

Crow Butte Resources Response to NRC Draft License Condition Revisions Dated March 8, 2012

Section 9: Administrative Conditions	Cameco Resources Comment
<p>9.1 Authorized place of use shall be the licensee's Crow Butte uranium recovery and processing facilities in Dawes County, Nebraska as described in the license application dated November 27, 2007 (Agencywide Documents Access and Management System (ADAMS) package ML073480264).</p>	<p>Comment: None.</p>
<p>9.2 The licensee shall conduct operations in accordance with the commitments, representations, and statements contained in the license application dated November 27, 2007 (ADAMS package ML073480264), which is supplemented by submittals dated August 28, 2008, May 12, 2009, July 13, 2009, September 17, 2010, <del>and</del> September 28, 2010 and February 8, 2012. The approved application and supplements are hereby incorporated by reference, except where superseded by license conditions below. Whenever the word "will" or "shall" is used in the above referenced documents, it shall denote a requirement.</p>	<p>Comment: None.</p> <p><b>Cameco 4/19/12: Accept.</b></p>
<p>9.3 All written notices and reports sent to the U.S. Nuclear Regulatory Commission (NRC) as required under this license and by regulation shall be addressed as follows: ATTN: Document Control Desk, Director, Office of Federal and State Materials and Environmental Management Programs, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. An additional copy shall be submitted to: Deputy Director, Decommissioning and Uranium Recovery Licensing Directorate, Division of Waste Management and Environmental Protection, Office of Federal and State Materials and Environmental Management Programs, U.S. Nuclear Regulatory Commission, Mail Stop T-8F5, NRC FORM 374A U.S. NUCLEAR REGULATORY COMMISSION 11545 Rockville Pike, Two White Flint North, Rockville, MD 20852-2738. Incidents and events that require telephone notification shall be made to the NRC Operations Center at (301) 816-5100 (collect calls accepted).</p>	<p>Comment: None.</p>

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<p><b>9.4 Change, Test and Experiment License Condition</b></p> <p>A) The licensee may, without obtaining a license amendment pursuant to 10 CFR 40.44, and subject to conditions specified in (B) of this condition:</p> <ul style="list-style-type: none"> <li>i. Make changes in the facility as described in the license application (as updated);</li> <li>ii. Make changes in the procedures as described in the license application (as updated); and</li> <li>iii. Conduct test or experiments not described in the license application (as updated).</li> </ul>	<p>Comment: None.</p>
<p><b>9.4 Change, Test and Experiment License Condition (cont.)</b></p> <p>B) The licensee shall obtain a license amendment pursuant to 10 CFR 40.44 prior to implementing a proposed change, test, or experiment if the change, test, or experiment would:</p> <ul style="list-style-type: none"> <li>i. Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the license application (as updated);</li> <li>ii. Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a facility structure, equipment, or monitoring system (SEMS) important to safety previously evaluated in the license application (as updated);</li> <li>iii. Result in more than a minimal increase in the consequences of an accident previously evaluated in the license application (as updated);</li> <li>iv. Result in more than a minimal increase in the consequences of a malfunction of an SEMS previously evaluated in the license application (as updated);</li> <li>v. Create a possibility for an accident of a different type than any previously evaluated in the license application (as updated);</li> <li>vi. Create a possibility for a malfunction of an SEMS with a different result than previously evaluated in the license application (as updated);</li> <li>vii. Result in a departure from the method of evaluation described in</li> </ul>	<p>Comment: License conditions 9.4, B) i., ii., iii. and iv. have been consistently modified from “result in any appreciable increase” to “result in more than a minimal increase”.</p> <p>To date, Crow Butte Resources has received favorable feedback from NRC inspectors on its implementation of this risk-based license condition and is unaware of any issue or concern which warrants this language change.</p> <p>If the change is intended to be more stringent, please explain where and how the new language would affect upcoming inspections. If possible, clarify the quantitative and qualitative implications so that Cameco may adjust our approach to implementation.</p> <p>If the change is not intended to be more stringent, is it needed? Proposed license conditions 9.4 B) ii. and 9.4 B) vi. appear to be redundant. Delete 9.4 B) vi.</p> <p><b>NRC Staff response: do not agree. No change to license condition.</b></p> <ul style="list-style-type: none"> <li>• Changes are made to all licenses for this standard license condition</li> <li>• Construction is similar to 10 CFR 50.59.</li> <li>• License conditions 9.4 B) ii. and 9.4 B) vi are not redundant.</li> </ul> <p><b>Additional Cameco Comment:</b> If license conditions 9.4 B) ii. and 9.4 B) vi are not redundant please explain the difference so that Cameco</p>

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<p>the license application (as updated) used in establishing the final safety evaluation report (FSER), environmental impact statement (EIS), environmental assessment (EA) or technical evaluation reports (TERs) or other analyses and evaluations for license amendments.</p> <p>viii. For purposes of this paragraph as applied to this license, SEMS means any SEMS that has been referenced in a staff SER, TER, EA, or EIS and supplements and amendments thereof.</p>	<p>may understand the compliance implications unique to each.</p> <p><b>NRC staff Response to additional comment:</b></p> <ol style="list-style-type: none"> <li>1. For explanation, see final rule for 10 CFR 50.59, 64 FR 53582.</li> <li>2. For further guidance, see Regulatory Guide (RG)1.187 (ML003759710). RG 1.187 provides a reference to a Nuclear Energy Institute guidance document that clarifies the difference between these two requirements.</li> </ol> <p><b>Cameco 4/19/12: Accept.</b></p>
<p>9.4 Change, Test and Experiment License Condition (cont.)</p> <p>C) Additionally, the licensee must obtain a license amendment unless the change, test, or experiment is consistent with NRC's previous conclusions, or the basis of, or analysis leading to, the conclusions of actions, designs, or design configurations analyzed and selected in the site or facility SER, TER, and EIS or EA. This would include all supplements and amendments, and TERs, EAs, EISs issued with amendments to this license.</p>	<p>Comment: None.</p>
<p>9.4 Change, Test and Experiment License Condition (cont.)</p> <p>D) The licensees determinations concerning (B) and (C) of this condition, shall be made by a Safety and Environmental Review Panel (SERP). The SERP shall consist of a minimum of three individuals. One member of the SERP shall have expertise in management (e.g., Plant Manager) and shall be responsible for financial approval for changes; one member shall have expertise in operations and/or construction and shall have responsibility for implementing any operational changes; and one member shall be the radiation safety officer (RSO) or equivalent, with the responsibility of assuring changes conform to radiation safety and environmental requirements. Additional members may be included in the SERP, as appropriate, to address technical aspects such as</p>	<p>Comment: None.</p>

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<p>ground water or surface water hydrology, specific earth sciences, and other technical disciplines. Temporary members or permanent members, other than the three above-specified individuals, may be consultants.</p>	
<p>9.4 Change, Test and Experiment License Condition (cont.)  E) The licensee shall maintain records of any changes made pursuant to this condition until license termination. These records shall include written safety and environmental evaluations made by the SERP that provide the basis for determining changes are in compliance with (B) of this condition. The licensee shall furnish, in an annual report to the NRC, a description of such changes, tests, or experiments, including a summary of the safety and environmental evaluation of each. In addition, the licensee shall annually submit to the NRC changed pages, which shall include both a change indicator for the area changed, e.g., a bold line vertically drawn in the margin adjacent to the portion actually changed, and a page change identification (date of change or change number or both), to the operations plan and reclamation plan of the approved license application (as updated) to reflect changes made under this condition.</p>	<p>Comment: None.</p>
<p>9.5 <u>Financial Assurance</u>.  The licensee shall maintain an NRC-approved financial surety arrangement, consistent with 10 CFR 40, Appendix A, Criterion 9, adequate to cover the estimated costs, if accomplished by a third party, for decontamination and decontamination, which includes offsite disposal of radioactive solid process or evaporation pond residues, and ground-water restoration as warranted. The surety shall also include the <b>estimated</b> costs associated with all soil and water sampling analyses necessary to confirm the accomplishment of decontamination.</p>	<p>Comment: To maintain consistency in language within the condition, please revise the last sentence to read "shall also include the <u>estimated</u> costs associated...." (Emphasis added).  <b>NRC Staff response: agree, change made.</b></p>
<p>9.5 <u>Financial Assurance</u>, cont.  Proposed annual updates to the financial assurance amount, consistent with 10 CFR Part 40, Appendix A, Criterion 9, shall be provided to the</p>	<p>Comment: 1) Will a new renewal date be established on an annual basis? 2) Will the NRC and State of Nebraska review occur concurrently or sequentially? 3) How will requests for alternate</p>

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<p><b>NRC by October 1 of each year.</b> The financial assurance update renewal date for the Crow Butte Project will be determined following consultation with the licensee and the State of Nebraska. If the NRC has not approved a proposed revision 30 days prior to the expiration date of the existing financial assurance arrangement, the licensee shall extend the existing arrangement, prior to expiration, for one year. Along with each proposed revision or annual update of the financial assurance estimate, the licensee shall submit supporting documentation, showing a breakdown of the costs and the basis for the cost estimates with adjustments for inflation, maintenance of a minimum 15-percent contingency, changes in engineering plans, activities performed, and any other conditions affecting the estimated costs for site closure.</p>	<p>decommissioning schedules and in-process license amendments be administered when the update requires CBR to look ahead and plan over a year in advance?  <b>NRC Staff agrees with comments 1&amp;2 above. License condition modified as follows –</b>  <b>1 &amp; 2 ) Remove "90 days prior to the anniversary date (e.g. renewal date of the financial assurance instrument/vehicle). The financial assurance update renewal date for the Crow Butte Project will be determined following consultation with the licensee and the State of Nebraska" and replace it with the original language, "by October 1 of each year."</b>  <b>Staff response to Comment 3 – No change required.</b>  <b>3) Concerning the Licensee's 3rd comment, NRC staff noted that such issues are handled on a case by case basis,</b></p>
<p><b>9.5 <u>Financial Assurance</u>, cont.</b>          Within 90 days of NRC approval of a revised closure (decommissioning) plan and its cost estimate, the licensee shall submit, for NRC review and approval, a proposed revision to the financial assurance arrangement if estimated costs exceed the amount covered in the existing arrangement. The revised financial assurance instrument shall then be in effect within 30 days of written NRC approval of the documents.</p>	<p><b>Comment: None.</b></p>
<p><b>9.5 <u>Financial Assurance</u>, cont.</b>          At least 90 days prior to beginning construction associated with any planned expansion or operational change that was not included in the annual financial assurance update, the licensee shall provide, for NRC approval, an updated estimate to cover the expansion or change. The licensee shall also provide the NRC with copies of financial assurance-related correspondence submitted to the State of Nebraska, a copy of the State's financial assurance review, and the final approved financial assurance arrangement.</p>	<p><b>Comment: None.</b></p>
<p><b>9.5 <u>Financial Assurance</u>, cont.</b></p>	<p><b>Comment: The NRC-related aboveground decommissioning and</b></p>

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<p>The licensee also must ensure that the financial assurance instrument, where authorized to be held by the State, identifies the NRC-related portion of the instrument and covers the aboveground decommissioning and decontamination, the cost of offsite disposal of solid byproduct material, soil, and water sample analyses, and ground water restoration associated with the site. The basis for the cost estimate is the NRC-approved site closure plan or the NRC-approved revisions to the plan. Reclamation or decommissioning plan cost estimates and annual updates should follow the outline in Appendix C to NUREG-1569 (NRC, 2003), entitled "Recommended Outline for Site-Specific In Situ Leach Facility Reclamation and Stabilization Cost Estimates."</p>	<p>decontamination scope will be identified.</p>
<p>9.5 <u>Financial Assurance</u>. (cont.)          Crow Butte Resources, Inc., shall continuously maintain an approved surety instrument for the Crow Butte project, in favor of the State of Nebraska, in the amount of no less than \$35,398,802 for the purpose of complying with 10 CFR 40, Appendix A, Criterion 9, until a replacement is authorized by both the State of Nebraska and NRC.  <del>The licensee shall continuously maintain an approved surety instrument for Crow Butte Resources, Inc., in favor of the State of Nebraska.</del></p>	<p>Comment: The sentences following the first are not applicable to Crow Butte since it is already in operation. This appears to be language that was used for a new licensee and does not reflect Crow Butte's current status. For that reason, Cameco suggests the second sentence be deleted.  <b>NRC Staff response: agree, license condition modified as suggested.</b>          Additional NRC staff Response:          Language changed to reflect the revised surety amount approved in amendment #26 (ML110320358).  <b>Cameco 4/19/12: Accept.</b></p>
<p>9.6 Release of surficially contaminated equipment, materials, or packages from restricted areas shall be in accordance with the NRC guidance document "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," (the Guidelines) dated April 1993 (ADAMS Accession No. ML003745526) or suitable alternative procedures approved by NRC prior to any such release. The Guidelines shall also apply to the removal of equipment, materials, or packages from restricted areas that have the potential for accessible surface contamination levels above background regardless of</p>	<p>Comment: Provided that the referenced guideline is interpreted consistent with the NRC Public Meeting Summary dated December 22, 2009 (ML093510155) and page 107 of the Safety Evaluation Report for the Moore Ranch ISR Project (ML101310291) regarding alpha contamination control, Cameco has no comment.  <b>NRC Staff response: Yes, interpretation is consistent with specified documents.</b>  <b>Additional Cameco Comment: At the present time, for Crow Butte Operations, equipment, materials or packages from restricted areas are only released to unrestricted use by the RSO or health physics</b></p>

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<p>the intent to release these items for unrestricted use. The licensee shall document their survey of equipment, materials, or packages prior to removing them from a restricted area. Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides shall apply independently.</p> <p><b>Personnel performing these contamination surveys for items released for unrestricted use or from restricted areas shall meet the qualifications as health physics technicians or radiation safety officer as defined in Regulatory Guide 8.31. Personal effects (e.g., notebooks and flash lights) which are hand carried need not be subjected to the qualified individual survey or evaluation, but these items should be subjected to the same survey requirements as the individual possessing the items.</b></p>	<p>technician as defined in Regulatory Guide 8.31. Included in the Crow Butte Resources radiation protection program is a combination of training, tracking and marking which are used to retain custody of equipment, materials or packages released by <u>trained personnel</u> from restricted areas to controlled areas. Only the RSO or health physics technicians are authorized to release these controlled items for discard or unrestricted use.</p> <p>Please delete the words “or from restricted areas” in the first sentence of the license conditions and add an additional sentence at the end which states:</p> <p>“(t)trained personnel will perform surveys for release of equipment, materials or packages from restricted areas to controlled areas at the Crow Butte Operations in accordance with the radiation protection program. Custody of items released by trained plant personnel from restricted to controlled areas must be demonstrated until unrestricted release by the RSO or HPT.”</p> <p><b>NRC staff response to additional comment:</b></p> <p><b>NRC staff disagrees with the proposed language. No change to license condition.</b></p> <p>No details have been provided on what appears to be a request for a “controlled release” program. <b>More specifically, there is no discussion in the Technical Report describing the location of “controlled” areas, specific training requirements to qualify an individual to perform these duties, and, most importantly, there are no details on exactly how materials will be accounted for once they leave the restricted area up until final disposition.</b></p> <p>License can be amended in the future to provide specific details on a proposed controlled release program.</p> <p><b>Cameco 4/19/12: Accept.</b></p>
<p>9.7 The licensee shall follow the guidance set forth in NRC, Regulatory Guides (as revised) 8.22, “Bioassay at Uranium Recovery Facilities,” and 8.30, “Health Physics Surveys in Uranium Recovery Facilities,” and</p>	<p>Comment: Please insert “or NRC-approved equivalent” at the end of the sentence invoking Regulatory Guide 8.31 to provide parallel construction and regulatory effect. Because Regulatory Guide 8.31</p>

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<p>8.31"Information Relevant to Ensuring that Occupational Radiation Exposure at Uranium Recovery Facilities will be As Low As Is Reasonably Achievable (ALARA)" or NRC-approved equivalent.</p>	<p>is guidance, Cameco believes it is important to expressly vest this discretion in the NRC, in part to minimize a potential unintended administrative constraint. <b>NRC Staff response: Agreed and changed.</b></p>
<p>9.8 <u>Cultural Resources</u>. Before engaging in any developmental activity not previously assessed by the NRC, the licensee shall administer a cultural resource inventory if such survey has not been previously conducted and submitted to the NRC. All disturbances associated with the proposed development will be completed in compliance with the National Historic Preservation Act (as amended) and its implementing regulations (36 CFR Part 800), and the Archaeological Resources Protection Act (as amended) and its implementing regulations (43 CFR Part 7) to the extent applicable.  In order to ensure that no unapproved disturbance of cultural resources occurs, any work resulting in the discovery of previously unknown cultural artifacts shall cease. The artifacts shall be inventoried and evaluated in accordance with 36 CFR Part 800, and no disturbance of the area shall occur until the licensee has received authorization from the NRC to proceed.  Prior to any developmental activity in the immediate vicinity of the six potentially eligible sites identified in Section 2.4 of the approved license application, the licensee shall provide documentation of its coordination with the Nebraska State Historical Society to NRC.</p>	<p>Comment: None.</p>
<p>9.9 The licensee shall dispose of solid byproduct material from the Crow Butte Project at a site that is authorized by NRC or an NRC Agreement State to receive byproduct material. The licensee's approved solid byproduct material disposal agreement must be maintained on site. In the event that the agreement expires or is terminated, the licensee shall notify the NRC within seven working days after the date of expiration or termination. A new agreement shall be submitted for NRC review within 90 days after expiration or termination, or the licensee will be prohibited from further lixiviant injection.</p>	<p>Comment: None.</p>



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<p>9.10 The results of the following activities, operations, or actions shall be documented: sampling; analyses; surveys or monitoring; survey/monitoring equipment calibrations; reports on audits and inspections; all meetings and training courses; and any subsequent reviews, investigations, or corrective actions required by NRC regulation or this license. Unless otherwise specified in a license condition or applicable NRC regulation, all documentation required by this license shall be maintained until license termination, and is subject to NRC review and inspection.</p>	<p>Comment: None</p>
<p>9.11 The licensee is hereby exempted from the requirements of 10 CFR 20.1902(e) for areas within the facility, provided that all entrances to the facility are conspicuously posted with the words, "CAUTION: ANY AREA WITHIN THIS FACILITY MAY CONTAIN RADIOACTIVE MATERIAL."</p>	<p>Comment: None.</p>
<p><i>The following information shall be provided to NRC staff within sixty days of the effective date of this license. Upon acceptance by NRC staff, it will become part of the licensing basis.</i></p>	
<p>9.12 The licensee shall submit a Quality Assurance Program (QAP) to the NRC for review and approval. The QAP will address the topics recommended in Regulatory Guide 4.15 (as revised).</p>	<p>Additional Cameco Comment: None.</p>
<p><b>SECTION 10: Operations, Controls, Limits, and Restrictions</b></p>	
<p>10.1 The licensee shall use a lixiviant composed of native groundwater, with added sodium carbonate/bicarbonate, carbon dioxide, oxygen and/or hydrogen peroxide, as described in the approved license application.</p>	<p>Comment: None.</p>
<p>10.2 <u>Facility Throughput</u>. The plant throughput shall not exceed a maximum flow rate of 9000 gallons per minute, excluding restoration flow. Annual yellowcake production shall not exceed 2 million pounds.</p>	<p>Comment: None.</p>
<p>10.3 <u>Emission Controls (Dryer)</u>. The licensee shall maintain effluent control systems as specified in Sections 4.1 and 5.8.1 of the approved license application, with the following exceptions: A. If any of the yellowcake emission control equipment fails to operate</p>	<p>Comment: None.</p>

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<p>within specifications set forth in the standard operating procedures, the drying and packaging room shall immediately be closed-in as an airborne radiation area and heating operations shall be switched to cooldown, or packaging operations shall be temporarily suspended. Packaging operations shall not be resumed until the vacuum system is operational to draw air into the system.</p> <p>B. The licensee shall, during all periods of yellowcake drying operations, assure that the negative pressure specified in the standard operating procedures for the dryer heating chamber is maintained. This shall be accomplished by (1) performing and documenting checks of air pressure differential approximately every four hours during operation, or (2) installing instrumentation which will signal an audible alarm if the water flow or air pressure differential falls below the recommended levels. If an audible alarm is used, its operation shall be checked and documented at the beginning and end of each drying cycle when the differential pressure is lowered.</p>	
<p>10.4 The licensee shall ensure that written standard operating procedures (SOPs) exist that address: (1) all operational activities involving radioactive and non-radioactive materials associated with licensed activities that are handled, processed, stored, or transported by employees; (2) all non-operational activities involving radioactive materials including in-plant radiation protection and environmental monitoring; and (3) emergency procedures for potential accident/unusual occurrences including significant equipment or facility damage, pipe breaks and spills, loss or theft of yellowcake or sealed sources, significant fires, and other natural disasters. The SOPs shall include appropriate radiation safety practices to be followed in accordance with 10 CFR Part 20. SOPs for operational activities shall enumerate pertinent radiation safety practices to be followed. A copy of the current written procedures shall be kept in the area(s) of the production facility where they are utilized.</p>	<p>Comment: None.</p>
<p>10.5 <u>Mechanical Integrity Tests</u>. The licensee shall construct all wells in accordance with methods described in Section 3.1.2 of the approved</p>	<p>Comment: None. NRC Staff: Since operating pressure is not specified within any of</p>

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<p>license application. Mechanical integrity tests shall be performed on each injection and production well before the wells are utilized and on wells that have been serviced with equipment or procedures that could damage the well casing. Additionally, each well shall be retested at least once each five (5) years it is in use. The integrity test shall pressurize the well to 125 pounds per square inch percent of the maximum operating pressure and shall maintain 90 percent of this pressure for 20 minutes to pass the test. A single point resistance test may be used only in conjunction with another approved well integrity testing method. If any well casing failing the integrity test cannot be repaired, the well shall be plugged and abandoned.</p>	<p>the license conditions, language was adjusted for clarity. <b>Cameco 4/19/12: Accept.</b></p>
<p><b>10.6 Ground Water Restoration.</b> The licensee shall conduct ground water restoration activities in accordance with the approved license application. Permanent cessation of lixiviant injection in a well field would signify the licensee's intent to shift from the principal activity of uranium production to the initiation of ground water restoration. Prior to initiation of ground water restoration activities, the licensee shall determine the restoration schedule. If the licensee determines that these activities are expected to exceed 24 months, then the licensee shall submit an alternate schedule request that meets the requirements of 10 CFR 40.42.</p> <p>Restoration Standards. Hazardous constituents in the ground water shall be restored to the numerical ground water protection standards as required by 10 CFR 40, Appendix A, Criterion 5(B)(5). In submitting any license amendment application requesting review of proposed alternate concentration limits (ACLs) pursuant to Criterion 5(B)(6), the licensee must also show that it has first made <b>practicable</b> efforts to restore the specified hazardous constituents to the background or maximum contaminant levels (whichever is greater).</p> <p><b>Restoration Stability Monitoring. The licensee shall conduct sampling of all constituents of concern on a quarter year basis during restoration stability monitoring. The sampling shall include the specified ore zone aquifer wells. The applicant shall continue the stability monitoring until</b></p>	<p>Comment: Cameco strongly disagrees with NRC's contention that Groundwater restoration is not a principal activity. It is Cameco's contention that the act of groundwater restoration is part and parcel to the final phase of restoration. Groundwater restoration is required by prior license conditions and is required under 10 CFR 40 Appendix A Criterion 5. This constitutes a licensed activity, and the arbitrary application of 10 CFR 40.42 in this condition is wholly inappropriate. 10 CFR 40.42(d) states the following, in part:</p> <p><i>"(d) Within 60 days of the occurrence of any of the following, consistent with the administrative directions in § 40.5, each licensee shall provide notification to the NRC in writing and either begin decommissioning its site, or any separate building or outdoor area that contains residual radioactivity, so that the building or outdoor area is suitable for release in accordance with NRC requirements, or submit within 12 months of notification a decommissioning plan, if required by paragraph (g)(1) of this section, and begin decommissioning upon approval of that plan if-</i></p> <p><i>(1) The license has expired pursuant to paragraph (a) or (b) of this section; or</i></p> <p><i>(2) The licensee has decided to permanently cease principal activities, as defined in this part, at the entire site or in any separate building or outdoor area; or</i></p>

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the data show the most recent four consecutive quarters indicate no statistically significant increasing trend for all constituents of concern which would lead to an exceedance above the respective Criterion 5B(5) standard.

Changes to ground water restoration or post-restoration monitoring plans shall be submitted to the NRC for review and approval at least 60 days prior to ground water restoration in a well field.

The restoration schedule for mine units two through five shall be as described in the request dated July 24, 2009, (ADAMS Accession No. ML092220668) and as approved in NRC staff's letter dated February 18, 2010(ADAMS Accession No. ML092510030).

(3) No principal activities under the license have been conducted for a period of 24 months; or

(4) No principal activities have been conducted for a period of 24 months in any separate building or outdoor area that contains residual radioactivity such that the building or outdoor area is unsuitable for release in accordance with NRC requirements."

Given that the action of groundwater restoration is required as part of the original and license conditions, that action is a principal action. The act of completing restoration to meet the requirements of 10 CFR 40 App. A Criterion 5(b)(5), the majority of the facilities at the site will remain engaged in a principal activity required by the license. As a result, none of the "triggers" in 10 CFR 40.42 are valid until groundwater restoration is completed. Cameco requests that references to groundwater restoration with respect to the requirements of 10 CFR 40.42 be changed to groundwater stability monitoring, which is far more appropriate for this requirement, or at least related to the time that may or may not exist where there is no activity between production and restoration.

**NRC Staff response: Principal activities are defined as extraction of uranium. No change to license condition.**

**Additional background information:**

**NRC letter to Cameco dated July 7, 2008 (ML081620401),** referencing Administrative Letter 96-05, provided a discussion of 10 CFR 40.42 requirements (timely decommissioning ) as it relates to groundwater restoration. In letter dated December 21, 2010 (ML110040422), Cameco appeared to agree with this position.

**Additional Cameco Comment:** As noted in the transmittal letter, Cameco is requesting that NRC Staff grant a specific exemption pursuant to 10 CFR § 40.14(a) from the requirements of 10 CFR § 40.42 as applied to alternate groundwater restoration schedules for Cameco's current and future wellfields. Please modify this license condition accordingly.

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	<p>NRC staff response to additional comment:  <b>No change to license condition at this time.</b>          NRC staff will evaluate the exemption request when resources permit. NRC staff will complete higher priority items first, including license renewal and the North Trend amendment request.  <b>Cameco 4/19/12: As noted in the transmittal letter, it remains Cameco's position that groundwater restoration is a principal activity. Dependent upon the outcome of the exemption request, Cameco may choose to pursue that interpretation.</b></p>
<p>10.6 <u>Ground Water Restoration.</u> (cont.) Hazardous constituents in the ground water shall be restored to the numerical ground water protection standards as required by 10 CFR 40, Appendix A, Criterion 5(B)(5). In submitting any license amendment application requesting review of proposed alternate concentration limits (ACLs) pursuant to Criterion 5(B)(6), the licensee must also show that it has first made <b>practicable</b> effort to restore the specified hazardous constituents to the background or maximum contaminant levels (whichever is greater).</p>	<p>Comment: Please replace the word "reasonable" with "practicable" for consistency with Criterion 5(B)(6).  <b>NRC Staff response: Agreed and changed.</b></p>
<p>10.7 The licensee shall maintain an overall inward hydraulic gradient <b>within the perimeter monitor well ring in each individual well-field</b> starting when lixiviant is first injected into the production zone and continuing until the initiation of the stabilization period. <del>restoration standards have been achieved.</del></p>	<p>Comment: The term "restoration target values (RTVs) is not used in the application or in NUREG-1569. Please change the license condition to "restoration standards".  <b>NRC Staff response: Agreed and changed.</b>          Additional Cameco Comment:          As written, every instance where indicator parameters are detected in a perimeter monitor well (i.e. "an excursion") will represent a violation of this proposed license condition.          Cameco requests this new license condition be deleted and the NRC continue to utilize LC 11.5 to ensure control of mining fluids within the perimeter monitoring well ring.          From the perspective of hydraulic gradient there are five operational phases- pretreatment, production, restoration, recirculation and stability monitoring. <b>Cameco has and will make an unqualified</b> commitment to maintain control of mining fluids during all five</p>

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operational phases. To date, Cameco has not, and in the future will not be able to commit to maintaining an inward hydraulic gradient within each individual well field in all phases of operations, for the following reasons.

In a new well field, mining solutions are initially pushed outward from the center of the well field to “pretreat” the production zone. Once the conductivities in outer extraction wells demonstrate adequate pretreatment, the wells are then rebalanced to establish the inward hydraulic gradient. Excursion monitoring is conducted in the perimeter monitoring wells throughout this process to demonstrate control the mining fluids and to ensure appropriate well field balance.

During production and restoration every effort is made to maintain an inward hydraulic gradient within the perimeter monitoring well ring. By monitoring indicator parameters in the perimeter monitor well ring, Cameco is able to respond to imbalances in the hydraulic gradient long before the uranium approaches the perimeter wells. When these excursions/parameter exceedences occur, notification and corrective action is compelled by LC 11.5.

After restoration is largely complete, in some instances recirculation is conducted to homogenize the aquifer. During recirculation the water table is flat- the injection wells and production wells are essentially balanced. At best, during recirculation only a very small inward hydraulic gradient exists.

An inward hydraulic gradient is not present during stabilization because pumping does not occur and a quiescent condition is desired.

If NRC chooses to retain the concept of “inward hydraulic gradient” in a license condition Cameco suggests the following language:

*“The licensee shall maintain an inward hydraulic gradient within the perimeter monitoring wells from the time pretreatment of a new production zone is complete until recirculation (if conducted) or stability monitoring begins. Imbalances in the hydraulic gradient*

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*managed pursuant to LC 11.5 do not represent a violation of this license condition."*

It should be noted that the alternate language now contemplates the perimeter monitoring well ring as the point of compliance within which Cameco will maintain an inward hydraulic gradient after pretreat and prior to recirculation (if conducted) or stability monitoring. On a well field by well field basis there are times where an inward hydraulic gradient is not maintained. This change is crucial to accommodate operational needs as a variety of water balance/water management challenges that must routinely be addressed.

Corresponding changes to the application are attached.

**NRC Staff response to additional comment:**

NRC staff disagrees with the proposed language. **No change to standard license condition to maintain a wellfield inward gradient at this time. However, staff revised to the license condition to further define the period for maintaining a wellfield inward gradient.**

As previously requested, the licensee did not provide a sufficient description of the design, operation, safety related information and controls for the containment of recovery fluids during wellfield pretreatment and recirculation as proposed. Staff requires this information to conduct its safety review of the containment of recovery fluids during operations and restoration to include pretreatment and recirculation.

NRC staff is continuing its evaluation of the containment of recovery fluids during pretreatment and recirculation, dependent upon additional information to be submitted by the applicant.

**Cameco 4/19/12: Based upon further discussions between NRC Staff and Cameco, the above revisions to the license language are being proposed. First, specifying "within the perimeter monitoring well ring" in lieu of "in each individual wellfield" recognizes the sequential development of new mine units which often adjoin an earlier mine unit. Prior to the start of a new mine unit, required**

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	<p>notifications are made and the sampling of the new perimeter monitoring wells on the outside edge of the new mine unit begins. The perimeter monitoring wells from the adjoining edge of the earlier mine unit are simultaneously incorporated as either injection or production wells.</p> <p>Second, Cameco requests the term “overall” be added. Cameco is able to maintain an overall inward hydraulic gradient during pretreatment, operations and restoration except for isolated, localized, short duration operational imbalances (e.g. well clogging, pump failure, etc.). Cameco identifies these imbalances by observing trends in monitoring parameters; in most instances the imbalances are corrected prior to reaching reportable exceedance levels in the perimeter monitor wells. In this way, minor operational imbalances will not be considered a violation of this license condition.</p>
<p><i>Facility Specific Conditions</i></p> <p>10.8 Flow rates on each injection and recovery well, and manifold pressures on the entire system, shall be monitored and recorded daily. During well field operations, injection pressures shall not exceed 100 pounds per square inch at the injection well heads.</p>	<p><b>Note: Moved from 11.7</b></p> <p>In the prior license, LC 11.1 stated:</p> <p><i>“Flow rates on each injection and recovery well, and manifold pressures on the entire system, shall be monitored and recorded daily. During well field operations, injection pressures shall not exceed the integrity test pressure at the injection well heads.”</i></p> <p>When intentionally or inadvertently the first sentence provides crucial context. Cameco requests that the entire language of the original LC 11.1 be included in the new license.</p> <p>This is necessary because injection pressures are not measured at the wellheads. Instead, injection pressures are monitored in the wellhouse at the manifold with an audible and visible alarm monitored 24 hours per day, seven days per week in the control room. The alarms are set to prevent pressure in excess of 100 psi at the wellhouse manifold, which is less than the 125psi integrity test pressure. In addition, due to line losses, the maximum pressure at</p>



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	<p>the well heads will be less than the 100 psi limit set at the wellhouse manifold.</p> <p><b>NRC Staff response:</b> Based on clarification provided, NRC staff agrees with the proposed change to the license condition. The license condition has been changed accordingly.</p> <p>Based on the results of NRC staff's safety evaluation, the second sentence of the license condition was revised. <b>Cameco 4/19/12: Accept.</b></p>
<p>10.9 In-plant radiological monitoring for airborne uranium and radon daughters shall be conducted at the locations shown in Figure 5.8-5 in the approved license application.</p>	<p><b>Comment:</b> None.</p>
<p>10.10 The licensee shall submit a detailed decommissioning plan to NRC for review and approval at least 12 months prior to the planned final shutdown of mine unit extraction operations.</p>	<p><b>Comment:</b> None.</p>
<p>10.11 Each of the Research and Development (R&amp;D) evaporation ponds shall have at least 0.9 meters (3 feet) of freeboard. Each of the commercial solar evaporation ponds shall have at least 1.5 meters (5 feet) of freeboard. Additionally, the licensee shall maintain, at all times, sufficient reserve capacity in the evaporation pond system to enable transferring the contents of a pond to the other ponds. In the event of a leak and subsequent transfer of liquid, freeboard requirements shall be suspended during the repair period.</p>	<p><b>Comment:</b> None.</p>
<p>10.12 All liquid effluents from process buildings and other process waste streams, with the exception of sanitary wastes, shall be returned to the process circuit; discharged to the solar evaporation ponds; disposed by land irrigation in accordance with the licensee's proposal submitted on August 3, 1988, as modified by its submittal on June 7, 1993; or deep well injected in accordance with the licensee's report submitted on August 24, 1993, as modified by submittals dated</p>	<p><b>Comment:</b> None.</p>

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<p>December 7, 1995, April 3, 1996, and September 12, 2000.</p>		<p>Comment: None.</p>
<p>10.13 The licensee shall maintain an area within the restricted area boundary for temporary storage of contaminated materials. All contaminated wastes and evaporation pond residues shall be disposed at a radioactive waste disposal site licensed to accept 11e.(2) byproduct material.</p>		<p>Comment: None.</p>
<p>10.14 The licensee shall construct solar evaporation ponds 2 and 5 in accordance with the engineering design report dated April 27, 1988, as modified by the submittals dated May 11, and July 16, 1992. In addition, the ponds shall be constructed as follows:</p> <ul style="list-style-type: none"> <li>A. Fill material shall be classified as a silty sand material in accordance with the Unified Soil Classification System.</li> <li>B. Quality control of the fill shall be performed in accordance with the guidance provided for radon barrier materials in the NRC Staff Technical Position on Testing and Inspection Plans during Construction of DOE's Remedial Action at Inactive Uranium Mill Tailing Sites (January 1989).</li> <li>C. As-built drawings of the constructed ponds shall be submitted to NRC within 3 months of the completion of construction of each pond.</li> </ul>		<p>Comment: None.</p>
<p>10.15 Production zone monitor wells drilled after April 1999 shall be spaced no greater than 300 feet from a well field unit and no greater than 400 feet between the wells.</p>		<p>Comment: None.</p>
<p><b>10.16</b> The licensee shall conduct isotopic analyses for alpha- and beta-emitting radionuclides on airborne samples at each in-plant air particulate sampling location at a frequency of once every six months for the first two years and annually thereafter to ensure compliance with 10 CFR 20.1204(g). For any changes to operations, the licensee shall conduct an evaluation to determine if more frequent isotopic analyses are required for compliance with 10 CFR 20.1204(g).</p>		<p>Comment: Cameco will perform the in-plant particulate sampling and isotopic analysis contemplated by this license condition in accordance with the attached sampling plan. As noted in the sampling plan, any necessary changes to the Crow Butte Radiation Protection Program will be documented in accordance with license condition 9.4. Consistent with the plan, Cameco will evaluate the results using a risk-based approach to determine the need for and amount of additional data collection over the license term. For that reason, Cameco proposes deleting this condition.</p>

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	<p><b>NRC Staff response: Staff is continuing to evaluate applicant's sampling plan.</b></p> <p><b>NRC staff additional comment:</b></p> <p><b>This license condition moved from 11.15</b></p> <p>NRC staff replaced specific radionuclides with a more general monitoring approach. This is consistent with a performance-based approach agreed to by industry (ML102640020) where the licensee is expected to identify all potential radiological hazards in the absence of site-specific information for a given radionuclide.</p> <p>NRC staff is continuing its evaluation of the sampling plan, dependent upon additional information to be submitted by the applicant.</p> <p><b>Cameco 4/19/12: Accept.</b></p>
<p>10.17 Uranium compounds that have no assigned inhalation classification, or for which no site-specific data is available, such as uranium carbonates, shall be assigned to inhalation class W for radiation protection purposes.</p>	<p><b>Comment:</b> Cameco proposes modifying the DAC for U<sup>Nat</sup> in accordance with information submitted to Ron Burrows of the NRC by email on March 15, 2011. As a 10 CFR §2.390 privileged and confidential submission, no ML number is available. A further clarification was submitted by email on April 5, 2011 (ML11020132). Cameco requests that NRC evaluate those submissions in light of this draft license conditions. If the information contained in these two Cameco submissions is acceptable, the change to current license or the upcoming license will be documented in accordance with license condition 9.4. For that reason, Cameco proposes deleting this condition.</p> <p><b>Staff response: Staff is continuing to evaluate applicant's DAC proposal.</b></p> <p><b>Additional Cameco Comment:</b> Based upon further clarifications submitted by email on September 19, 2011 Cameco has modified the text of the application to reflect a site-specific DAC for Crow Butte Operations yellowcake. As a result, Cameco requests this license condition be deleted.</p> <p><b>NRC staff response to additional comment:</b></p>

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	<p>This license condition moved from 11.14. Based upon various submittals from the applicant, including: ML102640195, ML110880727 (non-public, proprietary), ML110810041, ML111020132, and ML11257A104, NRC staff agrees. License condition regarding yellowcake deleted. Exposure to other uranium compounds, for example carbonates, still require an assumed inhalation classification. <b>Cameco 4/19/12: Accept.</b></p>
<p><i>The following information shall be provided to NRC staff within sixty days of the effective date of this license. Upon acceptance by NRC staff, it will become part of the licensing basis.</i></p>	
<p>10.18 Security measures for the mine units and header houses that address the requirements of 10 CFR Part 20, Subpart I, shall be described in writing to the NRC staff.</p>	<p>Comment: None.</p>
<p><b>SECTION 11: Monitoring, Recording, and Bookkeeping Requirements</b> <i>Standard Conditions</i></p>	
<p>11.1 In addition to reports required to be submitted to NRC or maintained on-site by Title 10 of the Code of Federal Regulations, the licensee shall prepare the following reports related to operations at the facility: A) A quarterly report that includes a summary of the weekly excursion indicator parameter values, corrective actions taken, and the results obtained for all wells that were on excursion status during that quarter. This report shall be submitted to NRC within 60 days following completion of the reporting period.</p>	<p>Comment: CBR proposes to submit the NDEQ Quarterly Mine Monitoring Report (MMR) to NRC in lieu of an additional report. The quarterly MMR provides monthly averages of excursion indicator parameter values, corrective actions and results. <b>NRC Staff response: disagree, monthly averages of excursion indicators is not equal to summary of weekly excursion indicators for wells on excursion. No change to license condition.</b> The time required for radiological sample analysis prevents submission within 30 days. In addition, 10 CFR §40.65 requires submission within 60 day. Please change the submission deadline to 60 days. <b>NRC Staff response: Agree on changing to 60 days.</b></p>
<p>11.1 (Cont.) In addition to reports required to be submitted to NRC or maintained on-site by Title 10 of the Code of Federal Regulations, the licensee shall prepare the following reports related to operations at the</p>	<p>Comment: With the exception of MIT status, the information requested is currently included in the Semiannual Radiological Effluent and Environmental Monitoring Report, which is submitted</p>

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<p>facility:</p> <p>B) A semi-annual report that discusses: status of well fields in operation (including last date of lixiviant injection), status of well fields in restoration, status of any long term excursions and a summary of MITs during the reporting period. This report shall be submitted to NRC within 60 days following completion of the reporting period.</p>	<p>pursuant to 10 CFR §40.65. MIT status will be added to that report. The time required for radiological sample analysis prevents submission within 30 days. In addition, 10 CFR §40.65 requires submission within 60 day. Please change the submission deadline to 60 days to remain consistent.  <b>NRC Staff response: Agree on changing to 60 days.</b></p>
<p>11.1 (Cont.) In addition to reports required to be submitted to NRC or maintained on-site by Title 10 of the Code of Federal Regulations, the licensee shall prepare the following reports related to operations at the facility:</p> <p>C) Quarterly report summarizing daily flow rates for each injection and production well and injection manifold pressures on the entire system. This report shall be made available for inspection upon request.</p>	<p>Comment: Monthly reports are currently available at the site upon request.</p>
<p>11.1 (Cont.) In addition to reports required to be submitted to NRC or maintained on-site by Title 10 of the Code of Federal Regulations, the licensee shall prepare the following reports related to operations at the facility:</p> <p>D) Consistent with Regulatory Position 2 of Regulatory Guide 4.14, a semiannual report that summarizes the results of the operational effluent and environmental monitoring program. The licensee shall submit this report consistent with the terms of Regulatory Guide 4.14.</p>	<p>Comment: None.</p>
<p>11.2 The licensee shall submit the results of the annual review of the radiation protection program content and implementation performed in accordance with 10 CFR 20.1101(c). These results shall include an analysis of dose to individual members of the public consistent with 10 CFR 20.1301 and 10 CFR 20.1302 and a land use survey.</p>	<p>Comment: None.</p>
<p>11.3 <u>Establishment of Background Water Quality</u>. Prior to injection of lixiviant for each production area, the licensee shall establish background ground water quality data for the ore zone, overlying and</p>	<p>Comment: For consistency, please change "each production area" to "each mine unit".  <b>NRC Staff response: Agreed and changed.</b></p>

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<p>underlying aquifers. The background water quality will be used to define the background ground water protection standards required to be met in 10 CFR 40, Appendix A, Criterion 5B(5), for the ore zone aquifer and surrounding aquifers. Water quality sampling shall provide representative background ground water quality data and restoration criteria as described in Sections 5.8.8 and 6.1.3 of the approved license application.</p>	
<p><b>11.3 <u>Establishment of Background Water Quality (cont.)</u></b>          The data shall consist, at a minimum, of the following sampling and analyses:          A. Four samples shall be collected from production and injection wells at a minimum density of one production or injection well per four acres. These samples shall be collected at least 14 days apart.</p>	<p><b>Comment:</b> This requirement is inconsistent with rules and permit requirements of NDEQ, the State primary agency for enforcing the requirements under the Safe Drinking Water Act and Underground Injection Control program. NDEQ has approved and continues to approve new UIC permits that require 3 baseline monitoring samples collected at least 14 days apart. Neither the NDEQ nor NRC has identified any specific weakness in the existing data sets used to date. The requirement for 4 rounds of baseline samples is from the UIC program originated from Wyoming under that States Rules and Regulations rather than Nebraska. It would seem to be inappropriate to impose requirements at the Federal level that are inconsistent with the rules and statutes that the State of Nebraska have promulgated in accordance with their implementation of the Safe Drinking Water Act.  <b>NRC Staff response: disagree. This approach will now be standard license condition. No change to license condition.</b></p>
<p><b>11.3 <u>Establishment of Background Water Quality (cont.)</u></b>          The data shall consist, at a minimum, of the following sampling and analyses:          B. Four samples shall be collected from each designated monitoring well at a minimum density of: 1) one upper aquifer monitoring well per five acres of mine unit area, and 2) all perimeter monitoring wells. These samples shall be collected at least 14 days apart. The results of these analyses shall constitute the baseline for each designated well.</p>	<p><b>Comment:</b> See comment immediately above regarding the requirement to collect four samples.  <b>NRC Staff response: disagree. This approach will now be standard license condition. No change to license condition.</b></p>

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<p>11.3 <u>Establishment of Background Water Quality (cont.)</u>. The data shall consist, at a minimum, of the following sampling and analyses: C. The samples shall be analyzed for ammonia, arsenic, barium, cadmium, calcium, chloride, copper, fluoride, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, nitrate, pH, potassium, radium-226, selenium, sodium, sulfate, total carbonate, total dissolved solids, uranium, vanadium, and zinc.</p>	<p>Comment: None.</p>
<p>11.3 <u>Establishment of Background Water Quality (cont.)</u>. The data shall consist, at a minimum, of the following sampling and analyses: D. Prior to operation of a mine unit, representative background concentrations shall be established on a parameter-by-parameter basis using either the mine unit or well-specific mean value.</p>	<p>Comment: At the end of the sentence please include: "or other NRC-approved statistically valid analysis." <b>NRC Staff response: Agreed and changed.</b></p>
<p>11.3 <u>Establishment of Background Water Quality (cont.)</u>. The data shall consist, at a minimum, of the following sampling and analyses: E. The licensee shall submit all mine unit hydrologic test packages to the NRC for review.</p>	<p>Comment: None.</p>
<p>11.4 <u>Establishment of UCLs</u>. The licensee shall establish upper control limits (UCLs) in designated upper aquifer and perimeter monitoring wells before lixiviant is injected in each well field unit. The UCLs shall be established by collecting and analyzing groundwater samples from those designated wells according to the following criteria: A. Four samples shall be collected from each designated monitoring well at a minimum density of: 1) one upper aquifer monitoring well per five acres of well field area, and 2) all perimeter monitoring wells. These samples shall be collected at least 14 days apart. B. The samples shall be analyzed for the following indicator parameters: chloride, conductivity, and total alkalinity. C. The UCLs shall be calculated for each indicator parameter, in each</p>	<p>Comment: In both instances in this license condition, please delete "wellfield " and replace with "mine unit". UCLs apply at the "mine unit" level. <b>NRC Staff response: Agreed and changed.</b></p>

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<p>monitoring well, as equal to 20 percent above the maximum concentration measured for that parameter, among the three baseline samples. For those indicator parameters with baseline concentrations that average 50 mg/L or less, the UCL for that parameter may be calculated as equal to 20 percent above the maximum baseline concentration, the baseline average plus five standard deviations, or the baseline average plus 15 mg/L.</p>	
<p>11.5 <u>Excursion Monitoring</u>. All designated perimeter and upper aquifer monitor wells shall be sampled and tested no more than 14 days apart, except in the event of the situations identified in the licensee's submittal dated March 19, 1998. If a designated monitor well is not sampled within 14 days of a previous sampling event, the reasons for the postponement of sampling shall be documented. Sampling shall not be postponed for greater than five days.</p> <p>If two UCLs are exceeded in a well, or if a single UCL is exceeded by 20 percent, the licensee shall take a confirming water sample within 48 hours after the results of the first analyses are received and analyze the sample for the indicator parameters. If the <b>second sample</b> does not indicate an exceedance, a third sample shall be taken and analyzed in a similar manner with 48 hours after the second set of samples was acquired. If neither the second nor the third sample indicates an exceedance, the first sample shall be considered in error.</p> <p>If either the second or third sample confirms that a UCL(s) has been exceeded, the well in question shall be placed on excursion status. Upon confirmation of an excursion, the licensee shall notify NRC in accordance with LC 11.6, as discussed below, implement corrective action, and increase the sampling frequency for the indicator parameters at the excursion well to once every seven (7) days. Corrective actions for confirmed excursions may be, but are not limited to, those described in Section 5.8.8 of the approved license application. An excursion is considered concluded when the concentrations of the indicator parameters are below the concentration levels defining an excursion for three (3) consecutive weekly samples.</p>	<p>Comment: In the second paragraph, third sentence, please correct the condition to say "second sample" instead of "second set of samples". In that same sentence, "with" should be "within".</p> <p><b>NRC Staff response: Agreed and changed.</b></p> <p><b>Additional Cameco Comment:</b></p> <p>First, restoration has begun in Mine Unit 6. Please delete references to Mine Unit 6 from this license condition.</p> <p>Second, do the paragraphs that compel termination of lixiviant injection apply to the entire mine or only Mine Units 6 and 8? Structurally, the text is unclear.</p> <p>Third, the new language regarding termination of injection had been removed from an earlier license by license amendment. Please explain why reintroduction of this language is under consideration.</p> <p>Crow Butte Resources believes that seasonal excursions of chloride, conductivity and alkalinity are naturally occurring. Only during recent high precipitation years have these constituents gone on excursion and typically the excursions last less than 90-days.</p> <p>If the license condition is reintroduced, please modify the language of this license condition to trigger at 90-days rather than 60-days to minimize the administrative burden and focus on non-seasonal, longer duration excursions of indicator parameters. With the modification this license condition would parallel the NDEQ approach to isolated "parameter exceedances".</p> <p><b>NRC Staff response to additional comments:</b></p> <p><b>First comment:</b> disagree –the portion of the condition referring to</p>



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<p>If an overlying aquifer monitoring well in Mine Unit 6 or Mine Unit 8 is placed on excursion status, the licensee shall test it weekly for natural uranium in addition to the required indicators of Alkalinity, Conductivity, and Chloride. The natural uranium data from wells on excursion status in the overlying aquifer in Mine Units 6 or 8 shall be maintained in the on-site records. If a well in these specific mine units remains on excursion for more than 60 days, the licensee shall provide the natural Uranium data with the UCL indicator data in the required sixty day excursion report.</p> <p><b>For all mine units, if an excursion is not corrected within 60 days of confirmation, the licensee shall either: (a) terminate injection of <del>lixiviant within the affected area</del> <del>production area of the mine unit</del> containing the excursion until the excursion is corrected; or (b) increase the surety in an amount to cover the full third-party cost of correcting and cleaning up the excursion. The surety increase shall remain in force until the NRC has verified that the excursion has been corrected and cleaned up. The written 60-day excursion report shall identify which course of action the licensee is taking. Under no circumstances does this condition eliminate the requirement that the licensee must remediate the excursion to meet ground water protection standards as required by LC 10.6 for all constituents established per LC 11.3.</b></p> <p>The licensee shall notify the NRC Project Manager (PM) by telephone or email within 24 hrs of confirming a lixiviant excursion, and by letter within 7 days from the time the excursion is confirmed, pursuant to LC 11.6. A written report describing the excursion event, corrective actions taken, and the corrective action results shall be submitted to the NRC within 60 days of the excursion confirmation. For all wells that remain on excursion after 60 days, the licensee shall submit a report as discussed in LC 11.1(A).</p>	<p>mine unit 6 remains unchanged.</p> <p><b>Second comment: Consistent with criteria 5 in Section 5.7.8.3 of NUREG 1569, the alternative for lixiviant termination applies to the affected area of the mine unit containing a excursion until the excursion is retrieved.</b> Text revised for clarity.</p> <p><b>Third comment:</b> The condition is being asserted due to results of staff's safety evaluation for water quality data for wells in the overlying aquifer within mine units 6 and 8. <b>The language is consistent with criteria 5 in Section 5.7.8.3 of NUREG 1569.</b></p> <p><b>Final comment:</b> disagree –the portion of the condition referring to 60 days remains unchanged.</p> <p><b> Cameco 4/19/12: Accept.</b></p>
<p>11.6 Until license termination, the licensee shall maintain documentation on unplanned releases of source or byproduct materials (including process solutions) and process chemicals. Documented information shall include, but not be limited to: date, spill volume, total</p>	<p>Comment: None.</p>

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<p>activity of each radionuclide released, radiological survey results, soil sample results (if taken), corrective actions, results of post remediation surveys (if taken), a map showing the spill location and the impacted area, and an evaluation of NRC reporting criteria.</p> <p>The licensee shall have written procedures for evaluating consequences of the spill or incident/event against 10 CFR 20, Subpart M, and 10 CFR 40.60 reporting criteria. If the reporting criteria are met, the licensee shall report the spill or incident/event to the NRC Operations Center as required. If the licensee is required to report any well field excursions and spills of source, byproduct material, and process chemicals that may have an impact on the environment, or any other incidents/events, to any State or other Federal agency, a report shall be made to the NRC Headquarters Project Manager by telephone or electronic mail (e-mail) within 24 hours. This notification shall be followed, within 30 days of the notification, by submittal of a written report to NRC Headquarters, as per LC 9.3, detailing the conditions leading to the spill or incident/event, corrective actions taken, and results achieved.</p>	
<p><i>Facility Specific Conditions</i></p>	
<p><del>11.7 During well field operations, injection pressures shall not exceed the integrity test pressure at the injection well heads.</del></p>	<p>Comment: This seems an odd place to document an operating requirement in the license.  <b>NRC Staff response: Agree. Moved to LC 10.8 under standard operating condition.</b></p>
<p>11.7 Any time uranium in a workers urine specimen exceeds 15 micrograms per liter (ug/l), the annual ALARA audit will indicate what corrective actions were considered or performed.</p>	<p>Comment: None</p>
<p>11.8 Any time a uranium action level of 35 ug/l for two consecutive urine specimens or 130 ug/l for any one specimen is reached or exceeded, the licensee shall provide documentation, within 30 days, to the NRC, indicating what corrective actions have been performed.</p>	<p>Comment: None</p>
<p>11.9 The licensee shall establish and conduct an effluent and environmental monitoring program in accordance with the program</p>	<p>Comment: Delete. The March 18, 1999 program is out of date.  <b>NRC Staff response: Yes, it is dated but approved. Applicant's</b></p>

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<p>submitted by letter dated March 18, 1999.</p>	<p>proposal has not been approved yet so staff does not have a basis for removing this reference.</p>
<p>11.10 The licensee shall perform and document inspections in accordance with the February 5, 1996, revision to its Evaporation Pond Onsite Inspection Program with the exception that the leak detection system (underdrain) shall be measured, and the vertical depth of the fluid in the standpipe shall be recorded, on a daily basis instead of a weekly basis.</p> <p>Any time 6 inches or more of fluid is detected in a commercial pond standpipe, it shall be analyzed for specific conductance. If the water quality is degraded beyond the action level, the water shall be further sampled and analyzed for chloride, alkalinity, sodium, and sulfate. Any time 6 inches or more of fluid is detected in an R&amp;D pond standpipe, it shall be analyzed for specific conductance, chloride, alkalinity, sodium, and sulfate.</p> <p>Upon verification of a liner leak, the licensee shall notify NRC in accordance with LC 11.6 within 30 days, lower the fluid level sufficiently to eliminate the leak by transferring the pond's contents to an alternate cell or approved destination, and undertake repairs, as needed. Water quality in the affected standpipe shall be analyzed for the five parameters listed above once every 7 days during the leak period and once every 7 days for at least 14 days following repairs.</p> <p>The licensee shall submit a corrective action plan to NRC within 30 day for review. The corrective action plan will document steps to adequately address the leak and procedures used to verify that the leak has been adequately addressed and permanently fixed. The corrective action plan should also evaluate how much and for how long the diminished waste disposal capacity will impact operations.</p>	<p>Comment: None.</p> <p>Additional Cameco Comment: None.</p> <p>Additional NRC staff response: Based on NRC staff evaluation and updated guidance, staff is requiring a change from weekly inspections to daily inspections.</p> <p><b>Cameco 4/19/12: Please provide a copy of the updated guidance so that Cameco may understand NRC's decision to rescind its earlier determination and corresponding license amendment that reduced the inspection frequency from a daily to a weekly basis. Cameco is unaware of any operational data or experience that would justify revising this license condition.</b> The revision will require additional manpower with corresponding safety implications, all without apparent benefit.</p>
<p><i>The following information discussed in LC 11.12 – 11.15 shall be provided to NRC staff within sixty days of the effective date of this license. Upon acceptance by NRC staff, such information will become part of the licensing basis.</i></p>	
<p>11.11 The licensee shall develop a survey program for beta/gamma contamination for personnel contamination from restricted areas, and</p>	<p>Comment: Consistent with the attached sampling plan, Cameco has undertaken a beta/gamma survey campaign that will fully address</p>

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<p>beta/gamma contamination in unrestricted and restricted areas that will meet the requirements of 10 CFR Part 20, Subpart F and submit to NRC for review and written verification.</p> <p>The licensee shall provide for NRC review and written verification <del>approval</del> the surface contamination detection capability (minimum detection concentration (MDC)) for radiation survey instruments, including scan MDC for portable instruments used for contamination surveys to release equipment and materials for unrestricted use and for personnel contamination surveys. The detection capability in the scanning mode for the alpha and beta radiation expected shall be provided in terms of dpm per 100 cm<sup>2</sup>.</p>	<p>license condition 11.12. As noted in the sampling plan, any necessary changes to the Crow Butte Radiation Protection Program will be documented in accordance with license condition 9.4.</p> <p>As a result, Cameco proposes deleting this condition.</p> <p><b>NRC Staff response: Staff is continuing to evaluate applicant's sampling plan.</b></p> <p><b>Cameco 4/19/12:</b> Cameco cannot accept the change from "approval" to "written verification" without an explanation of all procedural and legal implications in this LC and LCs 11.12, 11.14 and 11.15. Also note that "approval" continues to be used in many other license conditions.</p> <p><b>Fundamentally, NRC "approval" provides Cameco confidence that the program, if implemented as written, is in fact compliant with the requirements. If NRC cannot provide that assurance, why bother to review and verify when NRC inspectors may then reinterpret the requirements as they see fit?</b></p>
<p>11.12 The licensee shall provide the following information for the airborne effluent and environmental monitoring program for <del>it</del> which it shall develop written procedures for NRC written verification to:</p> <p>A) Discuss how, in accordance with 10 CFR 40.65, the quantity of the principal radionuclides from all point and diffuse sources will be accounted for, and verified by, surveys and/or monitoring.</p> <p>B) Evaluate the member(s) of the public likely to receive the highest exposures from licensed operations consistent with 10 CFR 20.1302.</p> <p>C) Discuss and identify how radon (radon-222) progeny will be factored into analyzing potential public dose from operations consistent with 10 CFR Part 20, Appendix B, Table 2.</p> <p>D) Discuss how, in accordance with 10 CFR 20.1501, the occupational dose (gaseous and particulate) received throughout the entire License Area from licensed operations will be accounted for, and verified by, surveys and/or monitoring.</p>	<p>Comment: Cameco will perform the environmental monitoring described in the attached sampling plan to address license condition 11.13. As noted in the sampling plan, any necessary changes to the Crow Butte Radiation Protection Program will be documented in accordance with license condition 9.4. Consistent with the plan, Cameco will use the results and a risk-based approach to determine the need for additional data collection over the license term.</p> <p>For that reason, Cameco proposes deleting this condition.</p> <p><b>NRC Staff response: Staff is continuing to evaluate applicant's sampling plan.</b></p> <p><b>Cameco 4/19/12: Accept, subject to clarification of "written verification".</b></p>

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<p>11.13 The license shall provide flow rates for discharge to unrestricted areas and air exchange rate for the facility, and describe what method(s) will be used to control releases to unrestricted areas.</p>	<p>Comment: Cameco will monitor production fluid for Radium-226 in accordance with the attached sampling plan and will use an approach similar to that discussed in the Safety Evaluation Report For the Moore Ranch ISR Project (ML101310291, pg. 73). For that reason, Cameco proposes deleting this condition. <b>NRC Staff response: Staff is continuing to evaluate applicant's sampling plan.</b></p>
<p>11.14 The licensee shall submit for NRC review and approval justification for using an inhalation classification other than Class W for uranium products encountered during operations or use Class W for all uranium products encountered during operations. This license condition moved to 10.17.</p>	<p>Comment: Cameco proposes modifying the DAC for U<sup>Net</sup> in accordance with information submitted to Ron Burrows of the NRC by email on March 15, 2011. As a 10 CFR 52.290 privileged and confidential submission, no ML number is available. A further clarification was submitted by email on April 5, 2011 (ML11020132). Cameco requests that NRC evaluate these submissions in light of this draft license conditions. If the information contained in these two Cameco submissions is acceptable, the change to current license of the upcoming license will be documented in accordance with license condition 9.4. For that reason, Cameco proposes deleting this condition. Staff response: Staff is continuing to evaluate applicant's DAG proposal. Additional Cameco Comment: Based upon further clarifications submitted by email on September 19, 2011, Cameco has modified the text of the application to reflect a site-specific DAC for Crow Butte Operations yellowcake. As a result, Cameco requests this license condition be deleted.</p>
<p>11.15 The licensee shall conduct airborne sampling for natural U, Ra-226, Po-210, and Pb-210 at each in-plant air particulate sampling location at a frequency of once every six months for the first two years and annually thereafter to ensure compliance with 10 CFR 20.1204(g). For any changes to operations, the licensee shall conduct an evaluation to determine if more frequent isotopic analyses are required for compliance with 10 CFR 20.1204(g).</p>	<p>Comment: Cameco will perform the in-plant particulate sampling and isotopic analysis contemplated by this license condition in accordance with the attached sampling plan. As noted in the Protection Program, any necessary changes to the Crow Butte Radiation Protection Program will be documented in accordance with license condition 9.4. Consistent with the plan, Cameco will evaluate the results using a risk-based approach to determine the need for and</p>

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<p>This license condition moved to 10.16.</p>	<p>amount of additional data collection over the license term.  <del>For that reason, Cameco proposes deleting this condition.</del>  <del>Staff response: Staff is continuing to evaluate applicant's sampling plan.</del></p>
<p><b>11.14 The licensee shall provide for NRC written verification an operational soil sampling program consistent with Regulatory Guide 4.14 or justification for an alternate program.</b></p>	<p>No comment.  <b>Cameco 4/19/12: Accept, subject to clarification of "written verification".</b></p>
<p><b>11.15 The licensee shall submit, for written verification, additional information on its Wellfield Decommissioning Plan for Crow Butte Uranium Project, dated June 2004, regarding the ability to detect radionuclides other than radium. Specifically, the licensee shall provide a technical basis for applying the gamma action level derived from radium to radionuclides other than radium and provide background levels that will be utilized for radionuclides other than radium (e.g., uranium).</b></p>	<p>NRC staff comment: This is a new license condition not present on the first or second draft. However, these issues were transmitted to the applicant by letter dated January 5, 2005 (ML050110170).  <b>Cameco 4/19/12: Accept, subject to clarification of "written verification".</b></p>