

November 25, 2014

Michael Thomas, Vice President
Regulatory and Public Affairs
Uranerz Energy Corporation
1701 East E Street
P.O. Box 50850
Casper, WY 82605-0850

SUBJECT: DEFICIENCY IN LICENSE AMENDMENT APPLICATION, URANERZ ENERGY CORPORATION NICHOLS RANCH *IN SITU* URANIUM RECOVERY PROJECT, CAMPBELL AND JOHNSON COUNTIES, WYOMING (TAC J00726)

Dear Mr. Thomas:

On September 11, 2014, the U.S. Nuclear Regulatory Commission (NRC) notified Uranerz Energy Corporation that NRC had initiated its acceptance review of Uranerz's May 8, 2014, license amendment request to amend license SUA-1597 for the Nichols Ranch In-Situ Recovery Project (Jane Dough amendment request). During the acceptance review, the NRC found the Jane Dough amendment request deficient due to lack of sufficient information.

In summary, the Jane Dough amendment request contains inconsistent and incomplete treatment of the mineralized zone, absent overlying confining units in Jane Dough Unit above the A Sand, and a clearly defined overlying aquifer. NUREG-1569, "Standard Review Plan for In Situ Leach Uranium Extraction License Applications," states in acceptance criterion 2.6.3(4) that the characterization of the site geology and seismology is acceptable if, "A geologic and geochemical description of the mineralized zone and the geologic units immediately surrounding the mineralized zone is provided." As described in the following paragraphs, the Jane Dough amendment request does not clearly describe the mineralized zone and geologic units immediately surrounding the mineralized zone.

Specifically, Appendix JD-D5, Section JD-D5.3, "Site Geology," of the Jane Dough amendment request states with respect to the Jane Dough Unit that, "The principle [sic] uranium ore bearing sand unit is the A Sand" and "The Jane Dough A Sand ore body is bounded above and below by aquitards." (p. JD-D5-8). However, the analysis on p. JD-D5-10 states, among other things, that "Where the AB Shale Aquitard is not present the B Sand sits directly upon the A Sand." This inconsistency in the description of the degree to which the A Sand is confined is representative of inconsistencies throughout the application. Uranerz did not clearly state which aquifer in Jane Dough contains the mineralized zone and which confining units (aquitards) are present above the mineralized zone.

The extent of where the AB Shale Aquitard is not present is depicted in Exhibit JD-D5-17 and various other cross-section drawings (e.g., Exhibit JD-D5-5), which clearly indicates that the AB Shale Aquitard is non-existent throughout much of the eastern side of the Jane Dough Unit where two proposed wellfields would be located. In addition, Appendix JD-D6, Section

JD-D6.2.2.1, "Aquifer Properties" states, "In the eastern half of the Jane Dough Unit, the aquitard between the A and B Sands is not continuous and thus the two sands show good connection and create the AB aquifer." Consistent with this explanation, Table JD-D6-3 of Appendix JD-D6 includes a summary of the aquifer properties in the Jane Dough Unit, including the properties of the "AB Sand." The geology and hydrology sections of the Jane Dough amendment request contain brief statements and representations acknowledging the absence of the AB Shale Aquitard and thus the existence of the coalesced "AB Sand."

Where the AB Shale Aquitard is absent between the A Sand and B Sand and the units coalesce to form the AB Sand, the Jane Dough amendment request does not address how wellfields will be operated and restored in the AB Sand to protect the overlying aquifer. Specifically, where the AB Sand coalesces, an overlying aquifer, separated by an aquitard, has not been defined in the application. If the upper portion of the coalesced AB Sand is selected as the overlying aquifer, as appears to be the case in the application, the Jane Dough amendment request does not address how excursions will be detected and corrected in the AB Sand or what portion of the AB sand would be the protected overlying aquifer. Staff is unaware of an NRC licensed ISR facility that uses a similar model where an overlying aquifer is not separated from the mineralized zone by an aquitard. See also NUREG-1569, acceptance criterion 5.7.8.3(3), which states, in part, "In well fields where the production zone confining layers are particularly thin, or of questionable continuity, a greater number of monitor wells is appropriate." The staff also observed that your application does not address ground water flow and transport modeling of the AB Sand during operation and restoration of the Jane Dough wellfields. Furthermore, Section 4.4.1.3 of the Environmental Report does not acknowledge the presence of, or environmental impacts to, the AB Sand. Revisions to the Jane Dough amendment request should address these matters in areas where the absence of the AB Shale Aquitard, and thus the existence of the AB Sand, would affect the analysis and conclusions contained in the application.

The NRC requests that Uranerz timely submit revisions to its Jane Dough amendment request that address the deficiencies described above. If NRC does not receive these amendments within 60 days of your receipt of this letter, NRC will reject the Jane Dough amendment request. Should the NRC reject the Jane Dough amendment request, Uranerz may resolve the deficiencies and resubmit its license amendment request at a later time.

M. Thomas

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If you have any questions, please contact me at David.Brown@nrc.gov or (301) 287-9110.

Sincerely,

/RA/

David D. Brown, Sr. Health Physicist
Uranium Recovery Licensing Branch
Division of Decommissioning, Uranium Recovery,
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket No.: 04009067
License No.: SUA-1597

cc:
Mr. Miles Bennett, WDEQ
Mr. Mark Rogaczewski, WDEQ

M. Thomas

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If you have any questions, please contact me at David.Brown@nrc.gov or (301) 287-9110.

Sincerely,

/RA/

David D. Brown, Sr. Health Physicist
Uranium Recovery Licensing Branch
Division of Decommissioning, Uranium Recovery,
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Office of Nuclear Material Safety
and Safeguards

Docket No.: 04009067
License No.: SUA-1597

cc:
Mr. Miles Bennett, WDEQ
Mr. Mark Rogaczewski, WDEQ

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