

Role of Congress in the High Level Radioactive Waste Odyssey: The Wisdom and Will of the Congress - 13096

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ABSTRACT

Congress has had a dual role with regard to high level radioactive waste, being involved in both its creation and its disposal. A significant amount of time has passed between the creation of the nation's first high level radioactive waste and the present day. The pace of addressing its remediation has been highly irregular. Congress has had to consider the technical, regulatory, and political issues and all have had specific difficulties. It is a true odyssey framed by an imperative and accountability, by a sense of urgency, by an ability or inability to finish the job and by consequences. Congress had set a politically acceptable course by 1982. However, President Obama intervened in the process after he took office in January 2009. Through the efforts of his Administration, by the end of 2012, the US government has no program to dispose of high level radioactive waste and no reasonable prospect of a repository for high level radioactive waste. It is not obvious how the US government program will be reestablished or who will assume responsibility for leadership. The ultimate criteria for judging the consequences are 1) the outcome of the ongoing NRC's Nuclear Waste Confidence Rulemaking and 2) the concomitant permissibility of nuclear energy supplying electricity from operating reactors in the US.

INTRODUCTION

As a starting point, it is essential to understand that the Constitution gives the Congress the role to set policy through statutes that authorize and fund (appropriate) every activity of the federal Government. It is then the role of the Executive branch to execute that policy. The Congress collectively has been responsible, in some manner, for the creation of all of the high level radioactive waste in the US. Defense high level radioactive waste was created by nuclear weapons projects, beginning with the Manhattan Project, which were specifically authorized and funded in every particular by the Congress. It has also been involved with the creation of civilian high level radioactive waste through the sponsorship and regulation, via federal agencies, of all the civilian nuclear power reactors in the US. Therefore, high level radioactive waste is a byproduct of important initiatives taken by the Congress to further the defense posture and energy security of the US.

Congress recognized the necessity to permanently dispose of the dangerous radioactive waste resulting from the programs it authorized. While there were significant technical aspects of the disposal methodology, progress in achieving the solution would be dominated by political and societal issues, primarily associated with siting a facility. The Congress would eventually recognize it would have to take a significant leadership role in establishing the framework to resolve the situation.

Numerous people have lost sight of the importance of this dual role; from this perspective, it is natural and necessary that the Congress collectively had to be instrumental, if not dominant, in assuring that the problem of disposal was brought to fruition through a politically legitimate process.

With Congress in ultimate control, all decisions would be subject to the democratic policy-making practices of Congress!

SENSE OF URGENCY IN ADDRESSING SIGNIFICANT ISSUES

Bringing the high level radioactive waste disposal (repository) program to fruition has been one of the most complex and contentious efforts, both technically and societally, conducted under the aegis of the US government. Consequently, the time line for achieving success is far more convoluted than the time necessary to develop the atomic bomb or the conduct of World War II. The following discussion illustrates a perspective regarding time frames for successfully resolving an issue when there is a recognized sense of urgency and an ability to finish.

In 1939 Otto Hahn [1] published his research of the discovery that atoms of uranium bombarded with neutrons would fission (split in two with release of significant energy). By 1943 the US government initiated building the first reactor (B-Reactor) to produce plutonium in industrial quantities; the reactor went critical (fully operational) just 20 months after proof that a sustainable and controllable nuclear chain reaction was possible, as demonstrated in December 1942. By December, 1944 the first separation plant (T Plant) was processing irradiated fuel to recover plutonium. On July 16, 1945 the first atomic bomb was successfully tested at the Trinity site in New Mexico [2].

In **6 ½ years**, the US had successfully transformed the discovery of an unusual physical phenomena to the most destructive weapon of war.

On December 7, 1941, the United States unwillingly entered World War II. On August 8, 1945 the United States had effectively ended that war by dropping the second atomic weapon on Japan.

In a little over **3 ½ years**, the US had successfully fought on two fronts and ended World War II

FEDERAL GOVERNMENT ACTIONS AND TIME FRAME FOR ADDRESSING AND REALIZING SUCCESS FOR SITING A HIGH LEVEL RADIOACTIVE WASTE REPOSITORY

The word odyssey is used to describe a long series of wanderings or adventures, especially when filled with notable experiences, hardships, etc. The following is an accounting of the high level radioactive waste disposal odyssey. Unlike Odysseus, who achieved his objective after only ten years of wandering, the high level radioactive waste disposal has gone on far longer. As elaborated below, although the objective was within reach, it has been temporarily pulled away.

In 1944 the Manhattan Project started to process irradiated reactor fuel, thereby producing the first high level radioactive waste. It was temporarily stored as a liquid in steel tanks at Hanford. In 1946 the Atomic Energy Commission (AEC) was created to succeed the Manhattan Engineering District. In that period, disposing of the high level radioactive waste was not recognized as an important requirement [3, 4, 5]; there was no sense of urgency to address the issue. In 1954 the Atomic Energy Act of 1946 was amended and made possible greater participation by industry in developing applications of atomic energy with the generation of additional high level radioactive waste. Simultaneously, the AEC initiated a program to evaluate a variety of disposal option. Also undertaken was a survey of potential geologic formations that could accommodate a geologic repository. In 1955, The AEC asked the National Academy of Sciences (NAS) to consider the problem and make a recommendation [6]. In 1957 an NAS Committee made the recommendation to dispose of high level waste from reprocessing in geologic formations of salt [7]. Geologic formations are the only structures on earth that had been in existence for time periods greater than the time required for the waste to decay to safe levels. If examined thoroughly and carefully selected, some geologic formation would be capable of isolating the waste from man's environment for the time required.

[1957] 13 years had elapsed; modest progress made

By 1970 transuranic waste (materials contaminated with small amounts of plutonium) from the manufacture of nuclear weapons was being stored at the Idaho National Engineering Laboratory in large and growing quantities. In addition, the amount of high level liquid waste was also growing as a result of the production of plutonium for nuclear weapons. High level radioactive waste in the form of spent fuel elements from the emerging nuclear energy based generation of electricity was accumulating in storage. These situations placed increasing pressure on the AEC to find a disposal site for both forms of radioactive waste. The AEC made a commitment to the political leaders of Idaho to remove the waste from Idaho by 1980 [8, 9]. The first engineering test facility in a salt formation at Lyons, Kansas was the only site the AEC had available at the time. In 1970 the AEC designated this site as the proposed location for the first repository; it would be driven by the need to address the defense transuranic waste issue and would also be used for disposal of high level radioactive waste. It was not recognized at the time that the concept of disposing of radioactive waste, created for defense purposes and for civilian purposes in a common facility would become a significant factor affecting political legitimacy in the decision process associated with siting a repository.

The AEC had done little research to determine if the salt formations had sufficient integrity to contain the waste for the time required. While the AEC made strong assertions that it was a suitable site, the State geologist of Kansas developed credible data and information to show that it was not. At that time the AEC was both the promoter and the regulator of nuclear energy efforts; the AEC downplayed the safety issues, and they acted on the side of promotion. Subsequently, the Kansas leaders pleaded their case before Congress in March 1971 during budget hearing [10]; their points were the site was flawed, technically unsafe, and the proposed project to build the repository should not be funded. On nuclear issues, the Congress was dominated by the Joint Committee on Atomic Energy (JCAE) and the JCAE was a strong supporter of the effort. No independent technical review capability existed at the time. Congress, unprepared for the role, was asked to make a technical decision regarding health and safety. The Congress supported the effort until the AEC, in early 1972, finally understood the technical flaws in the site and abandoned the proposal [11]. In essence, the Congress, collectively, made the wrong decision regarding the technical aspects of safety. Through this ineptness, the AEC had, in effect, lost its credibility, both from a technical perspective and from a regulatory perspective.

[1972] 28 years had elapsed; more setbacks than progress had been experienced

After the fundamental error made by Congress in supporting the proposed repository at Lyons, Kansas, the Congress would distinguished itself in specifying the necessary actions to address the high level radioactive waste issue. Recognizing the situation that was evolving with regard to nuclear waste in the mid 1970s, the Congress took a number of necessary steps to correct the problems in a sequential process. By 1973, the executive branch, responsible for the effort to dispose of the high level radioactive waste, had revealed several significant shortcomings in the execution of its programs. While the lead agency in the executive branch was equipped to deal with the technical aspects of the disposal problem, it did not have the capability or flexibility to address the political and societal aspects. Issues were slowly revealed as the development effort. The Congress identified flaws in the technical, political, and societal effort. In each case the Congress stepped in to take the action necessary to overcome the shortcoming. In this paper, these actions are identified as the **“Wisdom and Will of the Congress.”** It involved a number of independent but interrelated steps that resulted, eventually, in a license application for the Nation’s first repository for high-level radioactive waste disposal.

In 1974, through the Energy Reorganization Act [12], Congress separated the promotion of nuclear energy from the regulation of nuclear energy. Two separate and independent agencies, the Energy Research and Development Administration (ERDA) and the Nuclear Regulatory Commission (NRC)

were created. In this legislation, Congress required that any facility to receive and store high level radioactive waste be licensed by the NRC. Congress wanted a thorough independent technical review of the safety of a proposed site for a high level radioactive waste repository. This was the first of numerous sequential steps necessary to implement a politically and societally balanced, as well as a safety-oriented process, for disposing of high level radioactive waste. Congress initiated what was to become a long and careful effort to direct a complex and contentious set of actions leading to the disposal of high level radioactive waste. Without the collective and coordinated leadership of Congress, it would not have been possible to identify and evaluate any site for a repository. (This was the first significant step collectively taken by the Congress through the **Wisdom and Will of the Congress**).

[1974] 30 years had elapsed; modest progress was realized

The issue associated with Lyons, Kansas brought to the forefront the lack of resources needed to manage and execute the program. Subsequently, significant increases in resources, both in funding and personnel, were provided to ERDA to develop, implement and manage a competent program to site and establish a facility to dispose of the high level radioactive waste. Increased resources were also provided to the NRC to develop their regulations and licensing process to ensure the safety of a repository. (This was the second significant step collectively taken by Congress through **the Wisdom and Will of Congress**).

Beginning in 1975, the congressional oversight of the ERDA and NRC was transferred to other committees and, in the late summer of 1977, the JCAE was abolished. At this point in time, with the abolishment of the JCAE, the efforts to dispose of waste from defense efforts and from civilian efforts were separated and managed as separate programs. The AEC and its successors felt the forces of other voices and objectives in Congress.

[1975] 31 years had elapsed; modest progress was realized

At this point in the sequence of events, to be capable of disposing of high level radioactive waste, the focus was on developing and implementing a technically competent program that would not repeat the mistakes experienced in the early 1970s (a poorly characterized site with no alternatives). As it became clear that the Federal government was serious about implementing the siting effort, societal and political opposition to the siting effort erupted. Rational discussion of the issue diminished. Strong polarization on the issue evolved between the federal and state governments. The primary question raised by the state and local governments was whether they would have veto authority over the site selection. Congress, the politically focused organization involved, which generally prefers to be in control of siting Federal facilities, did not and can not delegate the authority to make that decision to the Executive Branch. The decision making process regarding the repository siting became the single most difficult issue of waste disposal policy to address. This was because the resolution of the disposal of high level radioactive waste was a responsibility that previously had been delegated, by Congress, to the federal Executive branch under the Atomic Energy Act and the Energy Reorganization Act of 1974. It is an issue that has been the subject of much controversy beginning in 1976. After the election in 1976, ERDA proposed [13] an orderly and comprehensive program that would evaluate numerous sites in multiple geological media. Although it provided adequate alternative sites that were not present with the Lyons, Kansas proposal, it went overboard in terms of technical scope and involvement of too many states. It unexpectedly precipitated significant societal and political concerns, resistance and objections. The obvious focus of the states was to achieve the authority to stop the siting effort based on technical, societal or political reasons. As time advanced, the executive branch would take numerous actions that would cause the states to lose trust in it. There was a strong push for public participation in the siting process driven by lack of understanding of the approach, lack of knowledge of the risk, and strong sense of fear.

During the years of the Carter Administration (1977-1981), significant effort was spent addressing the issue of societal and political participation in resolving the issue of siting a repository. First, ERDA conducted an internal review of the repository program under the guidance of John Deutch [14]. Concurrently, a significant issue was evolving regarding the NRC ability to license reactors if there were no established means of disposing of the high level radioactive waste [15, 16]. Congress recognized the importance of the growing nuclear power industry and the importance of solving the disposal issue. It undertook the challenging process of creating legislation to address the critical issues.

Pursuant to the internal ERDA review, a higher level review process, identified as the Interagency Review, was initiated under the aegis of the White House. The Interagency Review Group (IRG) considered the full scope of issues involved [17, 18]. Most recommendations were accepted by the President but he wanted to terminate the Waste Isolation Pilot Plant (WIPP) as a dedicated repository for disposal of the defense transuranic waste and resurrect it as one of the many sites to be considered for NRC licensed repository. However, after the failure of Lyons, Kansas, the Executive Branch had given the political leaders of Idaho a commitment it would get the defense transuranic waste, temporarily stored there, out of the state beginning by 1985. It would go to WIPP, the repository dedicated to transuranic waste disposal. Despite the previous commitments of the Executive Branch and the Congress to the political leaders of Idaho, President Carter, in his FY1980 budget submission, proposed to terminate WIPP. Congress, through the leadership of the House Armed Services Committees, which was committed to an effective defense waste management program and more sensitive to the commitment to state political leaders, did not support his proposal. Congress continued to implement the commitment to solve that element of the overall waste disposal problem. This was collectively supported by Congress (This is the third step taken as part of the **Wisdom and Will of the Congress**).

During the Carter Administration the political strength of the states' unrelenting opposition to the federal Government's repository program was manifested in the positions of the National Governor's Association and the National Conference of State Legislatures. To establish a reasonable venue for discussions, in 1978 President Carter created the State Planning Council [19].

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| <p>[1980] 36 years had elapsed; Congressional leadership on the issue was strongly emerging</p> |
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It was clear during the last years of the 1970s and the first two years of the 1980s that societal and political tolerance defined the critical path forward for the siting of a high level radioactive waste repository. Here the Congress collectively took the most significant step in the effort, crafting and enacting the Nuclear Waste Policy Act (NWPA) of 1982 [20]. During this period a significant number of members of Congress took leading roles. Such political leaders as Bennett Johnson (D, LA) and Morris Udall (D, AZ) provided the authoritative leadership to guide the creation of the required legislation. Without such high level and dedicated leadership, it is unlikely that the NWPA would have passed. After 6 years of chaos, Congress distinguished itself in providing the political and societal framework to allow a complex technical problem to be solved. The most significant provision of this legislation is that it established a politically legitimately site selection process [21]. This process eventually put the decision regarding a proposed repository site by DOE and by the impacted state on an equal level. It gave the impacted state the authority to notify Congress of its disapproval of the site. To override the state's disapproval would require an override vote in both houses of Congress. One of the significant elements of the selection process is that Congress, collectively, held to itself the authority to accept or reject any disapproval of a proposed site; it would be the final authority regarding siting selection. Considering the reluctance of any state to express willingness to accept the siting of a repository within its boundaries, it was essential that the Congress hold unto itself the final decision about the site otherwise it could not be assured of effecting a solution to remediate the situation it was instrumental in creating. (This was the fourth and greatest step of the **Wisdom and Will of the Congress**).

[1982] 38 years had elapsed; the NWPA of 1982 was the breakthrough step required to make real progress

The process outlined in the NWPA required the nomination of five sites, which would to be further reduced to three for detailed site characterization (of the five, Yucca Mountain and the Richton Dome (salt) site in Mississippi were considered the most attractive sites).

The three sites eventually recommended (Yucca Mountain [tuffaceous rock], Herford Texas [salt], and Hanford Washington [basalt]) were driven by the requirement to have diversity in geologic media. The intention was for three sites to go through extensive site characterization. By 1987, significant information had been collected to establish a sense of which of the 3 sites had the greatest chance of success. At this point, Congress recognized the escalating cost of site characterization; in a budget reconciliation action, in December 1987, Congress chose to deviate from its initial plan and selected Yucca Mountain as the single site for detailed site characterization. With the return to a strategy that offered one site with no backup in case of the site's inadequacy, Congress established the Nuclear Waste Technical Review Board (NWTRB). Its single function was to advise them if technical issues regarding the suitability of the site emerged. Once the bill was signed out of the Conference Committee, the bill was voted on collectively by both the House and the Senate. (This is the fifth step in the **Wisdom and Will of the Congress**). It may, however, represent more Congressional Will than Wisdom.

[1987] 43 years had elapsed; finally a site was identified for repository development

The detailed characterization effort for Yucca Mountain proceeded along with the design of a facility consistent with the character of the site. NRC assigned an on-site representative to monitor the progress of the project in 1984. He had complete access to the program operations and files; he was also included in the project's technical management meeting. Once the Site Characterization Plan was prepared, the NRC established a detailed protocol for tracking the issues they believed were critical to their review and subsequent determination [22]. The issues identified through continuous independent technical oversight by the NRC, considered important to the license application, were analyzed and solid technical responses were developed. During this time immediately preceding preparation of the license application nearly 300 specific issues related to safety were identified by the NRC staff and the required course of action resolved by DOE [23]. The majority of them had been cleared and references cited by the time the President made the recommendation to Congress in 2002. The NWTRB (which had been in existence for 14 years) had not identified any significant deficiencies at this point that would warrant abandoning the site.

By January 2002, work on the site, including both scientific studies and engineering design of the facilities, had progressed to the point where the Secretary of Energy (Secretary) was ready to make his recommendation as specified in the NWPA. This had been established in late 2001 when the Under Secretary of Energy received a letter from NRC outlining the status of key licensing issues and their resolution [24]. The Secretary communicated to Governor of Nevada in a letter on January 10, 2002 that he intended to recommend the site to the president [25]. On February 14, 2002, the Secretary notified President Bush that he considered the Yucca Mountain should be approved for development as a geologic repository for spent nuclear fuel and high-level radioactive waste [26]. President Bush sent letters to that effect to the Speaker of the House and the President of the Senate on February 15, 2002 [27]. On April 8, the Governor of Nevada submitted his Notice of Disapproval to the Congress [28].

Now the issue was returned to the Congress for consideration. Congress had 90 days to make a decision on which path to follow: accept the DOE proposal to move forward with Yucca Mountain or to accept the Governor of Nevada's disapproval. In May 2002, the House of Representatives overrode the Notice of Disapproval 307 to 105. In July, the Senate also overrode the Notice of Disapproval by voice vote (note

that the vote to bring it to the floor of the Senate for a debate and final decision was 60 to 39). Through this dual override of the Governor's disapproval, the Congress implemented the politically legitimate process for site selection. This sixth step was a major and "the decisive" step in the **Wisdom and Will of the Congress** in which Congress collectively voted to designate Yucca Mountain as the Nation's site for the first high level radioactive waste repository. It again demonstrated the Will of the Congress to keep a single individual from vetoing the collective work and intent of the Congress without sound and compelling reason. This was consistent with the process by which the Congress authorized the creation of the waste and retained the ultimate responsibility for ensuring its safe disposal. This legislation, House Joint Resolution 87 [29], designating Yucca Mountain as the formal site for the Nation's first high level radioactive waste repository was signed by President Bush on July 23, 2002.

[2002] 58 years had elapsed; finally the political process of siting the repository was complete and properly resolved

Following the provisions of the NWPA, the Code of Federal Regulations, Title 10, Part 63, and the Energy Reorganization Act (the first step of the **Wisdom and Will of the Congress**), on June 3, 2008, the DOE submitted the Yucca Mountain license application to the NRC [30]. As opposed to the situation in 1970 with the Lyons, Kansas site, this application would be reviewed by an organization that was competent in the scientific and engineering disciplines important to the safety of a repository. On September 8, 2008 after a preliminary review, the NRC formally accepted the license application for full review indicating that the document was of acceptable quality [31]. Pursuant to the NWPA, the NRC now had 3 years to review the license application and make a decision, based on scientific fact, whether the site was satisfactory, i.e., met all applicable safety regulations.

[2008] 64 years had elapsed; the final technical review covering the safety of the site was underway

PRESIDENTIAL INTERVENTION

While campaigning for president in the state of Nevada prior to the 2008 election, Senator Obama made a commitment that, if he were elected president, he would stop the Yucca Mountain project. Not only did Mr. Obama win the presidency, Harry Reid, the senior senator from Nevada was elected Senate Majority Leader. Senator Reid and the State of Nevada long argued the science that was the basis for the site's selection was bad; however, the watchdog agency, the NWTRB, established by Congress specifically to monitor and report on insufficient science, never raised any issues suggesting that the site's selection was inappropriate during the required semiannual reporting to Congress over the 20+ years of its existence.

In the first year of the Obama Administration, Harry Reid, in concert with the President, was able to use the powers of the Senate Majority Leader to control the budgets for the Yucca Mountain Project in Fiscal Year 2010 (FY2010-October 1, 2009 – September 30, 2010) and beyond in the Senate and suppress House initiatives to fund the Yucca Mountain Project.

[2010] 66 years had elapsed; The combination of the President's campaign promise and Mr. Reid's role as Senate Majority Leader effectively gave the state of Nevada the veto power that Congress, collectively, denied the states in developing radioactive waste management policy.

Further, the Administration directed the Secretary of Energy to shut down the Yucca Mountain program and establish a Blue Ribbon Commission (BRC) to assess options for managing radioactive wastes (It will turn out that the BRC effort was be an inadequate redo of the IRG review undertaken in 1978-79).

To justify abandoning the Yucca Mountain Project, the Secretary declared it to be “unworkable.” These actions are in direct opposition to the **Wisdom and Will of the Congress**. The Congress had established the Nation’s waste disposal policy and designated Yucca Mountain as workable under the law; it gave no authority to any cabinet level appointee to overrule the congressional mandate, including the elimination of the DOE’s Office of Civilian Radioactive Waste Management (OCRWM) and the abolishment of the program. Through the action of the administration alone, by September 2010, the OCRWM specified in the NWPA had been completely dismantled.

In March of 2009 the DOE initiated an effort to stop the congressionally mandated NRC review of the Yucca Mountain site’s acceptability [32]. This coincided exactly with the issuance of the Obama Administration policy regarding the need for openness, transparency and scientific integrity in making major decisions [33]. The lack of scientific justification for the abandonment of the Yucca Mountain project, together with the political maneuvering used to attempt to subvert the **Wisdom and Will of the Congress** is staggering. As the NRC was about to conclude the mandated review of the site’s acceptability and state its conclusion that the staff considered the DOE’s license application to move to the next step of hearings, the Chairman of the NRC, in the fall of 2011, was able to use administrative ploys to put the effort on hold [34].

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| <p>[2011] 67 years had elapsed; the government was within one year of resolving the issue and one Senator was able to stop all progress and throw the situation back into total chaos</p> |
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The Obama Administration ignored the Constitutional role of the Congress to establish policy in the form of declarative statutes and instead usurped the authority in order to avoid a divisive problem. In effect, it overrode the Congress’ ultimate responsibility to ensure the safe disposal of the high level radioactive waste, the creation of which it authorized and funded. All the effort that Congress collectively and successfully put in place to address the societal, political and safety aspects of the repository site selection was undone by one senator who opposed the project, the one action that the Congress had worked so carefully to prevent. Neither Senator Reid nor President Obama had any hand in creating the high level radioactive waste; neither has the authority to *de facto* override the law that the Congress crafted to affect the final politically legitimate solution to the problem (high Level radioactive waste) it participated in creating.

The Yucca Mountain Project conducted its efforts within the letter and intent of the NWPA. The evaluation of Yucca Mountain began in the summer of 1978. The primary focus was to use established scientific methods to characterize the site. The site’s designation has been effectively supported by the NWTRB’s lack of objection and by the NRC’s independent review of the license application. By the fall of 2011, consistent with the 3 year time frame the Congress specified for an expeditious and focused review, the NRC staff concluded that the scientific data provided by the Yucca Mountain Project was of sufficiently high quality to support their technical judgment [35]. The NRC was on the verge of issuing its Safety Evaluation Report that would confirm its conclusion regarding the technical capability of the site when a political ploy stopped the congressionally mandated action. Despite the Administrations policy to make major decisions based on competent science [36], using transparent processes, the Administration acted vigorously to terminate work on the license application and prevent its release to the public. It took the Yucca Mountain Project and the NRC more than 33 + years from its initial identification and the expenditure of \$10 billion to successfully demonstrate, on a scientifically sound basis, the integrity of the site as intended under the **Wisdom and Will of the Congress**. Now, two individuals are very close to success in obviating what Congress collectively put in place.

COURT INVOLVEMENT IN THE REPOSITORY SITING PROCESS

Other political entities that had vested interest in the completion of the review and issuance of the license for the construction of a repository were not willing to accept the status. The state of South Carolina, the state of Washington, Aiken County S.C. and Nye, County, NV, the National Associate of Regulatory Utility Commissioners; and Ferguson, Lampson and Peterson all filed suits beginning in February, 2010. They eventually petitioned for a Writ of Mandamus to force the NRC to resume the review of the Yucca Mountain license application [37]. On May 2, 2012, the US Court of Appeals for the District of Columbia Circuit heard the case brought by the plaintiffs requesting a Writ of Mandamus to force the NRC to resume the review of the Yucca Mountain license application.

It was interesting to note that one of the judges, Judge Garland made a particularly alarming comment during the oral argument. He noted, “So, what’s the current status? I understand your argument about what they did in the past, but we still - - the purpose is to decide what they should do in the future.”[38]. This comment strongly implies that understanding the history of the waste disposal program and the full ramifications of their decision was unimportant. The judge may have understood the past with regard to the narrow issue of the discontinuance of the license application review, but it is not likely he understood how the issue related to the past in the effort to dispose of high level radioactive waste or the ramifications of a decision not to grant the Writ.

While the court would focus narrowly on the NRC violation of the provisions of the NWPA, there were far more significant issues associated with this situation. The failure to execute the provisions of the NWPA resulted from a fundamentally insidious situation, a situation that could be significantly reinforced by the wrong decision of the court. The court had two basic options. The first option would be to grant the Writ of Mandamus and force the NRC to resume the license application review until it ran out of funds. The Court’s action is a stop gap measure. The residual funds are insufficient to complete the entire licensing process. The budget limitation for the effort is determined entirely by the actions of the Senate, the House of Representatives has historically authorized funding for the project each fiscal year. The Senate’s willingness to support the Yucca Mountain licensing application review process, and the program, in general, is limited only by the actions of the Majority Leader of the Senate, the Senator from the state of Nevada.

The second option would be to not grant the Writ of Mandamus. This decision would keep the license application review in suspension until such time as Congress appropriated additional funding or change the NWPA. However, this decision would have far greater ramifications related to the past effort to solve the societal and political issues central to the disposal of high level radioactive waste. The most apparent consequences of this option are as follows:

1. Destruction of the singular path to success so carefully and laboriously crafted by the Congress in 1982.
2. Support, in effect, for the position that the decision regarding the selection of a suitable site for a high level radioactive waste repository should rest with the murky and mercurial political process and political leaders alone, instead of a fully transparent process depending on competent scientific and engineering experts working within the formally established and vetted regulatory requirements.
3. The monetary loss to rate payers that receive their electric energy from nuclear power plants, with no chance of recovery of the more than \$10 billion spent, pursuant to proper authorization by the Congress, to characterize successfully the Yucca Mountain site and solve the spent nuclear fuel disposal problem.

4. The radioactive waste, that the US Government ensured would be taken by the US Government with the intent of more thoroughly protecting the health and safety of all Americans, will be left where it sits today.
5. The utilities that have valid contracts with the US Government to take their spent nuclear fuel will have to continue to protect the spent fuel from degradation and other harm.
6. The utilities will continue to sue successfully the US Government and win large financial settlements at additional cost to the American tax payers.
7. An issue that has been begging for a solution for 67 years, which is within 1 or 2 years of initiating the construction of the repository, will be kicked down the road for at least another 20 years and possibly 40 years.
8. Confirmation that a *de facto* veto of a congressional mandate, in law, by a small politically motivated group, is acceptable, and it will become impossible for the Congress to hold unto itself the veto; it will not be possible to withhold the veto from any major political leader such as a state governor, a Senator or a Congressman.
9. Credence will accrue to an illegal action of a presidentially appointed government functionary in ignoring the requirements of the law crafted by Congress and signed by the President
10. Support the politicization of and destruction of the objectivity and credibility of the NRC.
11. Reinforcement of the thought that it is acceptable to throw away the valid results of \$10 billion worth of excellent research and 33 + years of work based on political bias of a small group of politicians.

The decision of the US Court of Appeals for the District of Columbia Circuit was issued on August 3, 2012. It was a decision that had concurring and dissenting views. All three justices were in favor of issuing the Writ of Mandamus, the issue was the point in time when it would be issued. The effective date decided was December 14, 2012 [39]. This was to allow the Congress time to provide guidance not to proceed. If Congress takes no action, the Writ would become effective.

It is clear the Court believed the Administration failed to meet the requirements of the legislation. It is implementing a process that will be limited in terms of the funds to execute the work. How far that funding will take the process is not clear at the end of 2012. The most important action would be to formally release the Safety Evaluation Report that clarifies the isolation capability of the site. This is essential to demonstrate whether the Administration is basing its decision on competent science or on political considerations alone. If it is a latter, the situation will have regressed to that which existed in 1970.

The NRC will resume the license application review and FY2009 carryover funding will run out before the review is complete. Under this scenario, the eleven consequences noted above will become effective.

CONCLUSIONS

The Congress was responsible for authorizing and funding the creation of the high level radioactive waste. It has some accountability for ensuring that there is an adequate process for remediating the waste. The Congress could not allow its capability to achieve the required remediation to be compromised. However, the Congress may have been outmaneuvered.

The Congress went to great lengths between 1976 and 1982 to put a process in place that would allow for a politically legitimate process for siting the repository. The Congress, after significant acrimonious debate, gave the congressional contingent that wanted to protect the state's interest the maximum capability to participate in the siting decision process by giving the governor of an impacted state a right to disapprove of the site. It required a governor's notice of disapproval of the site to be overridden by both houses of Congress for the selection to be effective.

The Governor of Nevada did submit to the Congress a Notice of Disapproval for the Yucca Mountain site. It was overridden in the House of Representative by a 307 to 105 margin and, effectively, in the Senate by a 60 to 39 margin. It is clear that the selection of Yucca Mountain was a politically legitimate action. It reflected the views of the representatives of a democratic society. With a viable solution on the table, the Congress, as a whole, wanted the issue resolved on a sound technical basis and not to be kicked down the road pursuant to some political conjure.

The Congress also made sure the selected site would be technically capable of isolating the high level radioactive waste by requiring an independent review and determination by the NRC. The Congress has offered the strong protection of public health and safety by creating two independent technically based government oversight organizations, the NWTRB (advisory role) along with the NRC (decision making role). The NRC's license application review is the more rigorous technical review since it is conducted before an administrative law court with formal cross examination by adversaries under the rules of evidence.

The Congress also created a way to legitimately fund the effort so that those who benefitted (the rate payers - not the tax payers) from the nuclear power pay for the remediation of the waste. It should be noted, however, that the tax payers are paying for the additional cost due to delay in the government being able to accept the waste from the utilities. As the cost of the repository increases, the cost to the rate payers is expected to escalate.

One Senator, in consultation with the Obama Administration, has undertaken an effort to subvert the **Wisdom and Will of the Congress** with regard to resolving the issue of disposing of high level radioactive waste *established through a hard fought political process*. The intention is to subvert the politically legitimate process. Despite the fact that Congress gave the state of Nevada the maximum in terms of participation in the siting decision, the Senate Majority Leader alone now wants to impose a process that has no conceptual or established political legitimacy.

It is interesting to note that both the Senate Majority Leader and President Obama attempted to discredit the Yucca Mountain site by asserting that the work was not based on sound science. Neither have been able to present evidence that their assertions have any validity. The Administration changed its rationale to a policy statement that it was "unworkable" based only on political assertions. They had concurrently issued a policy statement that major government decisions should be made in a transparent venue based on science of significant integrity. The Congress required a repository site's license application to be reviewed by a competent staff of scientific and technical experts to validate its safety. If the site was truly flawed or presented on the basis of bad science, what more authoritative review than by the NRC would there be to establish the Administration's position by following its own policy on scientific integrity in decision making. It could readily confirm their claim of poor science. To be true to its policy, the Administration should respect the position of the NWTRB and also want the NRC to complete the review. Their strong effort to prevent the NRC's review and release of their analysis and findings can be interpreted as a statement of a politically illegitimate process compounded by a lack of scientific integrity.

Until there is change in the Senate leadership, the current politically illegitimate situation characterized by complete lack of scientific integrity will continue until there is a more rational political leadership. The consequences of this situation are significant. It is difficult to imagine, in a period in which the US government is in the midst of its worse financial debt crisis, the Administration would throw away 33+ years of competent work, \$10 billion of rate payer's money and \$5 billion of taxpayers money to restart a process from scratch that which is likely to cost 3 to 4 times what already has been invested and discarded, and require unknown time.

Senator Reid and the state of Nevada argue that the Congress' deviation from the established plan was unfair to the state and a fraction of the 2.7 million residents of Nevada. One perspective of the state of Nevada is that Congress' decision does not constitute a genuine representation of a national consensus but is an illegitimate domination by a self-interest majority. One can get a true feel for the action of Congress, which acted within its constitutionally established role, by understanding the unrelenting opposition to siting a repository by all states in 1987. Beginning in 1977, no state government showed any interest in volunteering to host a high level radioactive waste repository. Over a 10 year period the Congress worked to identify or induce, with extensive benefits, a state to step forward. The discussions on the subject were not friendly. There was no willingness to allow the federal Government to develop the program in a progressive way. There was no trust that the federal Government would act fairly.

The bottom line is that after 10 years of searching for a reasonable approach, the Congress had made no progress. This was despite the fact that Congress, in 1982, gave the state full involvement in the site decision-making process. There was no evidence that opposition would change. It was further confirmed by the fact that the Office of the Nuclear Waste Negotiator, established by the 1987 amendment to the NWPA made no progress in inducing a state to step forward. In 1987, the Congress, faced with escalating cost concerns, chose not to kick the can down the road and made a decision. The states did not recognize that their collective and antagonistic reluctance to work with the Congress in any constructive manner would eventually create the need for a lottery. The lottery was limited in to three options and in 1987 the Congress chose a site they believed would work technically. For numerous reasons, Nevada won the lottery. While Nevada believes the action was unfair, fairness is in the eye of the beholder. Congress recognized the states reluctance to work with them was totally unacceptable and equally unfair in the need to solve a national problem. Congress had the imperative and accountability as well as strong motivation to solve the problem it helped create. While the **Wisdom** of the action may not have been without challenge, **Congress** did express its **Will** in executing a **workable** path forward for solving the Congress' problem.

An alternate approach, that is, the pursuit of the Blue Ribbon Commission (BRC) on America's Nuclear Future recommendations will only delay opening the repository. As opposed to the action of Congress in 1987, the Obama Administration, with the support of the Nevada senior senator, is kicking the can down the road for possibly another two generations. The US is already 68 years down the road from the creation of the first high level radioactive waste; there appears to be no reluctance to a delay of another 40 years (1978 to 2020 time from Yucca Mountain's identification until the expected repository opening). The BRC was not able to identify a truly viable alternative to geologic disposal, and acknowledged a repository will still be needed [40]; there is absolutely nothing here different from the findings of the 1978-79 IRG review with regard to disposal options. While the BRC strongly promotes a consent-based siting process, the state government remains the primary legal representative of local interest; this is established in the constitution and is not likely to change. State control is an unmistakable point in that Nye County and five surrounding counties (nearly 116,000 square kilometers of territory – 17 states in the US have smaller land areas) in Nevada have consented to accept the Yucca Mountain repository. In order to not have to deal with the issue of the acceptability of the Yucca Mountain site, the BRC consistently said it was not a siting commission and thus made no effort to see if there were any states interested in hosting a repository. Consequently, the BRC was consciously and intentionally unable to identify and document any state that harbored a latent and expected willingness to host a high level radioactive waste repository. It is curious that the BRC would offer, as a flagship piece of their work, a path forward that they chose not to verify as workable within the US. They base their consent-based recommendation on apparent success of European countries that do not have sovereign state, below the federal government level with strong states rights perspectives, in their political structure.

While the BRC made a significant point about the effect of delay, it never analyzed and presented a time line for their proposed process to establish a repository. It also appears to have neglected the importance

of national level political leadership in the process. It is not obvious that a sense of urgency will resurface or that strong rational political leadership will be anxious to take on this issue. The BRC's meager deliverable and the reality of their chosen siting concept can only reinforce the prudence of the **Wisdom and Will of the Congress** as expressed in 1987. Through this decision, 270 million citizens in 35 states that had high level radioactive waste and spent nuclear fuel had a viable and workable remediation process. The safety of the Congress' path forward was and remains well back-stopped.

Consequences

At the end of 2012, the US government has no program to dispose of high level radioactive waste. It is not obvious how the US government program will be reestablished or who will assume responsibility for leadership. The sense of urgency that had gathered some momentum for a while is now moribund. Congress has played a dominant role that is both legitimate and not legitimate. The Senate Leadership is functioning in a non-legitimate manner which could create the circumstances under which the odyssey will come to its end without reaching its goal. This is an alarming demonstration of how the US government, with all of its natural resources and technical capabilities, does not have the **political will** to finish that which, in reality, **is quite workable**. Consequently, the lack of a repository or a functioning repository program and an unknown means of reestablishing one, does not bode well for success of the NRC's Nuclear Waste Confidence Rulemaking effort and the continued use of nuclear energy in the US.

Andrew Carnegie established a foundation to "do real and permanent good" with his fortune; by contrast in the repository venue, the current Administration and the Congress are doing real and permanent harm!

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