UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CROW BUTTE RESOURCES, INC. ,	)	Docket No. 40-8943
	)	ASLBP No. 08-867-02-OLA-BD01
(License Renewal for the	)	
In Situ Leach Facility, Crawford, Nebraska)	)	June 25, 2015

CONSOLIDATED INTERVENORS' ANSWER TO NRC STAFF'S MOTION IN LIMINE

Consolidated Intervenors hereby submit the following Answer to NRC Staff's Motion in Limine filed June 15, 2015. The Consolidated Intervenors also join in the Answer filed by the OST on this date June 25, 2015, as if those arguments were set forth herein in their entirety.

INTRODUCTION

On June 15, 2015, the NRC Staff filed its Motion in Limine seeking to exclude a number of Exhibits filed by the Consolidated Intervenors and by the Oglala Sioux Tribe ("OST"), as well as significant portions of written testimony filed by Consolidated Intervenors' expert witnesses. For the reasons discussed below, the Consolidated Intervenors request that the NRC Staff's Motion in Limine be denied and that Consolidated Intervenors' Exhibits be admitted as filed.

Consolidated Intervenors understand that it is very common for NRC Staff to seek to exclude from a hearing record the expert testimony offered by public interest oriented intervenors even though it would seem that such exclusion efforts provide further evidence of Consolidated Intervenors overall arguments that NRC Staff seeks to avoid taking the 'hard look' required by NEPA.

In prior rulings, ASLBPs have admitted testimony over the objections of the NRC Staff and in rejection of its motions in limine and we submit that the same result is required here.[1] In particular, in *Private Fuel Storage, LLC (Independent Spent Fuel Storage Installation),* the Board specifically stated that the arguments raised by "the Staff are best considered and explored not at this point, but as the challenged evidence is being tested in the hearing process. At the conclusion of that process, we should be in better position to evaluate the legitimacy, value and weight of the challenged evidence." *Private Fuel Storage, LLC (Independent Spent Fuel Storage Installation)*, 2002 WL 818124 (NRC 2002).

Further, Dr. Kreamer, Mr. Wireman and Ms. McLean are identified experts and we have provided their credentials. Their testimony is directly relevant to the contentions admitted in this proceeding. Accordingly, 10 CFR 2.337(a) does not require that they be excluded nor does any other NRC regulation.

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[1] See e.g., *Alabama Power Company (Joseph M. Farley Nuclear Plant, Units 1 and 2)*, 1992 WL 111147,*2 (NRC 1992) (citing, *Philadelphia Electric Co. (Limerick Generating Station, Units 1 and 2)*, ALAB-863, 25 NRC 273, 279 (1987) (citing cases)); and *Private Fuel Storage, LLC (Independent Spent Fuel Storage Installation)*, 2002 WL 818124 (NRC 2002).

The general rule against hearsay does not apply in NRC administrative proceedings. *Alabama Power Company (Joseph M. Farley Nuclear Plant, Units 1 and 2)*, 1992 WL 111147,*2 (NRC 1992). Therefore, there is no reason to exclude the submissions of Dr. Abitz (INT-002), Paul Robinson (INT-005), or JR Engineering (INT-004).[2] Although such documents were not updated to reflect the SER or the EA, it does not matter because they were based on the LRA and they are directly relevant to contentions that are being heard at the August 2015 hearing in this matter.

The Rebuttals of Dr. Kreamer and Mr. Wireman are in response to specific matters raised by the initial testimony preferred by either Crow Butte, NRC Staff or both and, therefore, should not be excluded based on this Board's March 25th Order.

There is no legal requirement that Dr. Kreamer or Mr. Wireman make specific references to the initial testimony portions being rebutted - merely that they offer expert testimony in rebuttal to the statements made by the experts of Crow Butte and/or the experts of the NRC Staff. However, we note that the rebuttals focus on statements made in the initial testimony of Crow Butte witnesses Beins, Soliz, Lewis, Sperin and Teahon concerning admitted Contentions A, C, D, F and 14 (CBR-001) and Crow Butte's witnesses Patrick, Teahon, and Lewis concerning admitted contentions 6 and 9 (CBR-008).

Although the Federal Rules of Evidence do not apply directly in NRC proceedings, the Board may look to these rules for guidance. *Southern Cal. Edison Co.*

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[2] Of course the Board is empowered to weigh the evidence presented in such submissions and discount the same to the extent that the problems identified in such submissions have been corrected in the SER and/or the EA, which we submit has not happened.

(San Onofre Nuclear Generating Station, Units 2 & 3), ALAB-717, 17 NRC 346, 365 n. 32 (1983). Under Federal Rule 702, a witness qualifies as an expert if he or she has "scientific, technical, or other specialized knowledge [that] will assist the trier of fact to understand the evidence or determine a fact in issue." *Duke Power Co. (William B. McGuire Nuclear Station, Units 1 & 2)*, ALAB-669, 15 NRC 453, 475 (1982). Furthermore, under the NRC's rule at 10 C.F.R. § 2.337(a), the Board should admit evidence as long as it is "relevant, material, and reliable . . . [and] not unduly repetitious."

Finally, as a general matter, federal courts have determined that administrative agencies are the best source of initial evaluation of evidentiary matters, especially within the ambit of an agency's expertise (such as NRC Atomic Safety and Licensing Board on matters of Atomic Energy Act materials and protection of public health and safety): "Administrative agencies deal with technical questions, and it is imprudent for the generalist judges of the federal district courts and courts of appeals to consider testimonial and documentary evidence bearing on those questions unless the evidence has first been presented to and considered by the agency." *Cronin v. United States Dep't of Agriculture*, 919 F.2d 439, 444 (7th Cir. 1990). In the instant case, this Licensing Board is uniquely positioned to have expertise on matters involving AEA licensing and would also be in a position to evaluate any expert testimony offered in this proceeding.

Should the Board strike the expert testimony as requested by the NRC Staff, the Board will have lost its opportunity to include in the record a proper examination of the impacts of the proposed action which will support our arguments, on appeal to the federal

courts, that the NRC Staff and Crow Butte have failed to comply with the AEA and, in the Staff's case, NEPA's 'hard look' requirements.

REGARDING INITIAL TESTIMONY OF DR. DAVID KREAMER, MIKE WIREMAN AND MS. LINSEY McLEAN

In its Motion in Limine, the NRC Staff argues that the initial written testimony of Dr. Kreamer (INT-046) and Mike Wireman (INT-047) exceeds the scope of admitted contentions, particularly in relation to Contention A. The Consolidated Intervenors maintain that the descriptive language in both Dr. Kreamer's and Mr. Wireman's initial statements is relevant to explain and support their opinions that there is "no valid scientific reason" to exclude uranium as an excursion indicator. Likewise the detail is necessary to support each of their conclusions that the excursion monitoring program established by CBR and approved by NRC Staff is inadequate.

Ms. McLean's initial testimony (INT-048 & INT-049) is relevant to the potential deleterious effects of land application of mining waste water (Contention 12) to humans as well as fauna and flora in the ecosystem. Contentions A and D both address the potential for excursions. Ms. McLean's testimony, in its entirety, is relevant to explain the basis for her opinions that the monitoring protocol in use by CBR is inadequate to detect excursions and the corresponding potential health effects of such excursions on both the human, non-human and natural environment.

REGARDING REBUTTAL TESTIMONY OF DR. DAVID KREAMER

The NRC Staff contends that Dr. Kreamer's Rebuttal Testimony (INT-069) raises new arguments that do not relate to either NRC Staff witnesses,' nor CBR witnesses' initial testimony and should be excluded on those grounds. On the contrary, Dr. Kreamer's Rebuttal Testimony directly implicates statements made by witnesses for both CBR and NRC Staff and as such, is both relevant and admissible.

In their initial testimony witnesses for CBR directly discount the claim underlying Contention C, that there is a potential for surface water contamination. These witnesses also apparently support the NRC staff's characterization that the impact of surface waters from an accident is 'minimal since there are no nearby surface water features.' In support of their argument the witnesses state that, "At Crow Butte, engineering and administrative controls are in place to prevent both subsurface and surface releases to the environment and also to mitigate the effects should a release occur."

The witnesses do not address the actual surface water features in the area and do not fully explain the loss of flow to Chadron Creek other than a mention that springs in the area apparently had constant flow for a period of time. ("Spring discharge rates to Chadron Creek are purported to have remained constant through this time period").

Dr. Kreamer's rebuttal directly challenges these statements. In Dr. Kreamer's Section (a), he lists surface water features that are said to be absent and not identified by the witnesses or the LRA, points out the lack of monitoring of these features, and

discusses trends which could indicate changes near the CBR site. Further, regarding the witnesses statement that there are "engineering and administrative controls in place to prevent both subsurface and surface releases to the environment and also to mitigate the effects should a release occur," Dr. Kreamer's Section (a) points to the lack of description of runoff controls from the site, lack of discussion of impacts on stock or wildlife in these surface water features, and the lack of erosion modeling and potential for sediment discharge downstream during reported flooding of creeks near the site. Further, Dr. Kreamer's Section (d) notes the absence of a regional water balance study, which would quantitate CBR's impact on nearby communities and surface water ecosystems that CBR and the witnesses contend are absent.

Regarding the potential for leaking pipes, the witnesses state that, "In general, piping from the plant to and within the wellfield is constructed of PVC, high-density polyethylene pipe with butt-welded joints or equivalent." Dr. Kreamer's Section (e) directly addresses this admitted generality by the witnesses, which might have some other unspecified "equivalent" technology applied to these pipes, pipes which well could spend decades underground. Dr. Kreamer discusses that the standard put forth by CBR, for determining both pipe integrity and any leaks during operation, is solely pressure testing, and that this pressure testing "control" is not adequate and potentially harmful. Dr. Kreamer, directly rebuts the witnesses' testimony by explaining that pressure testing could both produce leaks in testing, and later not detect chronic leaks during operation, which could spill large quantities of fluid underground.

CBR witnesses further contend in their initial testimony that, "Crow Butte successfully demonstrated the mined aquifer is confined, including borehole log data, laboratory tests of soils and rocks, water level data, water sampling data, aquifer pump tests, and operating experience." The witnesses also state that, "As noted above, the conclusions regarding the suitability of the Crow Butte site for in situ mining were based on site-specific data, tests, and conclusions." They include information from the North Trend Expansion area to support their claim of hydrologic isolation of what the witnesses call the "Basal Chadron".

Dr. Kreamer's Rebuttal Section (b), directly contradicts the witnesses' statements regarding what they call "conclusions for confinement". Dr. Kreamer supports his objection to this purported hydrologic isolation by directly addressing the adequacy of CBR's analyses. Dr. Kreamer supports his statements by pointing out monitoring inadequacy and inappropriate modeling assumptions, and CBR's use of old and unsuitable methodology in his Section (c), and the lack of a water balance pointed out in Section (d).

Dr. Kreamer also shows that the witnesses' conclusions were based on selective data. He points out that the contradictory information to witnesses' claim of layer-cake geologic continuity is not supportable. Specifically in their testimony, the witnesses imply that some faulting was detected in some strata but characterize it as not "significant" saying, "Close spaced drill data throughout the license area indicate that no significant faulting is present in the wellfield area." The witnesses state that shrinking

and swelling clays, "indicate that both the upper and lower confinement are significantly less permeable than the ore zone and, given their substantial thickness, are essentially impermeable." Further the witnesses state, "The Pierre Shale, upper Chadron and Orella Member of the lower Brule Formation, therefore are aquicludes (not aquitards) that provide effective hydraulic isolation of the Basal Chadron Sandstone …." The witnesses cite the "result of multiple aquifer tests at other CBR expansion areas around Crawford, suggesting regional competency of the upper confining units."

In his Section (c), Dr. Kreamer directly and quantitatively challenges the aquifer testing (pumping tests) conducted by CBR and their subcontractors, which is a major lynch-pin of the witnesses' arguments. He shows why the selected analysis conducted with gross assumptions, conducted in a non-standard way, with inadequate monitoring well construction by CBR, is misleading and unwarranted. He debunks the idea that the geology is "layer cake" and in fact does not consist of horizontal geologic layers of uniform thickness, infinite horizontal extent, that are homogeneous and isotropic as assumed in the analytical modeling by CBR and its subcontractors.

Dr. Kreamer also directly contradicts the witnesses' testimony by showing that the "spot treatment" that has become necessary in remedial efforts and the discovered anisotropy in the "Basal Chadron" are also inconsistent with CBR's presented aquifer testing analysis. He directly challenges the exclusion of contradictory aquifer analysis by CBR cited by the witnesses. He points out indication of vertical communication (as opposed to vertical isolation espoused by the witnesses) in data analysis of the main

aquifer testing report (2002) cited by the witnesses. Dr. Kreamer also directly criticizes the numerical model loosely described by the witnesses for support of their hypothesis of hydrologic isolation.

In pages 34 through 41 of the testimony, the witnesses admit to "excursions" of underground contamination, but go through a lengthy process of justifying what they believe is the adequacy of CBR's monitoring and what they believe is a small likelihood of contaminant escape. This includes their specific endorsement of current: monitoring configuration, well construction, timing of sampling, the restriction of parameters sampled, the adequacy of their model based approach, and all aspects of monitoring throughout the course of operation, restoration and stabilization. These are being rebutted.

In his Section (c), Dr. Kreamer directly rebuts this testimony. He points out the conflict of current monitoring well design at CBR with EPA recommended practices. He points out the potential for "rebound" of concentrations after a six-month monitoring period at the end of restoration/ stabilization. He points out that rebound of contaminant concentrations is particularly likely as oxidized groundwater replaces any stop-gap reductant added by CBR to temporarily sequester contaminants. He points out that rebound of high contaminant concentrations after the monitoring period is also likely due to the presence of clays, which could temporarily adsorb contaminants for later release after the brief, six-month monitoring period is over. Dr. Kreamer describes reporting

omissions in the model based remedial approach, and how the references for the model are not up-to-date.

Accordingly, Dr. Kreamer's Rebuttal Testimony is directly, and specifically, related to claims and assertions made by witnesses for both CBR and NRC Staff in their initial testimony and should be admitted as filed.

REGARDING REBUTTAL TESTIMONY OF MIKE WIREMAN

NRC Staff also asserts, for similar reasons, that Mike Wireman's Rebuttal Testimony (INT-070) should be excluded. The Consolidated Intervenors assert that Mr. Wireman's Rebuttal Testimony is directed to statements made by witnesses for both CBR and NRC Staff in their initial testimony and is therefore relevant rebuttal evidence.

In their Initial Written Testimony CBR witnesses' state that CBR has thoroughly investigated the potential for the White River Structural feature (WRSF) to be a contaminant pathway and that the WRSF will not convey water from the Basal Chadron to the overlying Brule Formation.

Mr. Wireman's rebuttal directly challenges this conclusion. The witnesses indicate that a measured increase in gradient in the vicinity of the WRSF is a result of structural thinning. No data is presented to support this conclusion. The increase in gradient could also represent a groundwater discharge location. The exact nature of the WRSF has not been fully characterized. The 3D geologic software used to characterize the WRSF is constrained by insufficient empirical data. The witnesses' note that there is 300-500 ft of

structural relief across the WRSF and observed thinning of individual members of the Chadron Formation. These observations, in combination with the increase in gradient and past interpretations of the WRSF as a fault, clearly indicate a significant uncertainty regarding the hydrology of the structural feature.

In their Initial Written Testimony CBR witnesses state that "no faults or fractures exist which could provide a pathway for contamination of the White River." The witnesses further claim that the Basal Chadron is isolated from the overlying Brule Formation. and that "Crow Butte has demonstrated that the Basal Chadron sandstone is confined such that there is no upward migration of mining fluid into the Brule aquifer".

Their conclusions are based, in significant part, on a series of aquifer tests completed between 1982 and 2002 included a monitoring well in the upper confining unit and reported in the 2007 LRA. Mr. Wireman's rebuttal directly challenges these witnesses' conclusions in their initial testimony, which echoes assertions made in the LRA. In all four tests the pumping well was in the Basal Chadron ore body. Three of the tests included only one monitoring well in the Brule aquifer and the fourth test included two Brule aquifer monitoring wells. Given the size of the mined area and the spatial heterogeneity of lithologies in the formations which comprise the upper confining unit, the tests were not adequate to characterize the potential for upward migration. Results and data from these tests are not adequate for assessing the hydraulic properties and groundwater flow in the Brule aquifer. The data analyses methods used to interpret the aquifer test data are suitable for homogeneous "Darcy flow" aquifers and are very

constrained when used to characterize preferential flow along poorly connected flowpaths. However these types of flowpaths can result in migration of significant volumes of contaminated groundwater. As such, Mr. Wireman disputes the reliance placed on these tests by CBR witnesses in their initial testimony.

Also in their Initial Written Testimony CBR witnesses state that" Crow Butte maintains an extensive water sampling program to identify any potential impacts to water resources in the area." Witnesses have also concluded that the current groundwater monitoring program is adequate with respect to monitoring well locations, screened intervals, sampling procedures and schedules and constituents of concern. This applies to water level and water quality monitoring. The witnesses further state that "uranium is not a good excursion indicator because, although it is mobilized during mining, it may be retarded by reducing conditions in the aquifer …. which would render it a poor leading indicator of an excursion." The witnesses also state that "although the potentiometric surface of the Basal Chadron aquifer has been lowered (by 47 ft) water levels measured in wells screened in the Basal Chadron aquifer still would rise to level of the pre-operational potentiometric surface upon termination of mining and restoration."

Mr. Wireman's rebuttal directly challenges the witnesses' conclusions that the current groundwater monitoring program is adequate. While uranium concentrations in water are clearly affected by redox conditions, the detection of uranium in an excursion monitoring well or, even more importantly, in an offsite groundwater monitoring well provides empirical data to trigger actions to explain the occurrence. In addition,

according to Mr. Wireman, the White River is a critically important potential receptor for unwanted migration of contaminated water and he asserts that in all environmental monitoring programs, monitoring key potential receptors is a key element.

In their Initial Written Testimony (CBR-008) CBR witnesses' state that CBR has developed a modeling based restoration plan (MBRP) to guide groundwater restoration efforts. Witnesses' state that this model has proven to be effective in terms of estimating required pore volume removals and identifying where "spot treatment" is necessary. Witnesses also consider the current approach to meeting required standards to be adequate. Mr. Wireman's rebuttal directly challenges the witnesses' conclusions that current groundwater restoration efforts are adequate.

Accordingly, Mr. Wireman's Rebuttal Testimony is directly related to statements made by witnesses for both CBR and NRC Staff in their initial testimony and should be admitted as filed.

CONCLUSION

For all the foregoing reasons, the Board should deny NRC Staff's Motion in

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Limine and admit Consolidated Intervenors' Exhibits as filed.

Dated this 25th day of June, 2015.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing '**CONSOLIDATED INTERVENORS' ANSWER TO NRC STAFF'S MOTION IN LIMINE**, in the captioned proceeding were served via email on the 25th day of June 2015, which to the best of my knowledge resulted in transmittal of same to those on the EIE Service List for the captioned proceeding.

Respectfully submitted,

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