Testimony of Washington Attorney General Rob McKenna
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On America's Nuclear Future

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I. INTRODUCTION

In 1982, Congress enacted the Nuclear Waste Policy Act (NWPA). The NWPA established a process for addressing the nation's problem of accumulated spent nuclear fuel and high-level waste. When the law was enacted, Congress recognized that prior decades of debate had not succeeded in addressing this problem. In response to these past failures, Congress prescribed a detailed process for identifying a site or sites where high-level waste and spent nuclear fuel could be safely and permanently housed.

Following the process laid out by Congress, the Department of Energy (DOE) thereafter began searching for suitable repository sites. In 1986, DOE, using an "accepted, formal scientific method," ranked the appropriateness of the various sites it had investigated. Yucca Mountain was the highest-ranked site. Congress then amended the NWPA to focus DOE's next round of study exclusively on the Yucca Mountain site. After fifteen years of additional study, DOE formally recommended to the President that a geologic repository could be safely sited at Yucca Mountain. In July 2002, Congress approved Yucca Mountain as a repository site and directed that DOE pursue the next phase of siting – preparation of a license application to be considered by the Nuclear Regulatory Commission (NRC). DOE submitted the license application in June 2008 and the NRC staff officially docketed the application proceeding in September 2008.

Thus, today – in 2010, 28 years after Congress first acted to address the nation's problem of accumulated spent nuclear fuel and high-level waste, there is only one legal process in place for developing a geologic repository - the process provided by the current NWPA. This process has taken us to the point of a license application pending before the NRC – poised for a decision on the technical merits of the application.

The efforts of this Commission must not disregard the very process Congress put in place to move the nation closer to addressing the problem of accumulated spent nuclear fuel and high-level waste, the very process put in place to move away from the policy debate and move forward with a decision-making process based on the technical merits of a proposed repository.

A. Washington State's Role in the Development of Nuclear Weapons – And in Responsibly Responding to the Resulting Wastes

Washington is home to DOE's Hanford Nuclear Reservation (Hanford), which occupies 586 square miles in south-central Washington. Between 1944 and 1989, the United States produced plutonium at Hanford for use in nuclear weapons. Plutonium production and other activities at Hanford created enormous amounts of radioactive and mixed radioactive and hazardous wastes. Much of this waste remains at Hanford today, still awaiting cleanup and proper disposal.

The environmental legacy at the Hanford site includes approximately 2,300 tons (2,100 metric tons) of spent nuclear fuel; 9 tons (8 metric tons) of plutonium in various forms; about 25 million cubic feet (750,000 cubic meters) of buried or stored solid waste; groundwater contaminated above drinking water standards, spread out over about 80 square miles (208 square kilometers); more than 1,700 waste sites; about 500 contaminated facilities; and more than 53 million gallons of radioactive and chemically hazardous waste in 177 underground storage tanks.

The approximately 53 million gallons of waste stored in these underground tanks was generated from the reprocessing of spent nuclear fuel for plutonium production. This volume represents nearly two-thirds of the nation's total volume of defense-related high-level radioactive waste. The waste has been called a "witch's brew" containing at least 46 identified radionuclides and at least 26 hazardous waste (chemical) constituents. Within the tanks, the waste takes on various liquid, slurry, sludge, saltcake, and vapor forms.

Of the 177 underground tanks that hold this waste, 149 are "single-shell tanks" (SSTs) that do not comply with applicable hazardous waste tank standards. The SSTs were built

between 1944 and 1964 and the average tank is now 42 years past its expected 25-year design life. All 149 SSTs have been declared "unfit for use" by DOE under Washington's Hazardous Waste Management Act (HWMA) and the federal Resource Conservation and Recovery Act (RCRA). Of these 149 tanks 67, or more than one-third, are "known or suspected leakers" that have together released approximately 1 million gallons of waste to Hanford's surrounding soils. Once released, tank waste constituents will persist in the environment for thousands of years to come. Some of this released waste has now reached groundwater in the central portion of the Hanford Reservation. This groundwater eventually flows into the Columbia River, which is vital to the environment and economy of the Pacific Northwest. The combination of tank waste already released and tank waste that may be released in the future poses a serious threat of irreversible environmental harm within Washington, and beyond.

Further leakage from Hanford's tanks is certain unless the waste is timely retrieved from the tanks. To date, DOE's strategy for addressing this situation has been to rely on the prospective treatment capacity of a future Waste Treatment Plant (WTP) to process tank waste. Once operational, the WTP will separate tank waste into low-activity and high-level waste fractions, both of which will be vitrified into glass logs – transforming the current waste forms into a more stable and safer form so that it is ready for long-term disposal. Once vitrified into logs or canisters, this waste is not amenable to any further reprocessing. There will be two types of vitrified logs produced by the WTP: high level radioactive waste logs and low activity waste logs. The high level waste logs will account for about 10% by volume of the WTP output, compared to the low activity waste logs accounting for about 90% of the volume of the WTP output.

The WTP, in turn, is intimately tied to the expectation of a facility that will receive high level waste and spent nuclear fuel for final disposal. From its very inception, the WTP has been developed in consideration of the process established by the NWPA. Development of the WTP is based on the premise that the high level waste logs produced by the WTP would be finally

disposed of at a deep geologic repository in order to permanently isolate the waste from humans and the environment to the greatest extent practicable.

Based on the process established by the NWPA for development of a repository for high level waste, WTP construction and design has moved forward. The WTP was designed and is being constructed to satisfy performance standards specific to the Yucca Mountain facility. Through a series of references, DOE's contract for design, engineering, and construction of the WTP requires that the facility be designed and built to produce a product that satisfies waste acceptance standards specific to the Yucca Mountain repository. These include matters such as canister size, weight, and configuration; radionuclide content; and thermal output limits.

The WTP is a $12.3 billion facility. The complex as a whole is currently 52 percent complete, with design and engineering at 78 percent complete and construction at 48 percent complete. At this stage, the ability to alter design and construction of the complex is significantly foreclosed. The systems and components of the Pretreatment Facility, High-Level Waste Facility, and Analytical Laboratory are sufficiently complete to support the processing of high level waste to meet disposal requirements specific to the Yucca Mountain facility. If the Yucca Mountain repository is terminated, significant regulatory, administrative, and technical issues will have to be revisited at Hanford. In the worst case, this could result in a construction tear-down and rebuild of the WTP to accommodate design and engineering changes necessary to meet another repository's waste acceptance criteria, with significant impacts to cost, scope, and a legally-binding compliance schedule overseen by Washington State.

This would create a ripple effect throughout Hanford's entire tank waste cleanup mission. Based on DOE's current approach, a delay in the WTP will cause a delay in SST retrievals. This, in turn, will exacerbate the already dire risks associated with Hanford's stored tank waste. Even if the WTP is not delayed, any vitrified high-level waste produced to satisfy Yucca Mountain specific standards could potentially become stranded at Hanford if it is not suitable for

a different geologic repository. At a minimum, DOE's plan for interim storing high-level waste canisters will have to be significantly revised.

Besides the high-level tank waste, there are other waste streams in Washington presumptively slated for disposal at Yucca Mountain. These include more than 2,000 metric tons of spent nuclear fuel associated with defense production, 1,335 capsules of cesium, 601 capsules of strontium, and approximately 581 metric tons of commercial spent nuclear fuel. Termination (or significant delay) of the Yucca Mountain project would affect the disposition of all these waste forms. A deep geologic repository is vital to the safe, long-term storage of this vitrified high-level waste, cesium and strontium capsules, and spent nuclear fuel.

B. Yucca Mountain Must Remain an Option for Final Disposal of the Nation's High-Level Radioactive Waste

These are the reasons for Washington's strong interest in both the work of this Blue Ribbon Commission and in DOE's recent efforts to withdraw its licensing application for the Yucca Mountain facility and terminate all Yucca Mountain-related activities. In short, Washington has done its part to support this country's nuclear weapon production activities and has paid and will continue to pay a price in doing so. In addition to the waste streams identified earlier as destined for Yucca Mountain, many other Hanford waste streams will ultimately remain at Hanford. For example, 90% by volume of the tank waste to be vitrified by the Waste Treatment Plant (the low-activity waste) will be finally disposed of at Hanford. Only 10% by volume of the tank waste is slated to go to Yucca Mountain.

Ultimately, the timely success of Washington State's cleanup activities, aimed at preventing further harm to our environment and preventing additional risks to our citizens, depends on the timely availability of a repository for high-level radioactive waste. Study by this Blue Ribbon Commission and actions by DOE should not undermine this goal. To ensure the timely availability of a repository for high-level radioactive waste, the Blue Ribbon Commission must include the Yucca Mountain facility as one of the alternatives it examines. Likewise, DOE

must not abandon its application to license the Yucca Mountain facility, so that it remains an option for the national repository for high-level radioactive waste.

Why is it important that the Yucca Mountain facility should be considered by this Commission and why must DOE keep it on the table? There are two obvious reasons – one is factual and one is legal. First, as to the facts - for the last two decades, there has been only one prospective geologic repository in the works - Yucca Mountain - and there are no alternatives presently identified. Recognizing the need for a repository and after reviewing several site options, Congress in 1987 tentatively identified Yucca Mountain as the site for a national repository for high-level radioactive waste. After fifteen years of further study and investments of "billions of dollars and millions of hours of research," DOE officially recommended a repository at Yucca Mountain, referring to the site as "far and away the most thoroughly researched site of its kind in the world." When he formally recommended to the President in 2002 that a geologic repository could be safely sited at Yucca Mountain, the Secretary of Energy concluded that:

> [T]he amount and quality of research the [DOE] has invested into [determining Yucca Mountain's suitability as a repository] – done by top flight people . . . – is nothing short of staggering. After careful evaluation, I am convinced that the product of over 20 years, millions of hours, and four billion dollars of this research provides a sound scientific basis for concluding that the site can perform safely during both the pre- and post-closure periods, and that it is indeed scientifically and technically suitable for development as a repository.

If this Commission does not include the Yucca Mountain facility in its evaluation of possible repositories for high-level radioactive waste, the Commission will be ignoring and wasting the twenty-plus years of study. Likewise, DOE's wholesale abandonment of the Yucca Mountain facility at this juncture guarantees a de facto delay – likely decades-long in duration – in constructing a national repository for high-level radioactive waste. Decades of delay means decades more delay in achieving cleanup of our environment, all the while exposing the citizens of Washington State and our environment to the risk of further leaks and releases.

Second, to the legal reason why the Yucca Mountain facility should be kept on the table: as the Atomic Safety Licensing Board ruled on June 29, 2010, only Congress has the authority to take Yucca off the table. This legal conclusion is based on the NWPA enacted by Congress in 1982 to establish a process for addressing the nation's problem of accumulated spent nuclear fuel and high-level waste. When the law was enacted, Congress recognized that decades had already been wasted on ineffective efforts to address this problem and prescribed a detailed process for identifying a site where high-level waste and spent nuclear fuel could be safely and permanently housed.

Following the process laid out in the NWPA, DOE began searching for suitable repository sites in 1983. In 1986, DOE, using an "accepted, formal scientific method," ranked the appropriateness of the various sites it had investigated. Yucca Mountain was the highest-ranked site. Congress then amended the NWPA to focus DOE's study exclusively on the Yucca Mountain site. After fifteen years of additional study, DOE formally recommended to the President that a geologic repository could be safely sited at Yucca Mountain. In July 2002, Congress approved Yucca Mountain as a repository site and directed that DOE pursue the next phase of siting – preparation of a license application to be considered by the NRC.

Thus, at this juncture, factually there is only one prospective geologic repository approved by Congress - Yucca Mountain - and there are no alternatives in the fold. And, at this juncture, there is only one legal process in place for developing a geologic repository - that provided by the current NWPA. And, under the NWPA, there is only one entity that may take Yucca Mountain off the table – and that is Congress.

The convening of a Blue Ribbon Commission to examine alternatives to Yucca Mountain and recommend possible amendments to the NWPA cannot substitute for a process already provided by law.

C. DOE Has Not Based Its Rationale for Terminating the Only Repository Approved Under the NWPA on Scientific, Engineering, or Environmental Information

It is important that the Commission know that DOE has failed to articulate any explanation for terminating the only repository approved under the NWPA that rationally ties its decision to any specific facts. DOE has explained its view by saying that Yucca Mountain is not a "workable option" and that the nation needs a "different solution." These explanations pale in relation to the lengthy and detailed process under the NWPA that led to Yucca Mountain's Congressional approval. This makes it all the more striking that without any explanation, DOE has rejected obvious and less extreme alternatives to irrevocably terminating the Yucca Mountain project; such as calling for the study of other options while keeping the Yucca Mountain facility on the table, and moving the licensing proceeding to its conclusion.

DOE's decision to irrevocably terminate the Yucca Mountain project reverses decades of work, billions of dollars of investment, and settled expectations across the country. Despite these facts, and despite the fact that DOE has no identifiable alternative at hand, DOE's actions are intended to purposefully foreclose any future consideration of Yucca Mountain as a geologic repository.

D. Washington is not Contending that Final Siting of Yucca Mountain is Compelled By the NWPA; Nor is Washington Contending that the Project Could Not be Discontinued Based on Engineering, Science, or Environmental Grounds

Washington does not contend that the Yucca Mountain repository is itself compelled to open under the NWPA. That judgment is properly left to the licensing process currently before the NRC. Washington does contend, however, that unless and until it is amended, the NWPA mandates a licensing process that both DOE and NRC must follow.

Likewise, Washington has never expected that approval of DOE's application is "predetermined." Indeed, Washington is comfortable that the ultimate determination of *whether* construction of the Yucca Mountain repository should be authorized would be decided on the merits of DOE's application – based on science, engineering and environmental information.

While Washington would welcome Yucca Mountain's authorization if appropriate, after a full review in the licensing proceeding, Washington would no more support an inappropriate repository at Yucca Mountain than an inappropriate repository in its own state.

II. CONCLUSION

Washington Urges the Commission to Recognize the 30 Year Process Under the NWPA to Address Disposition of the Nation's High Level Waste and Spent Nuclear Fuel; Washington Urges DOE to Not Abandon the NRC Licensing Proceeding for the Yucca Mountain Facility

On behalf of the Citizens of the state of Washington, I urge the Commission to recognize the prescriptive scheme established by Congress to address disposition of the nation's high level waste and spent nuclear fuel. I urge the Commission to recognize the 30 year process already implemented pursuant to the NWPA. I urge the Commission to consider the Yucca Mountain facility as among the alternatives for a national repository for high-level waste. It is critical to our citizens that the only alternative thus far identified – the one that has been the subject of millions of pages of study and decades of review and the one that has moved forward under the governing law – remains on the table in order to avoid the otherwise certain delay in cleanup of our nation's nuclear waste.

I also urge DOE to honor the spirit and letter of the June 29, 2010, ruling by the ASLB by not abandoning the NRC licensing proceeding. Until the licensing proceeding produces a decision on the merits of the pending application or until Congress amends the NWPA to provide otherwise, it is critical that DOE's actions not cause unnecessary delay.

Thank you Commissioners for giving of your time and expertise to serve on the Blue Ribbon Commission. Thank you for visiting Washington and seeing first hand why your work is so important to us.