supra* note 126, at 1087 & n.276.

[131] *Id.* at 1087 & n. 277.

[132] BERLIN & STANTON, *supra* note 16, at 357.

[133] *Id.* Because temporary on-site storage facilities "do not achieve the same degree of long-term isolation [as do] licensed disposal facilities, . . . the site operator will incur additional labor costs for the monitoring, maintenance, and surveillance activities required over the life of the storage facility to achieve comparable levels of containment." *Id.*

operating costs and how utility costs will be allocated to ratepayers.[134] Second, ratepayers also finance the NWPA nuclear waste disposal program by paying more than $1 million per day into the Nuclear Waste Trust Fund.[135]

F. Environmental Risks of On-Site Storage

Perhaps more costly to the consumers than any assessed fee are the environmental risks posed by the accumulation of high-level radioactive waste on utility premises. First, the probability that a devastating accident will occur is multiplied by the number of utility sites where high-level radioactive waste is stored. At each site, the risk of an accident only increases as utilities continue to accumulate.[136] Second, that these utility sites were not originally constructed for long-term or permanent storage increases the risk posed by on-site storage because the utilities must continue to store high-level radioactive waste for an indefinite period of time.[137] Third, the expertise of the operators at each utility storage facility may not be the same as that of the operators of a facility specially designed for permanent storage.[138] The utilities are not in the business of storing waste; they do not possess the technical know-how.[139] Indefinite, on-site storage, therefore, may subject plant workers and the outside public to the risk of radioactive exposure.[140]

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[134] Alfred E. Kahn, 1 THE ECONOMICS OF REGULATION 20-57 (1988). In ratemaking proceedings, a utility seeks the opportunity to earn a reasonable "rate of return" on its investment. The percentage rate of return is multiplied by the utility's rate base — roughly the utility's dollar amount of capital and equipment — to yield the allowed return. Thus, the rate of return allowed in ratemaking proceedings is the amount of revenue minus operating costs (which include profit and interest on capital debt). *Id.*

[135] *See supra* note 14 and accompanying text. This fee is added to the ratepayer's utility bill.

[136] Jorge Contreras, Comment, *In the Village Square: Risk Misperception and Decision-making in the Regulation of Low-Level Radioactive Waste*, 19 ECOLOGY L. Q. 481, 522-23 & nn. 259-63 (1992). Although Contreras' Comment discusses low-level radioactive nuclear waste, the analysis of the problems associated with on-site storage of low-level radioactive nuclear waste is similar for high-level radioactive nuclear waste.

[137] *Id.*

[138] *Id.* at 520 & n. 245.

[139] Michael E. Petrella, Note, *Wasting Away Again: Facing the Low-Level Radiation Waste Debacle in the United States,* 5 FORDHAM ENVTL. L. J. 103, 132 (1993). Although Petrella's Note discusses low-level radioactive nuclear waste, the analysis of the problems associated with on-site storage of low-level radioactive nuclear waste is similar to that for high-level radioactive nuclear waste.

[140] *Id.* This would probably be true even if states impose stricter safety standards because the ability of a facility designed for short-term storage to provide long-term storage is uncertain. *Id.*

While on-site storage may be adequate as a short-term policy, it is an incomplete solution because nuclear waste remains radioactive for thousands of years, and the on-site storage facilities were intended only as temporary storage sites.[141] On-site facilities likely will prove inadequate to protect the public from the dangers of high-level radioactive waste in the long-term.

V. Conclusion

For nuclear energy to remain a viable energy option, the issue of accumulation of spent nuclear fuel must be resolved. Consumers not only are facing an unacceptable risk by the accumulation of high-level radioactive waste at various sites around the United States but also are paying more than necessary for its storage by funding both repository efforts and on-site storage costs.

Although the best resolution would be for the DOE to construct expeditiously a permanent repository for high-level radioactive waste, Congress may provide a short-term solution. Congress can pass legislation (1) requiring the DOE to accept the spent nuclear fuel for interim storage in one or more of its existing facilities and (2) allowing the reimbursement of utilities from the Nuclear Waste Trust Fund for the costs the utilities will incur in storing the waste on-site after the time when a repository is supposed to be constructed.

Storing spent nuclear fuel on-site may allow utilities to continue to operate while they await the opening of an operational repository, but on-site storage will not be adequate as a long-term solution. Although nuclear waste remains radioactive for thousands of years, the on-site facilities were constructed for only short-term storage.

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[141] *See Ten Thousand-Year Decision*, *supra* note 35, at A1; 45 Fed. Reg. 58,196 (1982) (stating that nuclear waste must be isolated from the biosphere for at least 10,000 years to protect public health and safety and the environment).