APP-065

July 15, 2014

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

William J. Froehlich, Chairman
Dr. Richard F. Cole, Special Assistant
Dr. Mark O. Barnett, Special Assistant

In the Matter of:	)	
POWERTECH USA, Inc.	)	
(Dewey-Burdock Project	)	Docket No. 40-9075-MLA
In Situ Uranium Recovery Facility)	)	ASLBP No. 10-898-02-MLA-BD01
	)	
	)	

ANSWERING TESTIMONY OF HAL DEMUTH

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1. CONTENTION 2

1.1 Acquisition of Baseline Groundwater Quality Data is a Phased Process

Q.1. Do you agree with the statement by Dr. Moran that, "The Final SEIS states repeatedly that the NRC will require Powertech to collect such detailed data / information after NRC license approval, because the Application lacked such data" (Exhibit OST-1 at 17)?

A.1. This statement mischaracterizes the phased nature of groundwater quality characterization for an ISR project. As stated in my initial testimony (Exhibit APP-013) at A.13 through A.23, Powertech's approach to licensing and developing a uranium ISR facility is the same approach that has been used in the industry for decades. Prior to license issuance, the applicant collects site-wide baseline groundwater quality data and demonstrates the appropriate procedures for establishing Commission-approved background water quality for each wellfield. Following license issuance but prior to operations, the licensee established Commission-approved background water quality and upper control limits (UCLs) for each wellfield. The initial testimony of Errol Lawrence (Exhibit APP-037) at A.8 through A.26 describes how Powertech collected site-wide baseline groundwater quality in conformance with applicable guidance and regulations, including NUREG-1569 Section 2 and 10 CFR Part 40, Appendix A, Criterion 7. NRC staff's initial testimony (Exhibit NRC-001) at A2.3 also describes conformance with Criterion 7.

To state that NRC will require collection of future baseline groundwater quality information because "the Application lacked such data" fails to recognize that a license applicant cannot construct a wellfield in order to obtain wellfield-specific Commission-approved background data until after license issuance (see A.22 of my initial testimony).

2. CONTENTION 3

2.1 The Fall River and Chilson Aquifers are Isolated Sufficiently that ISR Operations Can Be Conducted Safely in Accordance with the NRC License

Q.2. Do you agree with the statement by Dr. Moran that, "Dewey-Burdock uranium ore zones are not hydraulically-isolated from other geologic units, other aquifers, or zones outside the project area" (Exhibit OST-1 at 18)?

A.2. No. My initial testimony at A.31 through A.33 presents evidence that the production zone aquifers are isolated sufficiently that ISR operations can be conducted safely in accordance with the NRC license. That testimony describes the continuity of the major confining units (Graneros Group, Fuson Shale and Morrison Formation), differing potentiometric water levels between the Fall River and Chilson aquifers and water quality differences between aquifers. See also Errol Lawrence's initial testimony (Exhibit APP-037) at A.44 through A.72, which describes in detail evidence that the ore zones are hydraulically isolated sufficiently to conduct ISR operations

safely. The NRC staff's initial testimony (Exhibit NRC-001) at A.3.5 and A3.8 further describes evidence presented in the FSEIS regarding hydraulic isolation of the production zone aquifers.

2.2 Acquisition of Hydrogeologic Information is a Phased Process

Q.3. Do you agree with the statement by Dr. Moran that, "NRC Staff has delayed a full and credible hydrogeological analysis until after the licensing decision, without providing a credible reason for its incomplete analysis" (Exhibit OST-1 at 23)?

A.3. No. As stated in my initial testimony at A.26 through A.30, acquisition of hydrogeologic information is a phased process in which site-wide hydrogeologic characterization is performed prior to license issuance and the procedures for establishing hydrologic information specific to each wellfield and for monitoring potential impacts are reviewed during the license application process. Similar to Dr. Moran's allegation on baseline groundwater quality, this allegation fails to recognize that Powertech cannot, according to federal law, construct an ISR wellfield in order to obtain hydrogeologic information on a wellfield-scale prior to license issuance. The procedures to prepare wellfield hydrogeologic data packages following license issuance but prior to operations are described in NRC staff's initial testimony at A3.9.

3. CONTENTION 4

3.1 The Water Balance Satisfies its Intended Purpose

Q.4. Do you agree with the allegation by Dr. Moran that the water balance in the FSEIS "did not follow … accepted methodologies" (Exhibit OST-1 at 27)?

A.4. No. My initial testimony at A.40 through A.44 addresses the adequacy of the water balance in the FSEIS, which is based on a water balance diagram that Powertech provided in its license application (Exhibit APP-016-B at 68-73). Specifically my testimony at A.41 describes how NRC staff requested a water balance diagram in support of Powertech's discussion on handling liquid waste. The need for the water balance diagram stemmed from NUREG-1569 guidance indicating that a license application should contain "a water balance diagram for the entire system" (Exhibit NRC-0013 at 3-1).

My initial testimony at A.42 describes Powertech's water balance diagram, which shows the project-wide typical flow rates during various project phases (uranium recovery, groundwater restoration and concurrent uranium recovery/groundwater restoration) and for the two wastewater disposal options (deep disposal wells and land application). Key features of the water balance diagram include demonstrating how the production and restoration bleed will be maintained during production and groundwater restoration and showing the water usage from the Inyan Kara and Madison aquifers during the various project phases.

My initial testimony at A.43 describes how NRC staff reviewed Powertech's water balance and found it to be done in accordance with NRC regulatory guidance in NUREG-1569 Section 3.1.3 and federal regulations in 10 CFR 40.32(c) and 40.41(c).

Q.5. Is a water balance "necessary to predict whether sufficient water is available in an aquifer(s) for use by an ISR project" as stated in NRC staff's initial written testimony (Exhibit NRC-001) at A4.6?
A.5. A water balance is necessary to determine the typical groundwater usage so that an assessment of water availability may be performed. However, as noted at A4.6 in NRC staff's initial written testimony, "a water balance alone is not capable of predicting the impacts from consumptive groundwater use on surrounding water us[e] (such as drawdown in nearby wells) resulting from ISR activities. Potential impacts on surrounding water users at ISR facilities from the consumptive use of groundwater are evaluated using numerical groundwater models …"

Q.6. Did the Petrotek numerical groundwater model provide an assessment of water availability in the production zone aquifers?
A.6. Yes. Section 3 in the numerical groundwater model report (Exhibit APP-025) describes how recharge occurs to the Fall River and Chilson aquifers from a combination of infiltration of precipitation and from overland flow in their outcrop areas to the east and north of the project area. Section 3 describes how the approximate groundwater flux for the Fall River and Chilson was calculated for the project area, and Section 5.4 describes how the simulated flux from the numerical model closely agreed with the flux calculated previously.

Q.7. Did the Petrotek numerical groundwater model provide an assessment of potential impacts of consumptive groundwater use on surrounding water users?
A.7. Yes. As described in my initial testimony at A.47, the model estimates that the maximum drawdown in the Fall River and Chilson aquifers will be up to 10 to 12 feet at the license boundary. See also Errol Lawrence's initial testimony at A.99 and A.100, which describes the modeled drawdown impacts. Further, the model estimates that water levels will recover to near pre-operational levels within about one year after project water usage terminates.

Q.8. Did NRC staff review the adequacy of the Petrotek numerical model?
A.8. Yes. As stated in Errol Lawrence's initial testimony (Exhibit APP-037) at A.93, NRC staff reviewed the numerical groundwater model and determined that it was appropriately developed and sufficiently calibrated. More specifically, Mr. Lawrence's initial testimony at A.42, citing the SER (Exhibit NRC-134 at PDF page 253), describes how the NRC staff found that the modeling effort was sufficient to "[e]nhance understanding of the Fall River and Chilson aquifer systems with respect to:

- regional and local flow patterns
- recharge and discharge boundaries
- overall water budget (available and sustainable resources)"

4. CONTENTION 6

Q.9. What is the nature of your answering testimony on Contention 6?

A.9. Since none of the intervenors submitted written testimony on Contention 6, my answering testimony responds to allegations stated by the Oglala Sioux Tribe in its Initial Position Statement and to initial testimony by NRC staff in Exhibit NRC-001. My testimony specifically focuses on mitigation issues associated with groundwater protection.

4.1 The FSEIS Adequately Describes Mitigation Measures with Respect to Groundwater Resources

Q.10. Do you agree with the statement that, "Instead of providing a reasonably complete NEPA discussion of mitigation and providing an analysis of the effectiveness of those mitigation measures, the FSEIS repeatedly refers to various commitments by the applicant to mitigate impacts by submitting plans in the future as a result of license conditions imposed by NRC staff … including such basic elements as requiring the applicant to conduct hydrogeologic characterization and aquifer pumping tests in each wellfield to examine the hydraulic integrity of the Fuson Shale … to locating unknown boreholes or wells identified through aquifer pump testing, and committing to plugging and abandoning historical wells and exploration holes, holes drilled by the applicant and any wells that fail mechanical integrity tests" (OST Initial Position Statement at 33)?

A.10. No. I addressed these allegations in my initial testimony, including:

- A.32 and A.33 address evidence of hydraulic isolation between the Fall River and Chilson aquifers due to the Fuson Shale, including differing potentiometric water level elevations and differing water quality.
- A.55 through A.58 address the extensive mitigation measures that were evaluated in the FSEIS to ensure that drawdown-induced migration of potential contaminants (i.e., from the Fall River Formation through the Fuson Shale and into the Chilson) from the historical mine pits does not affect aquifer restoration goals.
- A.59 describes sections of the FSEIS that evaluate the effectiveness of Powertech's plans to identify and plug unplugged or improperly plugged boreholes.

In addition, my initial testimony at A.51 through A.54 describes how the FSEIS adequately describes the mitigation measures that will be used to protect groundwater resources and evaluates their effectiveness based on a number of common factors such as compliance with applicable regulatory requirements, adherence to license conditions and proven effectiveness at operating ISR facilities. It describes how the mitigation measures used to minimize and control potential adverse environmental impacts to groundwater are the same procedures and controls that NRC staff reviewed in the SER to ensure that the facility will be operated in a manner that protects public health and the environment in accordance with federal regulations including 10 CFR Part 40.

Q.11. Please respond to the allegation that "historic evidence demonstrates that ISL uranium mines have a very poor record of restoring ground water aquifers – in fact, none have ever actually restored an aquifer used to conduct ISL uranium mining" (OST Initial Position Statement at 34).

A.11. The allegation that no ISR facility has "ever actually restored an aquifer used to conduct ISL uranium mining" is false. As documented in A.64 of my initial testimony, NRC has approved numerous wellfield restorations at NRC-licensed ISR facilities.

5. CONTENTION 9

Q.12. What is the nature of your answering testimony on Contention 9?

A.12. Since none of the intervenors submitted written testimony on Contention 9, my answering testimony responds to allegations stated by the Oglala Sioux Tribe in its Initial Position Statement and to initial testimony by NRC staff in Exhibit NRC-001. My testimony specifically focuses on disposal of treated wastewater in Class V deep disposal wells permitted through EPA.

5.1 EPA Regulates Class V UIC Wells in South Dakota and Decides on the Suitability and Appropriate Classification of the Treated Wastewater

Q.13. Please respond to the allegation that disposal of radioactive waste below the lower-most USDW is not a Class V activity, but is a Class I underground disposal well, which is not allowed under South Dakota regulations (OST Initial Position Statement at 40).

A.13. As described in my initial testimony at A.69, this allegation is based on a false premise – that "radioactive waste" will be disposed in the Class V deep disposal wells. In fact, as described throughout the FSEIS, Powertech has committed to treating the wastewater to meet 10 CFR 20, Appendix B, Table 2, Column 2 limits for release of radionuclides to the environment (e.g., FSEIS at 4-34).

Further, the FSEIS at 2-22 confirms that hazardous waste may not be injected into the Class V deep disposal wells:

> "Liquid waste injected into potential Class V injection wells at the proposed Dewey-Burdock ISR Project site must not be hazardous or radioactive, as defined at 40 CFR 144.3."

As stated in A.70 of my initial testimony, EPA regulates Class V UIC wells in South Dakota and will make the decision on the suitability and appropriate classification of the waste stream based on Powertech's commitments to treat the wastewater. There is no regulatory requirement that Class V wells must be above or below any USDW.

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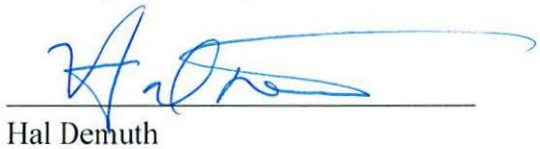
AFFIDAVIT OF HAL DEMUTH

I declare under penalty of perjury that my statements in prefiled Exhibit APP-065 (Hal Demuth Answering Testimony) are true and correct to the best of my knowledge and belief.



Hal Demuth

Executed in Littleton, CO
this 14th day of July, 2014