

D R A F T

**REPORT AND RECOMMENDATIONS
OF THE
NEVADA COMMISSION ON
NUCLEAR PROJECTS**



*Presented to
The Governor and Legislature
Of the State of Nevada*

December 2014

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PREFACE

The August 2013 ruling by the U.S. Court of Appeals for the District of Columbia Circuit ordering the U.S. Nuclear Regulatory Commission (NRC) to restart the licensing proceeding for the discontinued Yucca Mountain repository project represents a giant step backwards in the country's efforts to finally solve the problem of spent nuclear fuel and high-level radioactive waste. In the words of Chief Judge Garland's blistering dissent, the Court ordered NRC to do a "useless thing" by forcing it to restart licensing for the defective Yucca Mountain project even though all three judges agreed NRC had insufficient funds to complete the legally mandated proceeding. Besides, Judge Garland warned, the unprecedented number of valid technical and scientific challenges admitted in the licensing proceeding (including 219 brought by the State of Nevada) "could not all reasonably be expected to be resolved in favor of the proposed repository," acknowledging the very real possibility that Yucca Mountain cannot be licensed, even if the proceeding could be completed.

And therein lies the dilemma for Nevada. The Court's decision means that the Yucca Mountain licensing proceeding will go forward, and Nevada is being forced to expend resources to protect our state's vital interests. Depending on how far NRC can stretch its remaining Yucca Mountain licensing funds and whether or not Yucca Mountain supporters in Congress manage to appropriate additional funds for the proceeding (something Congress has not done for four consecutive fiscal years), Nevada will need to allocate considerable state monies to this "useless" licensing effort. But the state can ill afford to sit this one out. Regardless of how constricted or expansive the proceeding is and how much (or how little) money NRC has to go forward with it, the State of Nevada must be prepared to aggressively prosecute the strong and compelling case against Yucca Mountain.

Nevada certainly cannot rely on the NRC or the NRC's staff to impartially and objectively evaluate DOE's license application and its wildly optimistic conclusions regarding the site's suitability and safety. As the report which follows makes clear, NRC staff over the years have consistently acted as if they were "part of an Administration team rather than an independent [regulatory] agency."

It is imperative for the Governor and Legislature to assure that the Attorney General and the Agency for Nuclear Projects have the funds and resources needed to protect the State in this critically important licensing proceeding. No one else is going to look out for Nevada's interests if we fail to do it ourselves.

Richard H. Bryan, Chairman
Nevada Commission on Nuclear Projects
December 2014

LIST OF ACRONYMS/ABBREVIATIONS

AG – Attorney General

BRC – Blue Ribbon Commission on America’s Nuclear Future

CAB – NRC’s Construction Authorization Board responsible for the Yucca Mountain licensing hearings

CADC – US Court of Appeals for the District of Columbia Circuit

DOE – U.S. Department of Energy

EIS – Environmental Impact Statement

EPA – U.S. Environmental Protection Agency

FEIS – Final Yucca Mountain Environmental Impact Statement

HLW – High-Level Radioactive Waste

IFC – Interim Finance Committee

IG – Inspector General

KTI – Key Technical Issue

LA – DOE’s Yucca Mountain License Application pending before the Nuclear Regulatory Commission

LSN – Licensing Support Network

NAS – National Academy of Sciences

NRC – U.S. Nuclear Regulatory Commission

NWAA – Nuclear Waste Administration Act – the new legislation currently in Congress (S.1240)

NWPA – Nuclear Waste Policy Act of 1982 – the original legislation that governed the federal high-level radioactive waste program from January 1983 to December 1986

NWPAA – 1987 Nuclear Waste Policy Amendments Act amended the NWPA and singled out Yucca Mountain as the only site to be studied as a potential repository site

OCRWM – Office of Civilian Radioactive Waste Management

QA – Quality Assurance

SEIS – Supplemental Environmental Impact Statement

SER – Safety Evaluation Report

SNF – Spent Nuclear Fuel

TSPA – Total System Performance Assessment

CHAPTER 1 – YUCCA MOUNTAIN: THE SAGA CONTINUES

To paraphrase Mark Twain’s famous quote, “The reports of [Yucca Mountain’s] death have been greatly exaggerated,” at least for now.

The U.S. Department of Energy (DOE) announced in 2010 that it was terminating the Yucca Mountain repository program and withdrawing the license application pending before the U.S. Nuclear Regulatory Commission (NRC). Subsequent events have kept the moribund project on life support, while forcing the federal agency with regulatory authority over the project (NRC) to restart the formerly suspended licensing proceeding and requiring the State of Nevada to ramp up and intensify its licensing intervention efforts.

Court-Ordered Restart of the Yucca Mountain Licensing Proceeding

In 2010, acknowledging that the Yucca Mountain project had become “unworkable,” DOE moved to withdraw its application for a license to construct a repository at the site. NRC’s licensing board denied that motion, ruling that, under current law (the Nuclear Waste Policy Act of 1982, as amended), DOE does not have the authority to withdraw the application. Nevertheless, the NRC licensing board suspended the proceeding on September 30, 2011 (the last day of the federal fiscal year) due to Congress’ refusal over consecutive fiscal years to appropriate new funds for completing the licensing process and the fact that the President’s Fiscal Year 2012 budget request contained no full-time federal employee positions for Yucca Mountain activities.

In 2011, the States of South Carolina and Washington, one South Carolina County (Aiken County), the National Association of Regulatory Utility Commissioners, several individuals from Washington State, and eventually Nye County, Nevada (which joined the others in this litigation in direct opposition to the position of the State of Nevada) filed suit in the U.S. Court of Appeals for the District of Columbia Circuit (CADC) asking for a writ of mandamus requiring NRC to restart the then-suspended Yucca Mountain licensing proceeding using what little carry-over funds remained available to NRC for Yucca Mountain licensing activities.

On August 13, 2013, the CADC issued a decision in the Aiken case, ordering NRC to restart the Yucca Mountain licensing proceeding using the available carry-over, appropriated funds, even though the court acknowledged that those funds were insufficient to complete the proceeding. The ruling was a split decision, with two members of the three-judge panel voting

to grant mandamus and one judge (Chief Judge Garland), in a strongly-worded and compelling dissent, opining that NRC was being ordered to do a “useless thing” by forcing it to restart a proceeding everyone agreed could not be finished without new congressional appropriations.¹

Following the court’s ruling, NRC reported that it had slightly over \$13 million in funds remaining from prior appropriations that could be used for a restarted licensing proceeding.² On November 18, 2013, NRC ordered the licensing proceeding restarted and directed its staff to complete work on the Safety Evaluation Report (SER) that contains the staff’s review of the DOE license application and its compliance with NRC licensing regulations. NRC also requested that DOE prepare a Supplemental Environmental Impact Statement (SEIS) to address the impacts of the proposed repository on groundwater.³ DOE subsequently advised NRC that it would not prepare the requested SEIS and, instead, promised to provide NRC with an updated report on groundwater issues. The NRC will now be required to complete the SEIS on its own. NRC’s most recent monthly status report containing the budget for various licensing tasks, including preparation of the SER and SEIS, is included as Attachment I to this report. NRC’s “Backgrounder on Licensing Yucca Mountain” describing NRC’s overall approach to implementing the Court-ordered licensing restart is included as Attachment II.

Status of the Recommendations of the Blue Ribbon Commission on America’s Nuclear Future

At the same time that DOE announced it was terminating the Yucca Mountain program and moving to withdraw its license application before the NRC, the President appointed a Blue Ribbon Commission on America’s Nuclear Future (BRC) to recommend new and more workable approaches for resolving the spent nuclear fuel and high-level radioactive waste problem. The final BRC report, which was issued in January 2012, recommended immediate efforts to commence development of at least one geologic disposal facility and at least one consolidated storage facility, as well as efforts to prepare for the eventual large-scale transport of spent nuclear fuel and high-level waste from current storage sites to those facilities. The centerpiece of the BRC’s work is the recommendation that *any future nuclear waste facility siting effort must be “consent-based” and have the voluntary participation of the prospective host states*

¹ The full text of the Court’s decision, including Judge Garland’s dissent, is available on-line at: <http://www.state.nv.us/nucwaste/licensing/cadc130813opinion.pdf>.

² Prior to the suspension of the proceeding in 2010, NRC had estimated that the total costs of a full-scale licensing proceeding would be in excess of \$100 million.

³ Before the licensing proceeding was suspended in 2010, NRC staff had determined that the groundwater analysis contained in the EIS DOE prepared as part of its license application did not adequately address certain groundwater impacts resulting from repository activities. NRC decided that a supplemental environmental analysis would be required. However, the proceeding was suspended before such analysis could be undertaken.

and communities. The BRC also recommended removing the high-level nuclear waste program from DOE and creating a new federally-chartered corporation to manage the program.

In August 2012, the Nuclear Waste Administration Act of 2012 (S. 3469) was introduced by the retiring U.S. Senator from New Mexico, Jeff Bingaman, with the goal of starting a discussion on the BRC report. Referred to the Senate Committee on Energy and Natural Resources, that bill died in committee. However, on April 25, 2013, the Committee issued a “discussion draft” of proposed legislation “intended to implement the recommendations” of the BRC. Over the next month, the Committee received more than 2,500 public comments on the discussion draft, and the resulting Nuclear Waste Administration Act (NWAA) of 2013, S.1240, was introduced in the U.S. Senate in June 2013.

S. 1240 represented the collaborative work of the Committee’s Chairman (Wyden, D-OR) and Ranking Member (Murkowski, R-AK) and the Chairman (Feinstein, D-CA) and Ranking Member (Alexander, R-TN) of the Senate Appropriations Subcommittee on Energy and Water Development. The provisions generally follow those of S.3469 and the “discussion draft.” At the heart of S.1240 is consent-based site selection for all new nuclear waste storage and disposal facilities. The proposed consent-based siting process would not, however, apply to Yucca Mountain. S.1240 would remove the federal high-level radioactive waste program from DOE and establish a new independent government agency to manage the program. The bill needs to be amended to extend the requirement for a written consent agreement to include Yucca Mountain and to better address transportation safety and security. As of the date of this report, the bill has still not been acted on by Congress.

Status of DOE’s Yucca Mountain Activities

While NRC was required by the CADC’s August 2013 *Aiken* decision to restart its suspended Yucca Mountain licensing proceeding, DOE remains committed to its decision to terminate the Yucca Mountain program as unworkable and move ahead with seeking to implement the BRC recommendations. The Yucca Mountain site and exploratory tunnel remain closed and shuttered, with support facilities likewise closed or dismantled. DOE’s Office of Civilian Radioactive Waste Management has no budgeted staff positions, with duties related to spent fuel and high-level waste management disbursed within DOE’s Office of Nuclear Energy. In January 2013, DOE issued a strategy for implementation of the BRC recommendations, identifying implementing tasks for DOE to pursue under existing legislative authority. In February 2014, DOE declined an NRC staff request to prepare a SEIS on groundwater issues that

had been identified by NRC as inadequately covered in DOE's original Yucca Mountain EIS. As a result, NRC will be forced to undertake the SEIS itself.

Whether NRC will have sufficient remaining resources to resume the adjudicatory hearings component of the licensing proceeding once the SER and SEIS have been completed is uncertain as is how DOE would approach going forward with its Yucca Mountain license application. In October 2014, DOE reported to Congress that it had approximately \$20 million in unobligated funds from the Nuclear Waste Fund and defense nuclear waste disposal account, plus approximately \$21.7 in obligated funds (that would have to be reprogrammed from other work), available from prior year Yucca Mountain appropriations (i.e., funds appropriated in past fiscal years but not expended) that could conceivably be used to further the application in the NRC hearings.⁴ How aggressively DOE approaches any restarted adjudicatory hearings will reveal a great deal about DOE's commitment to abandon Yucca Mountain and pursue new and more promising approaches as those advocated by the BRC.

Nevada's Response to Date

In response to NRC's restarted licensing proceeding and in preparation for addressing the forthcoming SER and SEIS and a likely resumption of the adjudicatory hearings, the Agency for Nuclear Projects and the Office of the Attorney General (AG) undertook a thorough reexamination of available funding and resources in relation to what would be required to participate effectively in the proceeding in order to successfully prosecute the 219 (and possible more) contentions/challenges to DOE's Yucca Mountain license application, and to adequately protect Nevada's interest in NRC's renewed licensing process. In June 2014, the Agency and the AG's Office jointly petitioned the State Board of Examiners to approve \$1,376,152 (\$610,752 for the Agency and \$765,400 for the AG's Office) in additional state funds for NRC licensing activities during FY 2015 (through June 30, 2015). Following the Board's approval, the joint request was submitted to the Legislature's Interim Finance Committee (IFC) asking for an allocation from the Contingency Fund in the same amount. On August 27, 2014, the IFC approved the request. Additional funds for increased licensing activities are also being included in the Agency's and AG's FY 2016 – FY 2017 biennial budget submissions.

The additional funds will allow the Agency and AG to ramp up legal/licensing activities in response to NRC's resumption of work on the SER and SEIS. As of November 2014, the State's licensing attorneys and technical experts have been re-engaged to closely review the complex

⁴ In 2008, DOE estimated that it would need \$1.66 billion (2007\$) to complete all activities associated with the licensing process through 2017, on top of the \$670 million spent on licensing between 2003 and 2006. DOE Total System Life-Cycle Cost Report, 2008, pages 8,17-18.

and detailed SER volumes in relation to Nevada’s technical challenges, prepare additional contentions and critique SER findings and conclusions. They will also closely review the SEIS on groundwater impacts to determine its adequacy and identify any information suggestive of new challenges or relevant to existing contentions. In the likely event that NRC resumes the adjudicatory hearings once the SER and SEIS have been completed, the licensing attorneys will assist staff in mapping out and implementing intervention strategies, preparing for and taking depositions of DOE’s experts as appropriate, and otherwise aggressively pursuing Nevada’s case in the proceeding. The state’s technical experts will update information and research pertinent to the 219 (or more) Nevada contentions and prepare for their roles as expert witnesses for Nevada’s challenge to the license application.

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CHAPTER 2 – STACKING THE DECK: LICENSING AND THE ROLE OF NRC'S STAFF

The release by NRC of Volume 3 of the Safety Evaluation Report (SER) for DOE's Yucca Mountain license application (LA) is being heralded by Yucca Mountain supporters in Congress, the nuclear industry, and elsewhere as NRC's definitive judgment regarding the safety and viability of a Yucca Mountain repository facility. **It is no such thing.** Instead, the SER represents only the views and opinions of NRC staff who, as documented below, have spent their careers working hand-in-hand with DOE over more than three decades in the development of the license application and the data, modeling, and analyses that went into it.

To put the SER Volume 3 into perspective, it is important to understand: (1) the structure of the NRC licensing process and NRC staff's role in that process; and (2) the history of NRC, NRC staff and DOE interactions and relationships over the time period during which DOE was characterizing the Yucca Mountain site and developing what ultimately became the LA that was submitted to NRC in 2008.

The Role of NRC's Staff

The role of NRC's staff in NRC's process for licensing nuclear facilities is curious, to say the least. Once an applicant has submitted a formal application (be it for a nuclear power plant, a uranium enrichment facility, a repository, or another nuclear facility), that application is referred to professional staff employed by NRC. It becomes NRC staff's responsibility to review the application for procedural adequacy and to then docket the application – meaning that it then becomes the subject of a formal NRC adjudicatory proceeding to determine if a license to construct the facility should be granted. Once docketed, the same staff is then charged with preparing a Safety Evaluation Report assessing the application in relation to NRC regulations for licensing such a facility. Upon completion of the SER, which is invariably favorable to the applicant, NRC staff does not assume the role of impartial third party to the adjudicatory proceeding. Instead, NRC staff serves as an advocate for the license application that NRC staff members have reviewed and passed judgment on in the SER. In effect, NRC staff joins with the applicant in defending the LA and opposing contentions and challenges brought by intervening parties. This type of process – and the role of federal agency staff – is unique to NRC and confounding to interveners seeking to oppose or otherwise influence NRC's licensing decisions.

With regard to the proposed Yucca Mountain high-level nuclear waste facility and the decades-long effort by DOE to compile information and prepare a formal license application for submittal to NRC (as provided for in the Nuclear Waste Policy Act of 1982, as amended), the

roles of NRC staff and the project applicant, i.e., DOE, are even more blurred. As early as 1987, with the passage of the Nuclear Waste Policy Amendments Act that singled out Yucca Mountain as the only site to be characterized as a potential repository location, NRC staff has been working closely with DOE management and technical experts with the goal of assisting DOE to develop an “acceptable” license application (i.e., one that could be successfully submitted to NRC, docketed, and adjudicated). In doing so, NRC staff became so closely involved with DOE’s Yucca Mountain project and the intricacies of the work that went into developing the LA that the final LA can – and should – be viewed as a largely collaborative effort on the part of NRC staff and DOE. For NRC staff to then be tasked with reviewing the Yucca Mountain LA and preparing the SER to determine if the application conforms to NRC regulations and requirements is to ask the same staff to pass judgment on its own work and findings that are inextricably contained in the LA.

History of Inappropriate NRC-DOE Interactions and Relationships

The State of Nevada has long been aware of and concerned about inappropriate DOE/NRC activities and interactions. Over the years, a trail of correspondence between the Nevada Agency for Nuclear Projects, the Nevada Attorney General, the state’s congressional delegation, and NRC and DOE reflects an escalating level of concern on the part of the State and a consistent pattern of denial and avoidance on the part of both federal agencies.

After passage of the 1987 amendments to the Nuclear Waste Policy Act of 1982 (the so-called “Screw Nevada Bill”), both DOE’s and NRC’s approach to the federal repository program changed dramatically. Prior to 1987, DOE approached the effort as one to determine which three of nine possible sites were suitable for further study. After 1987, the focus became one of how to make Yucca Mountain work (i.e., appear safe and suitable), despite all of the serious problems and fundamental flaws DOE knew existed at the site.

On NRC’s part, the change was slightly more subtle, but no less dramatic in its effect. Prior to 1987, NRC staff viewed its role as overseeing DOE’s site investigation efforts to assure that adequate quality control processes and procedures were in place and that staff remained cognizant of what DOE was doing in assessing candidate repository sites against the various site selection criteria. After 1987, NRC staff began to view its role as that of a partner to DOE in the Yucca Mountain program and its function as one of assisting DOE to develop a “high quality” license application for a Yucca Mountain repository facility.

There are numerous instances of inappropriate NRC/DOE interactions and activities that have been documented over the years. A few examples are as follows:

- In October 2001, Nevada Senator Harry Reid wrote to NRC’s Inspector General regarding NRC staff’s inappropriate sharing of the NRC’s draft License Review Plan, the document that described the process NRC would follow to review a potential license application for Yucca Mountain. Senator Reid objected to the fact that, while sharing the plan with DOE and seeking DOE’s input, NRC staff refused to provide the document to the State of Nevada. Senator Reid pointed out that “by releasing this Licensing Review Plan [prematurely to DOE], NRC may have significantly diminished its impartiality” and urged the Inspector General to look into the matter. Governor Guinn also wrote to NRC Chairman Meserve on November 1, 2001 concerning the same issue.
- In the same month – November 2001, Governor Guinn again wrote to the NRC Chairman strongly objecting to the process by which NRC concurred in DOE’s new Yucca Mountain Siting Guidelines⁵ without any notice to the State or any opportunity for comment or input and questioning NRC’s “independence and objectivity.”
- In September 2002, Nevada Attorney General Frankie Sue Del Papa wrote to NRC Chairman Meserve registering a strong protest over “... a growing and apparently unlawful trend on the part of the Nuclear Regulatory Commission (NRC) to conduct private meetings with the Department of Energy (DOE) regarding the federal government’s activities at the proposed Yucca Mountain repository site, to the exclusion of the public in general and the State of Nevada in particular.” The letter went on to point out that, “... it has become obvious that DOE and NRC are meeting, conferring, and making arrangements or commitments with respect to their respective pre-licensing activities at the proposed Yucca Mountain site on a routine basis, with neither notice, nor the opportunity to attend being furnished, to the public in general or the State of Nevada However, now that site characterization is complete, and DOE is apparently proceeding full bore toward [DOE Secretary] Dr. Chu’s next announced milestone – the

⁵ The original Nuclear Waste Policy Act of 1982 required DOE to establish siting criteria containing specific qualifying and disqualifying conditions against which potential repository sites were to be evaluated. By the late 1990s, it became apparent that Yucca Mountain was in danger of being disqualified under those existing guidelines, primarily because the site could not meet the requirement for groundwater travel time. (The existence of interconnected fractures in the host rock provides rapid pathways for water to intersect the repository and reach the aquifer below.) As required by law, NRC “concurred” in the original siting criteria. When DOE scrapped the original siting guidelines and replaced them with a “black box”, generic performance assessment approach, NRC conducted its statutory “concurrence” activities in secret (but in close collaboration with DOE), and announced its “concurrence” as a final action, without allowing review or input by Nevada or the public. NRC then went on to scrap its own licensing regulations (which had also contained specific qualifying and disqualifying criteria) and adopted DOE’s performance assessment approach, making the new regulation applicable *only* to Yucca Mountain.

License Application – any further communications between the two agencies must be carefully scrutinized.”

- Also in 2002, Attorney General Frankie Sue Del Papa filed complaints with NRC alleging that NRC and DOE staff were jointly developing policy for Yucca Mountain licensing issues in closed sessions where State representatives were excluded. In response, NRC’s Inspector General (IG) issued a report that essentially whitewashed the matter, finding the meetings were “informal” interactions permitted under NRC regulations, even though the subject matter being discussed was germane to DOE’s forthcoming Yucca Mountain license application, which the same NRC staff members were charged with reviewing and approving for docketing. Then, in February 2003, newly elected Attorney General Brian Sandoval wrote a strongly worded letter to NRC Chairman Meserve objecting to the way the IG’s investigation was carried out and calling the report a “stained analysis” that “missed the point,” which was to ensure that NRC should “be totally objective and impartial” with regard to the Yucca Mountain project, “both in perception and reality.”
- Nevertheless, inappropriate meetings and interactions between DOE and NRC staff continued. In December 2003, Attorney General Sandoval wrote to NRC Chairman Nils Diaz to “object, in the strongest possible terms, to the [NRC] staff conducting secret meetings with [DOE] officials on key Yucca Mountain issues that are of great interest to the State of Nevada and its citizens.” Sandoval cited a series of secret meetings held in November and December 2003 where Nevada personnel were specifically excluded, pointing out that “I cannot conceive of any reason that these meetings should be closed. Furthermore, existing agreements between the two [federal] agencies regarding the conduct of meetings do not contemplate any closed meetings other than for [matters concerning classified materials or homeland security issues].”
- In August 2004, as DOE was preparing to submit its Yucca Mountain license application, Nevada raised strong objections to the way NRC staff members were allowing themselves to be “bullied” by DOE and DOE’s refusal to answer any NRC questions regarding Key Technical Issues (KTIs), despite DOE’s prior formal agreement to provide full resolution of all such KTIs prior to submitting a license application.⁶ In a letter to

⁶ In the years leading up to the Secretary of Energy’s recommendation of Yucca Mountain to the President for development as a repository, DOE agreed to provide complete information and “close” (i.e., resolve) a group of 293 Key Technical Issues (KTIs) Agreements made with NRC. The KTIs were to assure that DOE’s had sufficient information on these important technical issues

NRC Chairman Diaz, Agency for Nuclear Projects Executive Director Robert Loux wrote that, "It is clear that DOE believes it is in charge of the licensing process and that NRC has only a ministerial role." Loux went on to say that "Nevada is counting on NRC to provide a fair forum for examining the validity and acceptability of DOE's [license application] submission. That is not going to happen unless [NRC] commissioners protect NRC staff from bullying by DOE." Whether DOE bullying was successful or whether NRC staff willingly went along with what DOE wanted, the end result was that DOE refused to provide information on crucial KTIs, eventually submitted its license application anyway, and NRC staff went along and concurred in that process.

- Loux again wrote to NRC in February 2005 asking Chairman Diaz "to halt all secret, closed, and behind-the-scenes interactions between NRC and DOE officials." The letter was prompted by systemic DOE quality assurance problems that continued to plague the Yucca Mountain project. Loux noted that "the inappropriately close and secretive relationship between NRC and DOE has directly contributed to and exacerbated DOE's QA [quality assurance] problems by creating an atmosphere where DOE believes it needs to give only lip service to QA and safety issues ... and that NRC will do whatever is necessary, outside the light of public and stakeholder scrutiny, to help mask deficiencies during the licensing process."

As evidence of the inappropriate relationship between DOE and NRC, Loux cited a recent meeting in San Luis Obispo, California regarding the Diablo Canyon nuclear power plant where NRC representatives told citizens and government officials that there was no doubt Yucca Mountain would be licensed, built and operated. The local newspaper reported the comments under the headline, "Federal regulators optimistic about Yucca Mountain," quoting NRC representatives as saying they were "frustrated by the delays [in DOE's program], but gave assurances that the Department of Energy remains committed to opening the Yucca Mountain facility." The article went on to report that, "Regulators and nuclear industry officials say the science behind the Yucca Mountain project is sound."⁷

to allow NRC to attest to the "sufficiency" of DOE's site characterization information for a License Application for Yucca Mountain, as NRC was required to do by statute as a prerequisite for the Secretary of Energy to make a site recommendation to the President (as provided for under the Nuclear Waste Policy Act of 1982, as amended). DOE reneged on providing the information – in fact advised NRC that it would no longer honor the KTI agreements. In response, NRC acquiesced and provided the "sufficiency" assurance needed for the site recommendation anyway, even though numerous KTIs remained unresolved.

⁷ San Luis Obispo Tribune, December 16, 2005

- In August 2007, in comments on NRC’s FY 2007 – FY 2012 Strategic Plan, the Nevada Agency for Nuclear Projects pointed out the degree to which bias and prejudgment regarding Yucca Mountain had become institutionalized within NRC. The Agency pointed out that the plan appeared to assume that Yucca Mountain would be licensed:

“The Plan states on page 6 that, ‘[T]he NRC faces a major challenge as the Department of Energy prepares to submit an application to establish the Nation's first repository for high-level radioactive waste at Yucca Mountain, Nevada. The NRC's review of this application will require evaluation of a wide range of technical and scientific analyses and the resolution of various regulatory issues on an expedited schedule. Additionally, the Nation will continue to require that the continued safe management of interim storage capacity for spent nuclear fuel must be available ***even after the repository is licensed*** and ready to receive high-level radioactive waste’ (emphasis added).”

The Nevada comments voiced concern that the NRC Plan assumed a license would be awarded for DOE’s proposed Yucca Mountain high-level radioactive waste repository and reflected a pre-judgment on NRC’s part.

Despite Nevada’s repeated objections and expressions of concern about the inappropriate NRC – DOE relationships and the institutionalized bias that had become a dominant characteristic of the Yucca Mountain program, NRC’s responses were uniformly dismissive of Nevada’s concerns. The problem was even observed by one of NRC’s administrative judges on the Yucca Mountain licensing panel early in the proceeding (prior to its suspension).

In April 2009, as the original Yucca Mountain licensing proceeding was getting underway and briefings on the admissibility of Nevada’s 229 contentions challenging key technical findings and safety aspects of DOE’s license application were concluding, DOE predictably opposed admitting ***any*** of Nevada’s contentions, claiming they were all without merit. When NRC staff meekly joined DOE in opposing admission of virtually all of Nevada’s contentions, one of NRC’s own judges⁸ (Judge Rosenthal) assigned to the Yucca Mountain Construction

⁸ For the original Yucca Mountain licensing proceeding that began with the docketing of DOE’s license application in 2008, three panels of administrative judges (each panel consisting of three judges) were initially appointed to conduct hearings and adjudicate issues in what was expected to be the most complex and potentially most contentious licensing proceeding ever conducted by NRC.

Authorization Board (CAB) openly scolded NRC staff members and publically reminded them that they represent the regulator and are not promoters of the project:

“As the parties to the proceeding are likely aware, I became a member of this Board very recently. Upon joining it, I discovered to my amazement that the Department of Energy was taking the position that not a single one of the 229 separate contentions filed by the State of Nevada was admissible.

In addition, to my further amazement, I learned that the Nuclear Regulatory Commission staff had told the Board that, in its view, only a very small number of those 229 contentions met the standards for admission contained in the Commission’s rules of practice, more particularly, Section 2.309(f)(1).

That amazement stemmed from the fact that, on the face of it, it seemed most unlikely that experienced Nevada counsel, which included a former general counsel of this agency [i.e., NRC] were unable to come up with even one acceptable contention relating to this extraordinary and unique proposed facility. ...

If, upon full consideration, we conclude that a significant number of the Nevada contentions are clearly admissible, with the consequence that the objection to their admission was wholly insubstantial, for me at least, both DOE and the NRC staff will have lost credibility. ...

Insofar as concerns the NRC staff, unlike DOE, it is the regulator, not the promoter of the proposal. That being the case, it would be even more unseemly for it [the staff] to interpose to the admission of contentions, objections that are plainly without substance.

Indeed, in such circumstances, the staff would, to its detriment, create the impression that it is not a disinterested participant in the licensing proceeding but rather a spear carrier for DOE. Once that impression has been garnered, there would remain little reason to credit anything the staff might have to offer.”

Several months later, Judge Rosenthal’s admonition appeared prophetic as the CAB ruled that, despite DOE’s and NRC staff’s objections, 219 of Nevada 229 contentions were indeed eligible for admission and would be adjudicated in the course of the licensing proceeding.

Greasing the Skids for the Yucca Mountain Suitability Determination

NRC staff's overly close and collusive relationship with DOE on Yucca Mountain was manifest in the controversial process involving the establishment of radiation health protection standards for a Yucca Mountain repository. In a 1995 Congressionally-mandated study⁹, the National Academy of Sciences (NAS) recommended that a repository at Yucca Mountain not be licensed unless releases of radioactive materials from the repository to the environment complied with a special kind of annual radiation risk standard. Compliance would be determined using a total systems performance assessment (TSPA) that calculated future annual risks from releases from the repository (NAS Report "Technical Basis for Yucca Mountain Standards," 1995, ML032400080, at pg. 4).

The high-level radioactive wastes to be disposed in Yucca Mountain would be potentially hazardous for many hundreds of thousands of years. Therefore, NAS recognized that selecting the appropriate time period for the performance assessment and the application of the standard is important for the protection of future generations. NAS found that, while limiting the compliance period to the first 10,000 years would make the technical job of assessing whether or not the site was in compliance "rather easy," such a limit had no scientific basis and would ignore the greatest risk to humans that would occur many years later. NAS recommended that the compliance calculation to determine if Yucca Mountain is a suitable site be done for the time when the greatest risk occurs within the limits of geologic stability, estimated to be well beyond 10,000 years (NAS Report at pp. 2, 6, 7, 30, 55). The recommendations made by the NAS were mandated to be binding on the U.S. Environmental Protection Agency (EPA), NRC and DOE, in accordance with the Energy Policy Act of 1992.

By 1998, DOE's own studies of Yucca Mountain indicated that the probable peak dose after 10,000 years would be very large (300 millirem) – well in excess of any reasonable radiation risk standard (DOE's "Total Systems Performance Assessment – Viability Assessment," 1998, at pg. 11-38, ML003758366). Thus, just as NAS had predicted only a few years earlier, peak doses after 10,000 years entered forbidden territory in terms of site suitability.

EPA at the time was still in the process of developing a radiation health standard for Yucca Mountain that would respond to the NAS recommendations, so DOE embarked on an

⁹ The Energy Policy Act of 1992 contained a provision requiring radiation health protection criteria for Yucca Mountain to be based on and consistent with the findings of a study to be conducted by the National Academy of Sciences to assure that risks of radiation exposure from a Yucca Mountain repository would be at acceptable levels. The Act further required NRC to adopt the EPA criteria in its Yucca Mountain licensing regulations, thereby requiring both EPA's and NRC's regulations to be in line with the finding of the NAS study.

intensive lobbying effort to persuade EPA to limit the compliance period to 10,000 years, directly contrary to what NAS had recommended in its study. If EPA did so, NRC would routinely follow EPA's lead when it promulgated its own regulations for licensing a Yucca Mountain repository.

NRC not only declined to object to what DOE was doing, but NRC staff joined DOE in persuading top administration officials at the White House to require EPA to accede to DOE's manifestly unlawful and unsafe proposal. In a July 1998 meeting at the White House, NRC staff abandoned its role as an independent safety regulator and argued that DOE's 10,000-year limit be adopted, explaining that "although it is scientifically possible to evaluate performance hundreds of thousands of years in the future as NAS suggests, NRC does not *consider it prudent* to base regulatory decisions on such analyses, particularly in its adjudicatory licensing process" (Minutes of the July 1998 meeting - ML003753689 and ML031671192) (emphasis added). In other words, because it would be difficult if not impossible to prove compliance after 10,000 years in a licensing hearing where DOE and NRC staff experts could be challenged, the standard had to be tailored so that, as NRC staff knew from the NAS Report and DOE's Yucca Mountain studies, proving compliance in a licensing hearing would be possible. Otherwise, Yucca Mountain could not be licensed.

NRC staff expressed a similar sentiment privately to DOE. As a DOE licensing expert explained, "The NRC by and large wants to see the repository licensed, BUT at the highest levels of NRC management there is a deep-seated fear that the science of it is all too diverse and complicated to present [to] a licensing board—DOE has no simple explanation of how the natural and engineered barriers will work and an endless ocean of open 'scientific questions'."¹⁰ Under any legitimate process, an independent regulator would not "fear" the rejection of a license application with an "ocean" of open scientific questions. Arguably, that is what is supposed to happen under such circumstances.

NRC staff's position was, in fact, nothing new. A few years earlier in 1996, NRC staff had agreed with DOE that NRC staff's pre-licensing goal should be "not to preclude the ability to obtain a license in the future" (minutes of a NRC Staff- DOE Management Meeting, May 8, 1996, ML003759346).

EPA eventually responded positively to the pressure brought by NRC staff and DOE. EPA and NRC both promulgated new regulations limiting the compliance period for Yucca Mountain

¹⁰ Email communication between Robert G. Baca (Sandia National Laboratory) and Jerry McNeish (DOE/OCRWM), 10/28/1998.

to 10,000 years. Subsequently, the U.S. Court of Appeals for the District of Columbia Circuit held that the attempts to justify a 10,000-year limit were inconsistent with the NAS study (and therefore contrary to what was required by law) and reversed and nullified the agencies' decisions (*NEI v. EPA*, 373 F.3d 1251 (D.C. Circuit 2004)).

NRC staff did not, however, alter its regulatory approach even after the Court's rebuke. Once again, DOE, together with NRC staff, embarked on an intense lobbying effort to convince EPA to revise its nullified Yucca Mountain radiation risk standard to extend the risk standard beyond 10,000 years (in compliance with NAS), but to make the longer term standard far less stringent and easier to satisfy than the standard applicable for the first 10,000 years. Again, EPA yielded (40 C.F.R. § 197.25 (b)(2)), and NRC promptly followed suit (10 C.F.R. § 63.311 (a)(2)), promulgating new regulations specifically tailored to assure that Yucca Mountain would not be disqualified outright. Court challenges to the revised EPA and NRC regulations were filed and remain pending as of the date of this report.

Abandoning a Key Ethical Principle to License Yucca Mountain

Not only was NRC's complicity in manipulating the radiation exposure limits for Yucca Mountain directly contrary to its role as impartial arbiter in the licensing of a repository, it also violated a key ethical principle that had long governed NRC's work. For many decades, NRC staff advocated a commendable, intergenerational ethical principle for high-level radioactive waste repositories. It called this principle the "Pledge." In a 1993 presentation to the NAS committee charged with recommending standards for judging a Yucca Mountain license application, NRC staff recommended as follows (NRC Staff Views on the Major Issues Involved in Developing Standards for Disposal of High-Level Wastes (05/27/1993), ML031830818 at p. 3):

"The Pledge then promises to provide future societies with the same protection from radiation we would expect for ourselves. No more and no less....This Pledge is, I believe, what decision-makers in the U.S and other nations had in mind when deep geologic disposal was selected as the preferred technology and was declared to be safe."

Accordingly, when the Commission promulgated its original licensing standards for Yucca Mountain in 2001, it explained that its standards were in accord with the principle that "[r]adioactive waste shall be managed in such a way that predicted impacts on the health of future generations *will not be greater than the relevant levels of impact that are acceptable today*" (66 Fed. Reg. 55732, 55749, November 2, 2001 – emphasis added).

Beginning in the late 1990s, DOE studies showed that the risks to distant future generations (after 10,000 years) could well exceed the risks considered acceptable today (see Part 2 - Chapter 11 Total System Performance Assessment-Viability Assessment (TSPA-VA) Analyses Technical Basis Document Summary and Conclusions (08/14/1998), ML003758366 at 11-38). For a while, NRC avoided applying the ethical principle described above to this new risk information. It did so by eliminating the risks to distant generations from its safety review. But after this limit was declared unlawful (*NEI v. EPA*, 373 F.3d 1251 (D.C. Circuit, 2004), NRC was forced to confront the issue. It became apparent that allowing future generations to be exposed to more radiation risk would be necessary if Yucca Mountain were to be licensed.

EPA made the first public move when, in response to the Court decision noted above, it proposed to abandon the principle of limiting risks to future generation to those acceptable for the current generation and replace it with one less protective of future generations (see 70 Fed. Reg. 49014, 49035-36, August 22, 2005), concluding that “[a] repository must provide reasonable protection and security for the very far future, but this may not necessarily be at levels deemed protective (and controllable) for the current and succeeding generations”.

NRC staff concurred with this proposed relaxation in ethical principle, explaining that it would “bring greater effectiveness and efficiency to the licensing process for the proposed repository” (see SECY-05-0144, Proposed Rule; 10 CFR Part 63: “Implementation of a Dose Standard After 10,000 Years” (08/10/2005) ML052100024 at p. 4). NRC staff formally recommended that the Commission adopt the new standard in spite of the fact that an important and long-embraced ethical principle would have to be abandoned.

Implications for the SER and Licensing

The historical and ongoing collusion between DOE and NRC and the bias evident in NRC’s dealings with DOE and the Yucca Mountain project over the years have serious and long-ranging implications, especially with regard to NRC staff’s work related to the licensing proceeding in general and in preparing the important Safety Evaluation Report in particular. Judge Rosenthal’s admonition (quoted above) to the staff about being “regulators” and not “promoters” of Yucca Mountain and not being seen as “spear carriers for DOE” with “little reason to credit anything the staff might have to offer,” is especially notable and germane with respect to the staff’s role in preparing the SER.

Since NRC resumed work on the Yucca Mountain license application – as mandated by the CADC ruling in August 2013 – the major focus of the licensing effort has been on completing the five-volume SER. The SER will contain the results of NRC staff’s review of DOE’s Yucca

Mountain license application and the staff's view as to whether the application meets NRC regulations. As such, the impartiality of NRC staff (individually and as an institutional unit) is especially relevant to the integrity and credibility of the SER.

The issuance of the SER is not the end of the process to determine if a license can be granted, but rather signals the beginning of the adjudicatory proceeding that is at the heart of the licensing process. The SER reflects only NRC staff's views, opinions, and conclusions. During the adjudicatory hearings, Nevada and other parties to the proceeding will have the opportunity to challenge the SER findings and prosecute the almost 300 contentions (or challenges) that have already been admitted. Only after the conclusion of the hearings can the NRC administrative judges render decisions on the contentions and ultimately on the acceptability of the license application. It will then be up to the full Commission to decide whether to award a license to construct the repository facility.

Because of the unusual circumstances surrounding the completion and planned issuance of the SER volumes (i.e., the fact that the NRC may not have funds for completing the adjudicatory process following issuance of the SER), the staff's universally expected favorable findings and views as expressed in the SER are likely to be used by Yucca Mountain supporters in Congress, the nuclear industry, and elsewhere as "proof" that Yucca Mountain is an acceptable repository location and that NRC has officially endorsed licensing of the facility. As such, the fact that NRC staff – and the NRC as an agency – has a history of bias and inappropriately close relationships with DOE on the Yucca Mountain project bears directly on the credibility of any staff findings and views expressed in the SER.

Without a full airing of Nevada's contentions, the opportunity to challenge and contest the NRC's staff's conclusions and the ability to cross examine staff in the adjudicatory proceeding, the SER must necessarily be seen as a flawed and significantly compromised document that must be judged in the context of the historical relationship of NRC staff with its DOE counterparts.

CHAPTER 3 – CONCLUSIONS OF THE NEVADA COMMISSION ON NUCLEAR PROJECTS

The Nevada Commission on Nuclear Projects has long concluded that moving beyond the failed Yucca Mountain nuclear waste repository program is essential if the country is ever going to safely and expeditiously solve the problem of spent nuclear fuel and high-level radioactive waste. Forcing NRC to restart the Yucca Mountain licensing process, as the court has done (especially given the serious historical concerns about NRC's ability to impartially decide a Yucca Mountain license application on its merits), actually impedes progress towards finding workable and expeditious solutions by diverting the focus away from promising new approaches – most importantly the recommendations put forth in 2012 by the Blue Ribbon Commission on America's Nuclear Future.

NRC does not have the financial resources to complete the licensing process, so the best that can be accomplished is a truncated proceeding followed by another suspension when the money runs out. And, given the over 300 contentions that will have to be adjudicated in such a proceeding, there is no guarantee that Yucca Mountain can be licensed in any event. Following the same old Yucca Mountain game plan will only lead to more delay and more uncertainty. The country could waste another 10 or more years focusing on Yucca Mountain, only to have to start over again.

The Commission finds that a better solution is readily available using existing technology, although congressional action is required for full implementation. The recommendations of the BRC provide a promising and workable approach that has the potential to lead relatively quickly to the establishment of achievable interim storage facilities and, ultimately, one or more geologic repositories. The centerpiece of the BRC's recommendations for restructuring the nation's nuclear waste management system is the requirement for a consent-based approach whereby potential host states must agree to a storage or disposal facility within their borders. As the Yucca Mountain debacle has shown, there is no substitute for obtaining the voluntary consent of the state where a spent fuel storage or disposal facility is to be located. The BRC also found that there is no reason why the country cannot move ahead expeditiously to find one or more interim storage sites for spent nuclear fuel in order to address issues involving shut-down nuclear power reactors or instances where operating reactors are not able to implement sufficient on-site spent fuel storage.

The Commission supports the efforts of key senators in Congress to develop legislation implementing the BRC recommendations and believes such legislation represents the best solution to the waste problem. The Wyden/Murkowski bill (S. 1240) would require the consent of host states for any new interim storage or disposal facilities; it would remove the nuclear waste program from DOE and establish a separate federal entity solely responsible for the management of spent fuel and high-level waste; and it lays out a pathway for having storage facilities available in a relatively short time frame – significantly shorter than what could be achieved even if development of a Yucca Mountain repository was somehow eventually authorized.

The current proposed legislation needs changes to assure that the focus is on consent-based siting and does not revert to trying to resurrect Yucca Mountain. As currently written, S.1240 grandfathered in current Nuclear Waste Policy Amendments Act provisions regarding repository development at Yucca Mountain. To be workable, the bill must be amended to require that, before any funds can be expended for activities at Yucca Mountain, the new implementing entity must obtain the written consent of Nevada’s Governor – the same consent requirement applicable to the other facilities in other states provided for in the proposed legislation. Such a requirement would put Nevada and Yucca Mountain on the same footing as any other potential storage or disposal site contemplated under the new legislation and is the only fair, equitable, and workable way forward.

The Commission strongly supports the recommendations of the BRC including the consent-based approach to facility site selection. Governor Sandoval has already unambiguously advised the Secretary of Energy: “that Nevada wholeheartedly supports the recommendations of the BRC and believes that the consent-based approach represents the best chance for ultimately solving the nation’s nuclear waste management problem. However, Nevada will not consent to an interim storage facility or repository being considered in the state.”¹¹

¹¹ Governor Brian Sandoval, Letter to the Honorable Dr. Steven Chu, Secretary, U.S. Department of Energy, March 12, 2012

CHAPTER 4 – RECOMMENDATIONS OF THE NEVADA COMMISSION ON NUCLEAR PROJECTS

The Nevada Commission on Nuclear Projects remains concerned that the restarted Yucca Mountain licensing proceeding, combined with continuing political uncertainties and the potential misuse of the forthcoming Safety Evaluation Report being prepared by NRC staff that has demonstrated a history of bias and inappropriately close ties to DOE's Yucca Mountain program, could have serious and wide-ranging implications for the State of Nevada in its efforts to halt the ill-conceived Yucca Mountain project. The Commission believes it is imperative that the Attorney General and the Agency for Nuclear Projects have the resources to aggressively represent Nevada's interests in the licensing process.

Recommendation: The Governor and Legislature should assure that the Attorney General and the Agency for Nuclear Projects have adequate funds to aggressively represent Nevada's interests in the restarted Yucca Mountain licensing proceeding.

Discussion:

The Commission commends the Governor and the Legislature's Interim Finance Committee for seeking and providing additional funding for the Attorney General and the Agency for Nuclear Projects for essential licensing intervention activities during the current fiscal year (FY 2015). Both agencies are faced with very significant challenges given the realities of the restarted licensing process. While the Attorney General's Office still has some federal funds carried over from prior fiscal year appropriations and both agencies have state general funds earmarked for licensing activities, those monies are expected to be depleted before the end of FY 2015. Both agencies also requested additional funding for the FY 2016 – FY 2017 biennium. However, the amount of available resources is nowhere near what would be required in the face of a full-blown licensing proceeding, should the political dynamics in Congress change and allow new federal funds to be available to NRC and DOE.

In the face of such a renewed and aggressive Yucca Mountain licensing proceeding, Nevada's leadership will unavoidably be faced with finding additional state funds to support Nevada's licensing intervention effort. To re-engage the Agency's technical experts in support of the licensing contentions and to adequately fund the indispensable outside legal counsel required to intervene in such a highly specialized and unique technical/legal proceeding could require a many-fold increase in the amount of state funds for this purpose.

As the Commission noted in its 2012 report, coming at a time of continuing austerity at the state level, the need for such additional state resources would test Nevada's resolve to see its opposition to the Yucca Mountain program through to a successful conclusion. Nevertheless, the Commission believes Nevada is well-positioned to prevail in its challenges to DOE's Yucca Mountain license application, and by providing the resources needed to continue the fight, the Governor, the Attorney General and the Legislature would send a strong message that Nevada will do whatever it takes to achieve a successful outcome for the state.

Recommendation: The Commission urges the Governor and Legislature to stay the course and continue the state's historically strong opposition to the Yucca Mountain project and to any importation of spent nuclear fuel and high-level radioactive waste to the state.

Discussion:

As the Commission has emphasized in past reports, it is critically important for the Governor and Legislature to continue to maintain strong and unified opposition to the proposed Yucca Mountain repository and to resist any and all calls for negotiations involving spent fuel and high-level waste interim storage facilities, spent fuel reprocessing facilities, or other related nuclear facilities.

Nothing has changed to make Yucca Mountain more suitable or safe as a geologic disposal site. The site still cannot be shown to be able to isolate deadly radioactive waste from people and the environment for the tens of thousands of years necessary. The potential for earthquakes and renewed volcanic activity remains unacceptably high. The oxidizing and highly corrosive groundwater environment at Yucca Mountain cannot be defeated by manmade barriers, such as metal waste canisters and drip shields. The tens of thousands of spent nuclear fuel and high-level radioactive waste shipments that would transit the Las Vegas Valley and other areas of Nevada have not gone away. In short, Yucca Mountain was a bad bet for Nevada in 1986, again in 1987, and remains a bad idea today.

The same lack of rail transportation access, significant seismic hazards, and limited water availability also make the site and surrounding area unsuitable for spent nuclear fuel reprocessing facilities (if such facilities were even economically and environmentally feasible), for nuclear power reactors, or for temporary storage of spent fuel or high-level nuclear waste. The Commission continues to believe that no facility requiring the importation of dangerous spent fuel and high-level waste for disposal, storage, reprocessing or other uses can be

justified, given the extreme risks to the state's people, environment and our unique tourism-based economy.

Recommendation: The Agency for Nuclear Projects should continue to provide, to the degree practicable given budget constraints, ongoing public information to the citizens of Nevada to present the arguments supporting Nevada's opposition to Yucca Mountain generally, and specifically the public health, safety and environmental issues at stake in the restarted Yucca Mountain licensing proceeding.

Discussion:

The Commission remains concerned that the restarted Yucca Mountain licensing proceeding, combined with the national campaign of misinformation being conducted by and on behalf of Yucca Mountain proponents, especially on the heels of the release of the Safety Evaluation Report prepared by NRC staff, could have serious and wide-ranging implications for the State of Nevada in its efforts to halt the ill-conceived Yucca Mountain repository project. It is important that the State of Nevada continue to provide objective public information to explain the important public health, safety and environmental protection concerns that are the basis of Nevada's objections to the Yucca Mountain project.

Because of fiscal constraints, such a program must be conducted within the Agency's current budget, using existing staff and contractors, and integrated with the Agency's work of supporting contentions in the licensing proceeding. The most cost effective approach could be a series of topical white papers summarizing the positions that staff and contractors are already documenting in preparation for the restarted licensing proceeding.

The first topic should be a concise overview of the most important things that are wrong about the Yucca Mountain proposal as set forth in DOE's license application and in Nevada's admitted challenges to DOE's application: the site geology and hydrology are unsuitable for permanent disposal of high-level nuclear wastes; the DOE repository design does not compensate for the geotechnical deficiencies of the site; and the transportation system is unworkable and unsafe.

The second topic should be an explanation of the licensing proceeding itself, including the NRC staff role in the proceeding, preparation of the SER and other preliminary activities (the supplemental EIS on groundwater impacts and the publically accessible electronic library of documents (LSN)), and the adjudicatory proceedings ahead, depending upon the availability of

NRC funding, i.e., reestablishment of a licensing board, a case management conference, discovery, and trial-like hearings.

A third topic should be the findings and recommendations of the 2012 Report of the Blue Ribbon Commission on America's Nuclear Future and the need for new federal legislation to:

- (1) Establish a consent-based site selection process for nuclear waste storage and disposal facilities;
- (2) Take the nuclear waste program out of the U.S. Department of Energy; and
- (3) Implement the 2006 transportation safety and security recommendations of the National Academy of Sciences (including full-scale physical testing of shipping casks), and end the current DOE self-regulation of spent nuclear fuel shipments.

A fourth topic should be an explanation of the recent findings and order of the U.S. Nuclear Regulatory Commission that spent nuclear fuel can be safely stored at the reactor sites where it is produced for at least 120 years, eliminating any urgency to proceed with Yucca Mountain.

These topical white papers would be shared with the appropriate media outlets, state legislators, public interest groups, and interested Nevada citizens.

ATTACHMENT I

NRC's Monthly Status Report and Budget For Restarted Licensing Activities

**U.S. Nuclear Regulatory Commission Monthly Status Report
Activities Related to the Yucca Mountain Licensing Action
Report for September 2014**

Background

On August 13, 2013, a panel of the U.S. Court of Appeals for the District of Columbia Circuit issued its decision in the case *In re Aiken County* directing the U.S. Nuclear Regulatory Commission (NRC) to “promptly continue with the legally mandated licensing process” for the U.S. Department of Energy’s (DOE’s) application to construct a geologic repository for high-level waste at Yucca Mountain, NV. The NRC promptly began taking steps to comply with the court’s direction following the issuance of the decision. On November 18, 2013, the Commission approved a memorandum and order, which set a course of action for the Yucca Mountain licensing process that is consistent with the Appeals Court decision and with the resources available. The Commission also issued a related staff requirements memorandum (SRM) on November 18, 2013. The Commission provides further direction to the staff as needed.

Accomplishments and Ongoing Work

The NRC staff in the Office of Nuclear Material Safety and Safeguards, with the support of the Center for Nuclear Waste Regulatory Analyses, continues to make progress toward completing the four remaining volumes of the safety evaluation report (SER). Attached is the task tracking tool, “Status of Safety Evaluation Report (SER) Chapters and Volume Tasks,” which documents work completed through September 30, 2014. The NRC technical staff has completed the individual chapters of SER Volume 3, and this volume is scheduled to be issued by November 6, 2014. The NRC staff has completed the majority of the milestones for the chapters in volumes 2, 4 and 5; management provides additional oversight and support for any chapter that does not meet the projected schedule. Management and staff are actively working to resolve delays in those chapters that have not met their due dates. As a result, the final volume end dates have not changed. Completion of the SER remains the staff’s highest priority for this project and is on track for completion by January 2015.

Agency attorneys provided support to the staff and the Commission on project activities, advised the staff on issues related to SER development, and continued reviewing draft chapters of the SER.

Schedule and Cost for Remaining Activities

Completion of the SER is scheduled to take approximately 12 months, ending in January 2015. To date, no unforeseen technical or process issues have arisen that would affect the completion date. SER activities are proceeding within the September 2013 budget estimate of \$8.3 million.

The schedule for completion of an environmental impact statement (EIS) supplement is being considered. On February 28, 2014, DOE informed the NRC that it would not complete an EIS supplement that the staff has determined is needed for the review of DOE’s application under the National Environmental Policy Act, but rather would provide an update to a 2009 technical report that would inform an EIS supplement. On April 7, 2014, NRC staff met with DOE staff in a public meeting to discuss DOE’s revision of this report, titled, *Analysis of Postclosure*

Groundwater Impacts for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada. The NRC is awaiting receipt of the update to the 2009 technical report. Staff sent a letter to DOE on August 21, 2014, requesting an estimated date for the NRC to receive this report.

After DOE informed the NRC that it would not complete an EIS supplement, the Commission necessarily revised its earlier direction to adopt DOE's supplement. The Commission has directed the staff to plan to develop and issue an EIS supplement, pending a reassessment of available funding in the fall of 2014. The previous cost estimate of \$625,000 for an adoption determination of a DOE-developed EIS supplement will be revised to account for an NRC-developed EIS supplement as part of the fall 2014 reassessment.

The Licensing Support Network (LSN) document collection is fully available to internal users in a nonpublic library of the NRC's Agencywide Documents Access and Management System (ADAMS). This project was completed in April 2014 at a cost of approximately \$286,000. The Commission has also directed that, pending a reassessment of available funding in the fall of 2014, the LSN document collection should be loaded into a publicly accessible library in ADAMS.

The staff's February 2014 estimate that related activities, such as the work performed by NRC attorneys on Federal court litigation following the issuance of the mandamus order, monthly reporting, and other support efforts, will require approximately \$750,000 over the course of the project has not changed.¹

The total cost estimate for the work described above as of September 30, 2014, is projected to be approximately \$10 million.

¹ This total does not include any potential agency liabilities from external litigation.

Nuclear Waste Fund Expenditures

During the month of September, the NRC expended \$624,189 of Nuclear Waste Fund (NWF) funds on its actions in direct response to the court's decision. Cumulative expenditures since the August 13, 2013, U.S. Court of Appeals decision are \$7,358,371. The August 13, 2013, balance of \$13,549,315 of unexpended NWF funding, less the \$7,358,371, results in a remaining unexpended balance of \$6,190,944. Total unobligated NWF funds remaining as of September 30, 2014, are \$4,813,166. The following table provides further details regarding the NRC's expenditure of NWF funds since August 13, 2013.

Yucca Mountain Licensing Activities	Cost Estimate	September Expenditures	Cumulative Expenditures
Completion of the safety evaluation report	\$8,310,000	\$599,451	\$6,334,134
Loading of Licensing Support Network documents into a nonpublic ADAMS library	\$350,000	\$0	\$285,592
Development of the environmental impact statement supplement*	\$625,000	\$0	\$47,427
Program planning and support		\$21,539	\$327,968
Response to the August 30, 2013, Commission Order		\$0	\$137,518
Federal court litigation**		\$3,199	\$151,255
Support/Advice in NRC proceedings		\$0	\$35,535
Subtotal, other support costs chargeable to NWF funds		\$750,000	\$24,738
Adjustments to close out contracts funded by previous NWF appropriations		\$0	\$38,942
Total	\$10,035,000	\$624,189	\$7,358,371

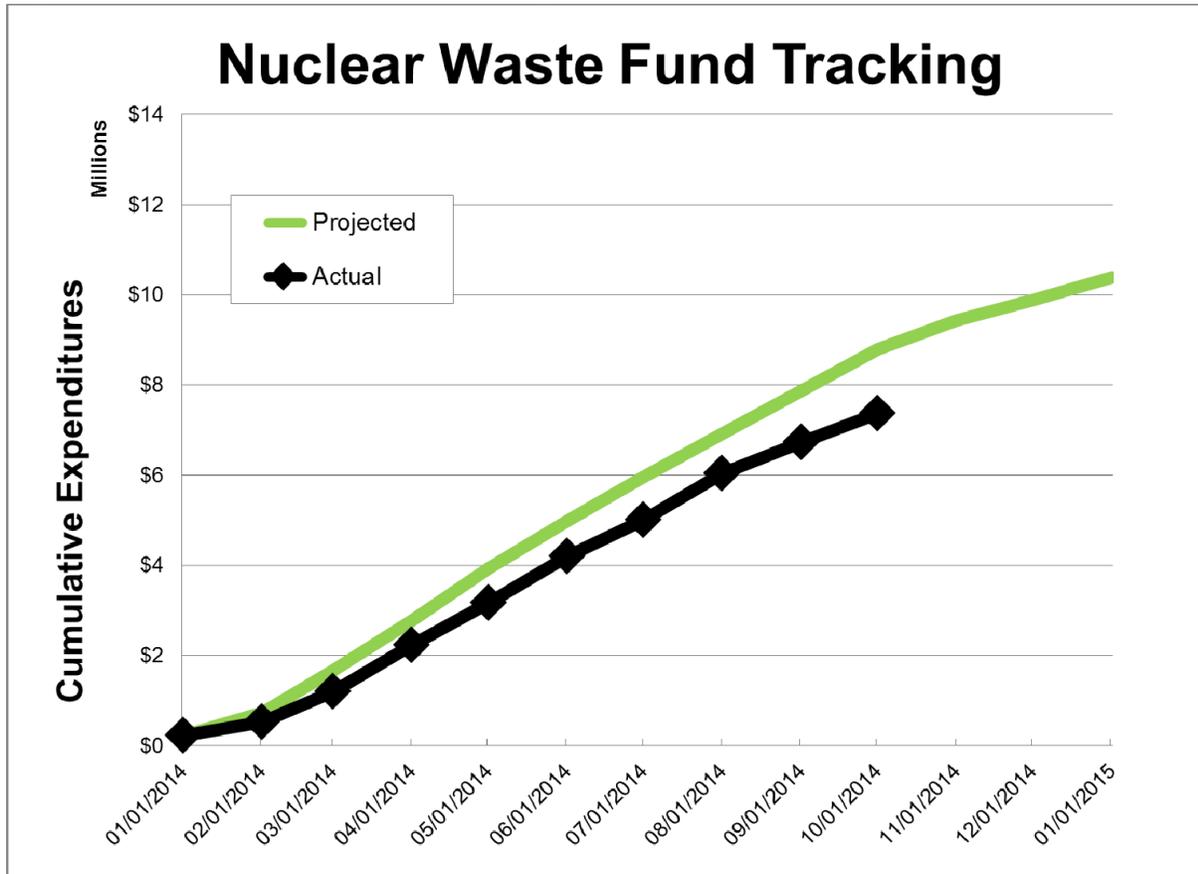
* The estimate of \$625,000 for an adoption determination of a DOE-developed EIS supplement would be revised to account for an NRC-developed EIS supplement as part of the fall 2014 reassessment of remaining NWF funds consistent with Commission direction.

** Includes a \$59,000 expenditure in May for the agency's agreement to settle the Equal Access to Justice Act claim of one of the *Aiken County* petitioners. The agency sought the views of the Comptroller General as to whether this payment is properly paid with NWF funds. Because the issue relates to a pending motion for attorneys' fees filed by the other petitioners in the *Aiken County* litigation, GAO has declined to provide the Commission with its views.

The unexpended NWF fund balance of \$6,190,944 includes \$254,348 of previously appropriated NWF funds that remain unexpended but obligated on contracts with the Center for Nuclear Waste Regulatory Analyses.

The staff has estimated the expenses necessary to complete the SER and related activities directed by the Commission. Figure 1 on page 4 shows the cumulative projected and actual expenditures. Projected expenditures include cost estimates shown in Table 1. The actual cumulative expenditures reflect costs through September 30, 2014, as given in Table 1.

Figure 1. Nuclear Waste Fund Tracking



Stakeholder Communications and Interactions

On September 30, 2014, the staff gave a presentation at the Decommissioning of Nuclear Reactors and Materials Conference in Miami, Florida, on the status of the NRC's review of DOE's application for a high-level waste repository at Yucca Mountain.

Status of Safety Evaluation Report (SER) Chapters and Volume Tasks

Volume 2 - Volume 5

Milestone Achieved as of September 30, 2014

CHAPTER MILESTONES	Staff Develops SER Inputs	Staff Completes SER Inputs	Branch Chief Review	OGC Chapter MLO Review	OGC Chapter Comment Resolution	Staff Verifies References Are Publicly Available	Technical Editor Review	Project Manager Accepts/Rejects Tech Edits [CHAPTER COMPLETE]
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CHAPTER MILESTONES	Staff Develops SER Inputs	Staff Completes SER Inputs	Branch Chief Review	OGC Chapter MLO Review	OGC Chapter Comment Resolution	Staff Verifies References Are Publicly Available	Technical Editor Review	Project Manager Accepts/Rejects Tech Edits [CHAPTER COMPLETE]
Volume 2: Review of Repository Safety Before Permanent Closure								
Chapter 1 - Site Description								
Chapter 2 - Description of Structures, Systems, & Components and Operations								
Chapter 3 - ID Hazard & Initiating Events								06/10/2014
Chapter 4 - ID Event Sequence								06/10/2014
Chapter 5 - Consequences								
Chapter 6 - ID Structures, Systems, & Components Important to Safety								05/27/2014
Chapter 7 - Design of Structures, Systems, & Components								08/08/2014
Chapter 8 - ALARA								
Chapter 9 - Retrieval								
Chapter 10 - Decontamination & Demolition								
Abstract								
Executive Summary								09/10/2014
Introduction								
Glossary								
Conclusions								
Appendices - Not Applicable								09/24/2014

Status of Safety Evaluation Report (SER) Chapters and Volume Tasks

Volume 2 - Volume 5

Milestone Achieved as of September 30, 2014

CHAPTER MILESTONES	Staff Develops SER Inputs	Staff Completes SER	Branch Chief Review	OGC Chapter NLO Review	OGC Chapter Comment Resolution	Staff Verifies References Are Publicly Available	Technical Editor Review	Project Manager Accepts/Rejects Tech Edits [CHAPTER COMPLETE]
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CHAPTER MILESTONES	Staff Develops SER Inputs	Staff Completes SER	Branch Chief Review	OGC Chapter NLO Review	OGC Chapter Comment Resolution	Staff Verifies References Are Publicly Available	Technical Editor Review	Project Manager Accepts/Rejects Tech Edits [CHAPTER COMPLETE]
Volume 3: Review of Repository Safety After Permanent Closure								
Chapter 1 - Multiple Barriers								
Chapter 2 - Scenarios (Features, Events, & Processes)								
Chapter 3 - Probability								
Chapter 4 - Degradation of Engineered Barriers								
Chapter 5 - Mechanical Disruption of Engineered Barriers								
Chapter 6 - Water Chemistry & Barriers								
Chapter 7 - Radionuclide Release								
Chapter 8 - Climate & Infiltration								
Chapter 9 - Flow in the Unsaturated Zone								
Chapter 10 - Radionuclides in the Unsaturated Zone								
Chapter 11 - Flow in the Saturated Zone								
Chapter 12 - Radionuclides in the Saturated Zone								
Chapter 13 - Igneous Disruption								
Chapter 14 - Radionuclides in Groundwater								
Chapter 15 - Airborne Transport & Redistribution								
Chapter 16 - Biosphere								
Chapter 17 - Individual Protection								
Chapter 18 - Human Intrusion								
Chapter 19 - Groundwater Protection								
Chapter 20 - Expert Elicitation								
Abstract								
Executive Summary								
Introduction								
Glossary								
Conclusions								
Appendices - Not Applicable								

Status of Safety Evaluation Report (SER) Chapters and Volume Tasks

Volume 2 - Volume 5

Milestone Achieved as of September 30, 2014

CHAPTER MILESTONES	Staff Develops SER Inputs	Staff Completes SER Inputs	Branch Chief Review	OGC Chapter NLO Review	OGC Chapter Comment Resolution	Staff Verifies References Are Publicly Available	Technical Editor Review	Project Manager Accepts/Rejects Tech Edits [CHAPTER COMPLETE]
Volume 4: Review of Administrative and Programmatic Requirements								
Chapter 1 - Research & Development Program to Resolve Safety Questions								09/10/2014
Chapter 2 - Performance Confirmation Program								
Chapter 3 - Quality Assurance Program								
Chapter 4 - Records, Reports, Tests, and Inspections								
Chapter 5 - DOE Organization Structure - Construction								
Chapter 6 - Key Positions								
Chapter 7 - Qualifications and Training								
Chapter 8 - Plans for Startup Activities and Testing								
Chapter 9 - Plans for Conduct of Normal Activities								
Chapter 10 - Emergency Planning								
Chapter 11 - Controls to Restrict Access and Regulate Land Use								
Chapter 12 - Uses of Geologic Repository Operations Area for Other Purposes								
Abstract								
Executive Summary								07/11/2014
Introduction								07/11/2014
Glossary								
Conclusions								09/10/2014
Appendices - Not Applicable								

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Volume 5: License Specifications								
Chapter 1 - License Specifications								09/24/2014
Abstract								
Executive Summary - Not Applicable								
Introduction								

VOLUME MILESTONES	Camera-Ready Combined File to Branch Chief	Branch Chief Concurrence	SFAS Deputy Director Concurrence	SFAS Director Concurrence	OGC NLO	NMSS Office Director of NUREG Publication Concurrence and Authorization	Final SER Volume Published
Volume 2					10/30/2014	11/06/2014	12/04/2014
Volume 3						10/09/2014	11/06/2014
Volume 4					10/16/2014	10/23/2014	11/20/2014
Volume 5					10/30/2014	11/06/2014	12/11/2014

Abbreviations and Acronyms:

- NLO No Legal Objection
- NMSS Office of Nuclear Material Safety and Safeguards
- OGC Office of the General Counsel
- SFAS Division of Spent Fuel Alternative Strategies
- SER Safety Evaluation Report. This document consists of 5 volumes. *Volume 1: General Information* (NUREG-1949) was published in August 2010.

Not Applicable A section of the originally planned report is not needed. Information intended for this section is captured elsewhere in the report.

ATTACHMENT II

NRC Backgrounder on Licensing Yucca Mountain



Backgrounder on Licensing Yucca Mountain

Note: After an August 2013 ruling by the U.S. Court of Appeals for the District of Columbia Circuit, the NRC, using available funds, resumed work on its safety review of DOE's application to construct a repository at Yucca Mountain. The current schedule calls for completion and publication of the safety evaluation report by January 2015. The adjudicatory hearing, which must be completed before a licensing decision can be made, remains suspended.

The Nuclear Regulatory Commission received an application from the Department of Energy (DOE) on June 3, 2008, for a license to construct the nation's first geologic repository for high-level nuclear waste at Yucca Mountain, Nev. The NRC's role is to assess whether the proposed facility meets NRC's regulatory requirements. The NRC staff's technical review, which will be documented in a safety evaluation report, is one part of this licensing process. The process also includes hearings before the NRC's Atomic Safety and Licensing Board, which will adjudicate challenges by a number of parties to the technical and legal aspects of the DOE application.

On March 3, 2010, DOE filed a motion with the Board asking to withdraw its application. The Board denied that request on June 29, 2010, and the participants filed petitions as to whether the NRC's Commissioners should review, and uphold or reverse this Board decision.

The Commission found itself evenly divided on whether to overturn or uphold the Board's decision. During this time period, Congress had reduced funding for the NRC's review of the application, with no funds appropriated for fiscal year 2012. Recognizing the budgetary limitations, the Commission directed the Board to complete case management activities by the end of September 2011, and the Board suspended the adjudicatory proceeding on September 30. At the same time, the NRC staff also completed orderly closure of its Yucca Mountain technical review activities. As part of this work, the NRC staff prepared three technical evaluation [reports](#) on DOE's application.



Yucca Mountain

The D.C. Circuit Court in August 2013 ordered the NRC to resume its review, using existing funds from previous appropriations. That review is now underway. The adjudicatory proceeding remains suspended.

Background

The Nuclear Waste Policy Act of 1982 directed DOE to site, construct and operate a geologic repository for high-level waste. The Environmental Protection Agency (EPA) was responsible for developing radiation protection standards for a repository. The NRC was responsible for developing regulations to implement EPA's standards and would regulate geologic disposal of the waste. In 1987, amendments to the Act directed DOE to focus its work solely on Yucca Mountain, about 100 miles northwest of Las Vegas in Nye County, Nevada. DOE determined in 2002 that Yucca Mountain would be a suitable location. President George W. Bush and Congress accepted that decision and directed DOE to submit its license application.

High-level nuclear waste consists primarily of spent fuel from the nation's commercial nuclear power plants. It also includes spent fuel from U.S. Navy reactors, and some of the waste generated during the development of nuclear weapons. The proposed repository would hold 70,000 metric tons of waste. This amount would include 63,000 metric tons of commercial spent nuclear fuel. About 69,000 metric tons of commercial spent fuel are now in temporary storage at nuclear power plants across the country.

Licensing Review Process

Docketing Review and Environmental Determination

The NRC staff's review began with an initial look at the DOE application to see if it was complete enough to docket and begin a thorough technical review. At the same time, the staff began reviewing DOE's environmental analysis. On September 8, 2008, the agency docketed the application and adopted DOE's environmental impact statements, noting more analysis was needed on groundwater impacts.

The decision to docket the application triggered a three-year schedule set by Congress for the NRC to reach a decision on whether to approve construction. The NRC may give notice to Congress of the need for an additional year to complete the review.

Licensing Review



Entrance Tunnel at
Yucca Mountain

Once the application was docketed, the NRC's technical staff began a detailed and comprehensive review. This review involved NRC staff and contractor employees with expertise in many technical and scientific disciplines. They were experts in geochemistry, hydrology, climatology, structural geology, volcanology, seismology and health physics, as well as chemical, civil, mechanical, nuclear, mining, materials and geological engineering. The Center for Nuclear Waste Regulatory Analyses in San Antonio, Texas, the NRC's federally-funded research and development center, provided technical assistance.

As part of its review, the NRC staff asked for more information from DOE regarding the application. These requests and DOE's responses are publicly available, unless they contain sensitive security, privacy or proprietary information.

As noted above, the NRC staff's Yucca Mountain review activities were closed in September 2011 and resumed in 2013. The Center in San Antonio continues to provide technical assistance for these activities. When the review is finished, the staff will issue a safety evaluation report (SER) containing its findings on the proposed repository. The SER will explain the staff's determination as to whether the facility meets NRC regulations. The SER is expected to be published by January 2015.

The Adjudicatory Process

NRC adjudicatory hearings are conducted by the Atomic Safety and Licensing Board Panel, which is composed of administrative judges who are lawyers, engineers and scientists.

After docketing the application in 2008, the NRC published a notice of hearing and opportunity to participate in the hearing. The Panel appointed multiple Boards of three judges to hear a variety of legal and technical contentions regarding the Yucca Mountain construction authorization application. The Boards determined if the contentions were admissible to the proceeding. Nearly 300 contentions were admitted before the proceeding was suspended on September 30, 2011. If the adjudication were to resume, one or more Boards would hear evidence and issue decisions on admitted issues contesting DOE's application or the NRC staff's decision to adopt the DOE environmental impact statement. A Board could also hold "limited appearance" sessions to allow members of the public to make brief oral statements about the proposed repository, and may invite the public to submit written statements.



ASLB Hearing Room,
Rockville, Md.

The Boards would likely issue several decisions on contentions before the NRC makes a decision on whether to authorize construction. Parties may ask the Commission to review these decisions. The Commission's final decision may be appealed to a U.S. Court of Appeals.

If the NRC were to authorize construction of the Yucca Mountain repository, before beginning to operate the facility, DOE would have to update the application to request NRC approval to receive and possess high-level waste at Yucca Mountain. This application would be subject to the same technical review and hearing processes as the construction authorization application.

Additional information on the regulation of high-level nuclear waste is available on the [NRC website](#).

Licensing Support Network

Under the Commission's rules, a hearing on DOE's application is required in the public interest before the Commission decides whether to authorize construction. In anticipation of the large number of technical documents related to the application that would be produced by DOE and the other parties, the NRC began preparing for the adjudicatory process long before DOE submitted its license application. The NRC created a Web-based Licensing Support Network (LSN), which was intended to be primarily a discovery tool. At the time the application was submitted, the LSN included over 3.6 million documents the parties had designated as relevant to the proceeding. Some of these were expected to be entered into evidence during the Yucca Mountain evidentiary hearings. The NRC deactivated the network in 2011. The parties submitted their documents to the Secretary of the NRC and these documents were held in storage. When work resumed in 2013, they were loaded into NRC's Agencywide Documents Access and Management System to allow access by NRC reviewers working on the SER. The Commission is considering funding and a schedule for making these documents publicly available.

Regulations

The NRC's regulations can be found in Title 10, Code of Federal Regulations (10 CFR). The primary regulations relevant to the Yucca Mountain review and hearings include:

- 10 CFR Part 2 – agency rules of practice and procedure;
 - Subpart J, Procedures applicable to proceedings for the issuance of licenses for the receipt of high-level waste at a geologic repository, and
 - Appendix D, Schedule for the proceeding on considering construction authorization for a repository.
- 10 CFR Part 51 – Environmental protection regulations for domestic licensing and related regulatory functions (10 CFR 51.67 and 51.109).
- 10 CFR Part 63 – Disposal of high-level radioactive wastes in a geologic repository at Yucca Mountain, Nevada

August 2014