

April 21, 2016

Mr. Larry Teahon, Manager
SHEQ
Cameco Resources, Crow Butte Operation
86 Crow Butte Road
P.O. Box 169
Crawford, NE 69339-0169

SUBJECT: SUMMARY OF APRIL 6, 2016, TELECONFERENCE REGARDING OPEN
ISSUES, CROW BUTTE RESOURCES, INC., MARSLAND EXPANSION AREA
LICENSE AMENDMENT (CAC NO. J00683)

Dear Mr. Teahon:

On April 6, 2016, the U.S. Nuclear Regulatory Commission (NRC) staff and representatives of Crow Butte Resources, Inc. (CBR) held a teleconference to discuss open issues associated with CBR's application for the Marsland Expansion Area (MEA) license amendment. The purpose of this teleconference was to explain the open issues to ensure that CBR understood the information being requested by the NRC staff. A summary of this meeting is enclosed, and contains the open issues, and a brief synopsis of any response by CBR.

Please either provide the information identified in the meeting summary within 45 days of the subject public meeting or inform us of the date you expect to provide the information.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

L. Teahon

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If you have any questions, please contact me at 301-415-6563 or by email at Thomas.Lancaster@nrc.gov.

Sincerely,

/RA/

Tom Lancaster, Project Manager
Uranium Recovery Licensing Branch
Division of Decommissioning, Uranium Recovery,
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket No.: 040-8943

Enclosure: Meeting Summary

cc: David Miesbach, NDEQ

L. Teahon

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Docket No.: 040-8943

Enclosure: Meeting Summary

cc: David Miesbach, NDEQ

DISTRIBUTION: N. Goodman, NMSS J. Valdes, NMSS M. Simon, OGC

ADAMS Accession No.: ML16109A304

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|--------|--------------|-----------|------------|--------------|
| OFFICE | NMSS:PM | NMSS:LA | NMSS:BC | NMSS:PM |
| NAME | T. Lancaster | S. Achten | B. VonTill | T. Lancaster |
| DATE | 4/15/16 | 4/18/16 | 4/21/16 | 4/21/16 |

OFFICIAL RECORD COPY

MEETING SUMMARY

DATE: April 6, 2016

TIME: 2:00 p.m. - 3:10 p.m.

PLACE: U.S. Nuclear Regulatory Commission (NRC)
Two White Flint North
Room T8C1
Rockville, MD 20555

PURPOSE: To discuss issues relating to Crow Butte Resources, Inc.'s (CBR's) Marsland Expansion Area (MEA) In-Situ Recovery (ISR) license amendment.

ATTENDEES: SEE ATTACHMENT 1

BACKGROUND

The purpose of this meeting was to discuss issues relating to CBR's MEA ISR license amendment. The meeting was publicly noticed on the NRC Web site on March 24, 2016.

DISCUSSION

The teleconference started at 2:00 p.m. Eastern Standard Time. An opening statement was presented by Mr. Tom Lancaster, NRC. The meeting continued with a discussion of issues relating to CBR's MEA ISR license amendment. The meeting closed with a discussion concerning the schedule for receiving CBR's written response to the issues. Attached is a detailed summary of this discussion.

ACTIONS

For individual actions associated with this teleconference, see the attached summary.

ATTACHMENTS:

1. Meeting Attendees
2. Meeting Agenda
3. Discussion Summary

Enclosure

MEETING ATTENDEES

APRIL 6, 2016

Teleconference to Discuss Issues Relating to Marland Expansion Area In-Situ Recovery License Amendment

| NAME | AFFILIATION | PHONE NUMBER |
|----------------|--------------------|--------------|
| Tom Lancaster | NRC/URLB | 301-415-6563 |
| Jose Valdes | NRC/URLB | 301-415-5259 |
| Elise Striz | NRC/URLB | 301-415-0708 |
| Nate Goodman | NRC/ERB | 301-415-0221 |
| Dave Back | NRC/ERB Contractor | 301-415-0221 |
| Marcia Simon | NRC/OGC | 301-415-1261 |
| Dave Cylkowski | NRC/OGC | 301-415-1631 |
| Emily Monteith | NRC/OGC | 301-415-2718 |
| Mike Thomas | Cameco Resources | 308-665-2215 |
| Bob Tiensvolds | Cameco Resources | 308-665-2215 |
| Larry Teahon | Cameco Resources | 308-665-2215 |
| Sabrina Fox | Cameco Resources | 308-665-2215 |
| Wade Beins | Cameco Resources | 308-665-2215 |
| Doug Palvick | Cameco Resources | 308-665-2215 |
| Bob Lewis | Cameco Resources | 308-665-2215 |

MEETING AGENDA

April 6, 2016

Crow Butte Resources, Inc./Marsland Expansion Area

MEETING PURPOSE: Teleconference to Discuss Issues Relating to Marsland Expansion Area In-Situ Recovery License Amendment

| <u>Time</u> | <u>Topic</u> | <u>Lead</u> |
|-------------|---|-------------|
| 10:00 a.m. | Introductions | All |
| | Discussion of Open Issues <i>(list of issues attached)</i> | All |
| | Summary of Action Items | Moderator |
| | Public Comment/Questions | Moderator |
| 4:00 p.m. | Adjourn | |

DISCUSSION SUMMARY OF MARSLAND OPEN ISSUES

APRIL 6, 2016

Open Issue Request No. 1

In Section 3.1.3 of the license application (second full paragraph) it is stated that: "Pumping tests will ...be performed for each MU not covered by the regional pump test..." The wording in the license application is not clear with regard to the meaning of "...not covered by the regional pump test." Per NUREG-1569, Section 5.7.8.3 , Acceptance Criterion No. 4: "Once a well field is installed, it should be tested to establish that the production and injection wells are hydraulically connected to the perimeter horizontal excursion monitor wells and are hydraulically isolated from the vertical excursion monitor wells... Test approaches typically consist of a pumping test that subjects the well field to a sustained maximum withdrawal rate while monitoring the perimeter and vertical excursion wells for drawdown."

The application should be modified to make it clear that the applicant intends to perform a pumping test involving a pumping well and monitoring wells for each mine unit.

Response: The licensee understood and will submit the necessary information to address the open issue within 45 days of the subject public meeting.

Open Issue Request No. 2

There is an inconsistency in the application regarding the presence of irrigation wells within the Marsland Expansion Area (MEA). In Section 2.9.3.2 (pg. 2-119, 1st sentence, 3rd paragraph in the "Risk Conclusion" subsection), it is stated that: "The presence of high-capacity irrigation wells both *within* and near the MEA screened within the Arikaree Group and Brule Formation will have a seasonal impact on those aquifers" (emphasis added). However, Table 2.2-11 of the application does not indicate the presence of any agricultural irrigation wells within the license boundary.

The inconsistency described should be addressed and corrected.

Response: The licensee understood and will submit the necessary information to address the open issue within 45 days of the subject public meeting.

Open Issue Request No. 3

Staff's technical review of Basal Chadron Sandstone water level data provided in the 2015 revision of the Marsland Technical Report has identified the following information needs to complete staff's independent evaluation:

- a. For the time period from 2011 to 2015, hydrographs and raw water level data (Excel file format) for a representative number of Basal Chadron Sandstone wells at the Crow Butte Resources (CBR) licensed facility. Raw data should include well identification, screened interval(s), water level elevations, data collection times, and spatial coordinates.

Response: The licensee understood and will submit the necessary information to address the open issue within 45 days of the subject public meeting.

- b. For all time periods available, hydrographs and raw water level data (Excel file format) for Basal Chadron Sandstone wells located at potential expansion areas (Marsland, North Trend, Three Crow). Raw data should include well identification, screened interval(s), water level elevations, data collection times, and spatial coordinates.

Response: The licensee understood and will submit the necessary information to address the open issue within 45 days of the subject public meeting.

- c. Conceptualization of regional groundwater flow directions in the Basal Chadron Sandstone encompassing data from the main Crow Butte facility and the proposed Crow Butte satellite facilities (Marsland, North Trend, Three Crow) along with a discussion pertaining to the data supporting the conceptualization.

Response: The licensee understood and will submit the necessary information to address the open issue within 45 days of the subject public meeting.

- d. Water balance information (i.e., extraction, injection, and consumptive use rates), preferably by mine unit, at the Crow Butte licensed facility for the time period from 2011 to 2015. The raw data (Excel file format) should also be provided.

Response: The licensee understood and will submit the necessary information to address the open issue within 45 days of the subject public meeting.

- e. An analysis (preferably analytical) of estimated drawdowns within the Basal Chadron Sandstone within and in the vicinity of the proposed Marsland Expansion Area based on projected consumptive use rates presented in Appendix T of the Technical Report. Results should include projected drawdown versus distance and potentiometric surface maps of the Basal Chadron Sandstone at intermittent times (including the period of highest consumptive use). Provide the executable code, data input and output files and any other information necessary for the Staff to independently verify the analysis.

Response: The licensee requested clarification of the open issue request (Item 3e) during the public meeting. After the public meeting, e-mail correspondence occurred with the licensee that allowed staff to provide clarity of the request. Staff's clarification of the open issue request is:

Conduct a cumulative drawdown impact assessment for the Basal Chadron Sandstone aquifer at the MEA including drawdown impacts from the MEA, Crow Butte Operating Facility and Three Crow Expansion Facility. The assessment will use the projected consumptive use at each facility, and actual consumptive use estimates for the CBO facility prior to 2016. The assessment will be performed using a Theis analytical solution for confined aquifers and the principal of superposition for cumulative drawdown impacts. The assessment will include drawdown impacts over the period 2011 to approximately 2052, corresponding to the historical groundwater monitoring period at the MEA, facility operations, and 10 years beyond last consumptive use at MEA and TCEA to include the aquifer recovery period. Hydrographs depicting projected drawdown over time will be

produced at selected locations within and around the MEA including the MEA In situ recovery (ISR) wellfields, existing MEA Basal Chadron monitoring wells (Monitor 1 thru Monitor 11), and at a 2.25 mile radius from the MEA facility. Drawdown contour maps will be provided illustrating the cumulative drawdown impacts at the MEA for the period of maximum cumulative drawdown.

In addition to the cumulative drawdown impact assessment described above, drawdown impacts resulting solely from MEA operations will be evaluated as part of this work. Hydrographs and drawdown contour maps will be prepared illustrating projected drawdown in the Basal Chadron aquifer due to MEA operations.

The licensee understands the information need above and will submit the necessary information to address the open issue within 45 days of the subject public meeting.

Response: The licensee understood and will submit the necessary information to address the open issue within 45 days of the subject public meeting.

- f. An analysis (preferably analytical) of estimated cumulative regional drawdowns in the Basal Chadron Sandstone that considers potential impacts of multiple Crow Butte ISR facilities (Marsland, North Trend, Three Crow, the main facility) operating simultaneously based on their respective production schedules. Provide the executable code, data input and output files and any other information necessary for the Staff to independently verify the analysis.

Response: The licensee understood and will submit the necessary information to address the open issue within 45 days of the subject public meeting.

- g. Maps of available head above the top of the Basal Chadron Sandstone within and in the vicinity of the MEA for both the pre-development period and during the period of highest projected consumptive use.

Response: The licensee understood and will submit the necessary information to address the open issue within 45 days of the subject public meeting.

- h. Description of Crow Butte's monitoring and contingency plans to ensure that the Basal Chadron Sandstone aquifer remains saturated throughout the proposed operations and ground water restoration at the MEA.

Response: The licensee understood and will submit the necessary information to address the open issue within 45 days of the subject public meeting.

- i. Any other information that CBR has not already submitted that relates to potential sources of drawdown in the Basal Chadron Sandstone aquifer regionally or locally with respect to the MEA.

Response: The licensee understood and will submit the necessary information to address the open issue within 45 days of the subject public meeting.

Schedule for Receiving CBR's Written Responses

Staff voiced an expectation of receiving CBR's written response to the above-referenced open issues within 30 to 45 days of the public meeting. Crow Butte indicated that they are planning on providing their written response to the NRC within 45 days.