July 6, 2009

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARDS

In the Matter of	)		
	)	Docket No.	63-001-HLW
U.S. DEPARTMENT OF ENERGY	)		
	)	ASLBP Nos.	09-876-HLW-CAB01
(High-Level Waste Repository)	)		09-877-HLW-CAB02
	)		09-878-HLW-CAB03
			09-892-HLW-CAB04

NRC STAFF ANSWER TO NEW CONTENTIONS FILED BY STATE OF NEVADA AND CLARK COUNTY

INTRODUCTION

Pursuant to 10 C.F.R. § 2.309(h)(1) and CAB Case Management Order #1, issued by the Construction Authorization Boards, dated January 29, 2009 (CMO 1) the Staff of the U.S. Nuclear Regulatory Commission (Staff) hereby files this answer to the State of Nevada's New Contentions Based on DOE's February 19, 2009 License Application Update, filed June 8, 2009 (Nevada Updated Contentions), and to Clark County, Nevada's New Contention Arising from the Department of Energy's February 19, 2009 License Application Update, filed June 10, 2009 (Clark Updated Contention). The Staff does not oppose admission of the Updated Contentions, however, as discussed below, the Staff does not agree with several of the reasons advanced by Nevada and Clark County in support of their admission.

BACKGROUND

On June 3, 2008, the U.S. Department of Energy (DOE) submitted an application (LA) to the NRC, seeking authorization to construct a geologic repository at Yucca

Mountain, Nevada. The Commission published a hearing notice on October 22, 2008. In the Matter of U.S. Department of Energy (High-Level Waste Repository); Notice of Hearing and Opportunity to Petition for Leave to Intervene on an Application for Authority to Construct a Geologic Repository at a Geologic Repository Operations Area at Yucca Mountain, 73 Fed. Reg. 63,029 (Oct. 22, 2008). DOE updated its LA on February 19, 2009. Nevada filed its Updated Contentions, NEV-SAFETY-204 and NEV-SAFETY-205, on June 8, 2009. On June 10, 2009, Clark County filed its Updated Contention, CLK-SAFETY-013.

The Staff does not oppose admission of these contentions. However, as discussed below, the Staff opposes certain of the assertions made by Nevada and Clark County in support of their admission.

NEV-SAFETY-204 - PROBABALISTIC VOLCANIC HAZARD ANALYSIS UPDATE EXPERT ELICITATION

> SAR Section 5, Subsections 5.1, 5.4, 5.4.1, and similar subsections, and QARD 2.2.9, 2.2.13.B.7, and similar subsections, which describe DOE's conduct of an expert elicitation relating to a Probabilistic Volcanic Hazard Analysis – Update (PVHA-U) that is directly relied upon in its License Application Update No. 1 (as well as the expert elicitation itself, "Probabilistic Volcanic Hazard Analysis Update (PVHA-U) for Yucca Mountain, Nevada" (09/02/2008), LSN# DEN001601965), disclose a methodology so contrary to that which is required and that which DOE committed to employ, as to render the PVHA-U inadequate and unusable in support of DOE's Updated License Application.

Nevada Updated Contentions at 2. NEV-SAFETY-204 alleges that the methodology DOE used for an expert elicitation offered to support the Updated Probabilistic Volcanic Hazard Analysis (PVHA-U) did not comply with NRC regulations or with DOE's own commitments. *Id* at 2-4. Specifically, Nevada alleges that the PVHA-U does not meet the requirements of 10 C.F.R. § 63.21(c)(19), and that DOE failed to follow NUREG-1563, Branch Technical Position on the Use of Expert Elicitation in the High-Level Radioactive Waste Program, despite having previously committed itself to do so in a Key Technical Issue (KTI) agreement, as well as in the Quality Assurance Requirements and Description (QARD), which is incorporated into the updated LA. *Id.* at 2, 3-4

Staff Response: The Staff does not oppose admission of NEV-SAFETY-204, to the extent that its admission is based on its claim that "DOE's procedure for the conduct of the PVHA-U does not meet the requirements of 10 C.F.R. § 63.21(c)(19) . . . ." *Id.* at 2. However, the Staff opposes admitting this contention to the extent that its admission is based on the assertion that DOE failed to follow NUREG-1563. Because NUREG-

1563 is guidance and not a binding regulation, the assertion that DOE failed to follow it does not demonstrate that the issue it raises is "material to the findings the NRC must make to support the action that is involved in the proceeding." 10 C.F.R. § 2.309(f)(1)(iv).

10 C.F.R. § 2.309(f)(1)(iv): Materiality

Under NRC precedent, Nevada must show that the subject matter of its contention would impact the grant or denial of the LA. *Duke Energy Power Corp.* (Oconee Nuclear Power Station, Units 1, 2 & 3), CLI-99-11, 49 NRC 328, 333-34 (1999) ("[t]he dispute at issue is 'material' if its resolution would make a difference in the outcome of a licensing proceeding.") (internal citation omitted). The assertion that DOE failed to follow NUREG-1563, despite agreeing to do so, does not satisfy this standard because "NUREGs and Regulatory Guides serve as guidance and do not prescribe requirements. They are not substitutes for regulations and are not binding authority." *Curators of the University of Missouri* (TRUMP-5 Project), CLI-95-1, 41 NRC 71, 98 (1995); *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant), ALAB-852, 24 NRC 532, 544-45 (1986). "A decision on contention admissibility must be based on compliance with the regulations, not compliance with a particular NUREG." *USEC, Inc.* (American Centrifuge Plant), LBP-07-06, 65 NRC 429, 440 n.31 (2007). Consequently, since DOE is not required to follow NUREG-1563, a finding that DOE failed to do so cannot be material to a finding to support the grant or denial of DOE's LA, as required under 10 C.F.R. § 2.309(f)(1)(iv).

Nevada also asserts that DOE is required to comply with NUREG-1563 because of commitments DOE undertook in a Key Technical Issue (KTI) agreement. Nevada Updated Contentions at 4. However, the KTI agreement was in support of the pre-

licensing process, and was applicable only to the period before DOE submitted the LA. It was designed to facilitate review of the impending LA, and not to be binding on DOE's final submission or the NRC Staff review. "The U.S. Nuclear Regulatory Commission's (NRC) issue resolution goal during the prelicensing period is to assure the U.S. Department of Energy (DOE) has assembled enough information on a given issue for NRC to begin a detailed technical review of a License Application (LA), if submitted." Enclosure 1: "Review of the Office of Nuclear Material Safety and Safeguards of the Department of Energy's Agreement Response Related to the Proposed Geologic Repository at Yucca Mountain, Nevada Igneous Activity" Key Technical Issue Agreement 1.02 [IA.1.02] [Project No. WM-00011]," ADAMS Accession No. ML042750122), Letter from C. William Reamer to Joseph Ziegler, DOE "Pre-Licensing Evaluation of Igneous Activity Key Technical Issue Agreement 1.02," dated Nov. 5, 2004 (ADAMS Accession No. ML041280559). The NRC "will make its final determination on the relevant aspects of this issue during review of a potential LA, in *accordance with the requirements of 10 CFR Part 63*." (Emphasis added). Letter from C. William Reamer to Joseph Ziegler, DOE "Pre-Licensing Evaluation of Igneous Activity Key Technical Issue Agreement 1.02," dated Nov. 5, 2004 (ADAMS Accession No. ML041280559). Therefore, since commitments undertaken in a KTI agreement do not require DOE to comply with NUREG-1563, a finding that DOE failed to do so, without further demonstration that a regulation has not been met, is not material to a finding to support the grant or denial of DOE's LA. Thus, Nevada's argument regarding compliance with NUREG-1563 should not be used as support for admitting this contention. *See* 10 C.F.R. § 2.309(f)(1)(iv).

The Staff does not oppose admission of NEV-SAFETY-204, to the extent that its admission is based on the claim that "DOE's procedure for the conduct of the PVHA-U does not meet the requirements of 10 C.F.R. § 63.21(c)(19) . . . ." *Id.* at 2. However, Nevada's assertion that DOE failed to follow NUREG-1563, despite agreeing to do so, cannot be used as a basis for admitting this contention because it fails to demonstrate that the issue it raises is "material to the findings the NRC must make to support the action that is involved in the proceeding." 10 C.F.R. § 2.309(f)(1)(iv).

NEV-SAFETY-205 - PVHA-U FAILS TO ADEQUATELY CALCULATE PROBABILITY OF IGNEOUS EVENTS

> DOE's Yucca Mountain license application, as amended, relies on the Probabilistic Volcanic Hazard Assessment-Update (PVHA-U) as the basis for calculations of the probability of disruption of a repository at Yucca Mountain by an igneous event, but the PVHA-U does not sufficiently integrate a comprehensive, self-consistent geologic model into probability calculations. Furthermore, SAR sections 2.3.11, 2.3.11.1, 2.3.11.2.2, 2.2.2.1.2, 2.2.2.3, 2.2.2.2.3.1 (and similar sections) and the PVHA-U do not adequately address alternative models, modern geophysical surveys, the entire 11 million year history of volcanism in the Yucca Mountain area, and do not adequately consider the Greenwater Range near Death Valley as part of the volcanic field about Yucca Mountain

Nevada Updated Contentions at 13. In this proposed contention, Nevada alleges that DOE should have used a three-dimensional, "comprehensive and coherent" geophysical volcanism model for its Updated Probabilistic Volcanic Hazard Analysis (PVHA-U), rather than the two-dimensional spatial realization model that DOE chose to use. *Id.* at 13, 15. Nevada claims that the LA "lacks geophysical data to substantiate models proposed by DOE" and that geophysical data provided by DOE was of such low resolution that it was unsuitable for use in the PVHA-U experts' models. *Id.* at 13, 23.

Staff Response: The Staff does not oppose admission of NEV-SAFETY-205 to the extent that its admission is based on the claim that DOE failed to "integrate a comprehensive, self-consistent geologic model into [its] probability calculations." Nevada Updated Contentions at 13. However, the Staff opposes admitting this contention on the basis of Nevada's assertions that the PVHA-U does not adequately consider the entire 11 million year history of volcanism in the Yucca Mountain area, because it fails to show a genuine dispute with DOE on a material issue of law or fact. 10 C.F.R. § 2.309(f)(1)(vi).

10 C.F.R. § 2.309(f)(1)(vi): Genuine Dispute Regarding the Application

The petitioner bears the burden of demonstrating that its contention meets the admissibility standards. *See, e.g., Progress Energy Carolinas, Inc.* (Shearon Harris Nuclear Power Plant, Units 2 & 3), CLI-09-08, 69 NRC ___ (May 18, 2009) (slip op. at 9). Pursuant to 10 C.F.R. § 2.309(f)(1)(vi), the contention must "provide *sufficient information to show* that a genuine dispute exists with the applicant/licensee on a material issue of law or fact." 10 C.F.R. § 2.309(f)(1)(vi) (emphasis added). To raise a genuine dispute with the applicant on a material issue of law or fact, the petitioner must "state the applicant's position and the petitioner's opposing view." *Dominion Nuclear Connecticut, Inc*. (Millstone Nuclear Power Station, Units 2 & 3), CLI-01-24, 54 NRC 349, 358 (2001), *pet. for reconsid. denied*, CLI-02-01, 55 NRC 1 (2002). Further, "[a]ny contention that fails directly to controvert the application or that mistakenly asserts the application does not address a relevant issue can be dismissed." *PPLSusquehanna LLC* (Susquehanna Steam Electric Station, Units 1 and 2), LBP-07-10, 66 NRC 1, 24 (2007).

Nevada alleges that the PVHA-U does not adequately consider the entire 11 million year volcanic record of the Yucca Mountain region. Nevada acknowledges that some of the PVHA-U experts considered volcanic events more than 5 million years ago, but not the "long term trends or patterns of volcanism." Nevada Updated Contentions at 17. Nevada concludes that if DOE had used the same techniques that DOE used for the past 5 million year period for the 11 million year period, it would have drawn the same conclusions as Nevada, but "[u]nfortunately, DOE decided not to do so." *Id.* at 18.

However, DOE did consider volcanic events for an 11 million year period. SAR

Section 2.3.11.2.1.1, "Igneous Framework," lays out the framework that DOE used in its igneous modeling. That section begins by noting that "[t]he earliest volcanism in the Yucca Mountain region was dominated by a major episode of caldera-forming silicic (rhyolitic) volcanism that occurred between 15 and 11 million years ago, forming the southwestern Nevada volcanic field (Sawyer *et al*. 1994). Silicic volcanism was approximately synchronous with a period of major crustal extension or stretching, which occurred between 13 and 9 million years ago (Sawyer *et al*. 1994, Figure 4)." SAR, Section 2.3.11.2.1.1, at p. 2.3.11-15. That is, DOE not only considered, but used "look back" periods of greater than 5 million years, and greater than 11 million years. By conceding that a longer "look back" period was considered, but then objecting to the PVHA-U's decision not to utilize it, s*ee id.* at 17-18, Nevada erroneously equates the PVHA-U's deliberate decision not to use a particular approach with a failure to consider that approach. Consequently, this asserted basis for admitting this contention must be rejected because it fails to raise a genuine dispute with DOE on a material issue of law or fact. *See* 10 C.F.R. § 2.309(f)(1)(vi).

The Staff does not oppose admission of this contention to the extent that it is admitted based on Nevada's assertion that DOE did not "integrate a comprehensive, self-consistent geologic model into probability calculations." However, Nevada's claim that the PVHA-U is erroneous because of alleged failures to consider the entire geologic history of the Yucca Mountain region should not be used as basis upon which to admit NEV-SAFETY-205, because this claim fails to satisfy the requirements of 10 C.F.R. § 2.309(f)(1)(vi).

CLK-SAFETY-013 – THE DOE'S PROBABILISTIC VOLCANIC HAZARD ANALYSIS UPDATE (PVHA-U) IS INADEQUATE FOR CALCULATING PROBABILITY OF DISRUPTION OF A REPOSITORY AT YUCCA MOUNTAIN BY IGNEOUS EVENTS

> The DOE's Yucca Mountain license application was recently amended (License Application Update # 1) and now relies on the Probabilistic Volcanic Hazard Analysis Update ("PVHA-U") as the basis for calculations of the probability of disruption of a repository at Yucca Mountain by an igneous event. The PVHA-U is inadequate for this purpose because it does not sufficiently integrate a comprehensive, self-consistent geologic model into probability calculations. Furthermore, SAR sections 2.3.11, 2.3.11.1, 2.3.11.2.2, 2.2.2.1.2, 2.2.2.3, 2.2.2.2.3.1 (and similar sections) and the PVHA-U do not adequately address alternative models, modern geophysical surveys, the entire 11 million year history of volcanism in the Yucca Mountain area or the Greenwater Range near Death Valley as part of the volcanic field about Yucca Mountain.

In this proposed contention, Clark County alleges that DOE should have used a three-dimensional, "comprehensive and coherent" geophysical volcanism model for its Updated Probabilistic Volcanic Hazard Analysis (PVHA-U), rather than the two-dimensional spatial realization model that DOE chose to use. *Id.* at 2. Clark County claims that the LA "lacks geophysical data to substantiate models proposed by DOE", and that geophysical data provided by DOE was of such low resolution that it was unsuitable for use in the PVHA-U experts' models. *Id* at 3, 12-13.

Staff Response: The Staff does not oppose admission of CLK-SAFETY-013 to the extent that its admission is based on its claim that DOE failed to "integrate a comprehensive, self-consistent geologic model into [its] probability calculations." Clark County Updated Contentions at 2. However, the Staff opposes admitting this contention on the basis of Clark County's assertion that the PVHA-U does not adequately consider the entire 11 million year history of volcanism in the Yucca Mountain area, because it

fails to show a genuine dispute with DOE on a material issue of fact or law. 10 C.F.R. § 2.309(f)(1)(vi).

10 C.F.R. § 2.309(f)(1)(vi): Genuine Dispute Regarding the Application

The petitioner bears the burden of demonstrating that its contention meets the admissibility standards. *See, e.g., Progress Energy Carolinas, Inc.* (Shearon Harris Nuclear Power Plant, Units 2 & 3), CLI-09-08, 69 NRC ___ (May 18, 2009) (slip op. at 9). Pursuant to 10 C.F.R. § 2.309(f)(1)(vi), the contention must "provide *sufficient information to show* that a genuine dispute exists with the applicant/licensee on a material issue of law or fact." 10 C.F.R. § 2.309(f)(1)(vi) (emphasis added). To raise a genuine dispute with the applicant on a material issue of law or fact, the petitioner must "state the applicant's position and the petitioner's opposing view." *Dominion Nuclear Connecticut, Inc*. (Millstone Nuclear Power Station, Units 2 & 3), CLI-01-24, 54 NRC 349, 358 (2001), *pet. for reconsid. denied*, CLI-02-01, 55 NRC 1 (2002). Further, "[a]ny contention that fails directly to controvert the application or that mistakenly asserts the application does not address a relevant issue can be dismissed." *PPLSusquehanna LLC* (Susquehanna Steam Electric Station, Units 1 and 2), LBP-07-10, 66 NRC 1, 24 (2007).

Clark County alleges that the PVHA-U does not adequately consider the entire 11 million year volcanic record of the Yucca Mountain region. Clark County acknowledges that the PVHA-U experts considered volcanic events more than 5 million years ago, but not the "long term trends or patterns of volcanism." Clark County Updated Contention at 7. Clark County concludes that if DOE had used the same techniques for the past 5 million year period for the to 11 million year period, it would have drawn the same conclusions as Clark County, but "[u]nfortunately, DOE decided

not to do so." *Id.*

However, DOE did consider the 11 million year volcanic record. SAR Section 2.3.11.2.1.1, at p. 2.3.11-15, "Igneous Framework," lays out the framework that DOE used in its igneous modeling. That section begins by noting that "[t]he earliest volcanism in the Yucca Mountain region was dominated by a major episode of caldera-forming silicic (rhyolitic) volcanism that occurred between 15 and 11 million years ago, forming the southwestern Nevada volcanic field (Sawyer *et al*. 1994). Silicic volcanism was approximately synchronous with a period of major crustal extension or stretching, which occurred between 13 and 9 million years ago (Sawyer *et al*. 1994, Figure 4)." SAR, Section 2.3.11.2.1.1, at p. 2.3.11-15. That is, DOE not only considered, but used "look back" periods of greater than 5 million years, and greater than 11 million years. By conceding that a longer "look back" period was considered, but then objecting to the PVHA-U's decision not to utilize it, s*ee id.* at 7, Clark County erroneously equates the PVHA-U's deliberate decision not to use a particular approach with a failure to consider that approach. Consequently, this asserted basis for admitting this contention must be rejected because it fails to raise a genuine dispute with DOE on a material issue of law or fact, as required by 10 C.F.R. § 2.309(f)(1)(vi).

The Staff does not oppose admission of this contention to the extent that it is admitted based on Clark County's assertion that DOE did not "integrate a comprehensive, self-consistent geologic model into probability calculations." However, Clark County's claim that the PVHA-U is erroneous because of its alleged failures to consider the entire geologic history of the Yucca Mountain region should not be used as basis upon which to admit CLK-SAFETY-013, because this claim fails to satisfy the requirements of 10 C.F.R. § 2.309(f)(1)(vi).

CONCLUSION

The Staff does not oppose admission of contentions NEV-SAFETY-204, NEV-SAFETY-205, and CLK-SAFETY-013, to the extent that the bases for their admission are limited as described above.

/Signed (electronically) by/

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/Executed in accord with 10 C.F.R. § 2.304(d)/

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARDS

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CERTIFICATE OF SERVICE

I hereby certify that copies of the "NRC Staff Answer to New Contentions Filed by State of Nevada and Clark County" in the above-captioned proceeding have been served on the following persons this 6th of July, 2009, by Electronic Information Exchange.

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