

**Garrett, Betty**

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**From:** Burrows, Ronald  
**Sent:** Monday, March 07, 2011 3:16 PM  
**To:** Garrett, Betty  
**Subject:** For ADAMS: NRC staff review of RAI responses  
**Attachments:** NRC staff review of RAI responses

Betty,

Please place the attached e-mail in ADAMS as publicly available.

Thank you.

Ron

**Garrett, Betty**

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**From:** Burrows, Ronald  
**Sent:** Monday, March 07, 2011 11:05 AM  
**To:** Richard Blubaugh  
**Subject:** NRC staff review of RAI responses  
**Attachments:** Acceptance Review Issues.docx

Dear Mr. Blubaugh,

NRC staff has completed its technical acceptance review of Powertech's RAI responses, submitted by letter dated December 23, 2010, during which the staff identified a significant number of deficiencies. Powertech did not provide information in sufficient detail in these responses for NRC staff to make an evaluation of public health and safety impacts.

As discussed in our February 8, 2011, phone call, the staff has stopped its review of the safety-related portion of Powertech's Dewey-Burdock application. However, the staff will continue its environmental review and Section 106 consultation process. As you requested, the staff has scheduled an open meeting for April 7, 2011 at NRC's Headquarters. During this meeting, the staff will discuss the deficiencies identified during its review of Powertech's RAI responses and the path forward to addressing the staff's issues. To help Powertech prepare for this meeting, attached is the list of RAIs, for which the associated responses were deemed deficient.

If you have any question, please call me at 301-415-6443.

Regards,

*Ronald A. Burrows*

Ronald A. Burrows CHP, RRPT  
U.S. Nuclear Regulatory Commission  
Federal and State Materials and Environmental  
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301.415.6443

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Content-Transfer-Encoding: binary  
From: "Burrows, Ronald" <Ronald.Burrows@nrc.gov>  
To: "Garrett, Betty" <Betty.Garrett@nrc.gov>  
Disposition-Notification-To: "Burrows, Ronald" <Ronald.Burrows@nrc.gov>  
Date: Mon, 7 Mar 2011 15:16:09 -0500  
Subject: For ADAMS: NRC staff review of RAI responses  
Thread-Topic: For ADAMS: NRC staff review of RAI responses  
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## Acceptance Review Issues

### Safety Review

**Administrative Issues** – A variety of administrative issues made it difficult for U.S. Nuclear Regulatory Commission (NRC) staff to locate Powertech's Request for Additional Information (RAI) responses. These included, for example:

- Replacement pages were not located directly after the RAI response.
- Replacement pages were not tabbed to assist NRC staff in locating responses.
- Replacement text did not have change bars to indicate what text was revised.
- Some replacement text pages still contained a February 2009 date.
- In several instances, the applicant directed the reviewer to various parts of the Technical Report or other RAI responses instead of directly answering the question.

After beginning the acceptance review, it was determined that the paper copy of the RAI responses was not identical to the compact disc (CD) version of the RAI responses. During a telephone conversation on January 21, 2011, Powertech confirmed that the paper copy and CD versions should be identical. Therefore, the staff's review was based on the paper version, which was also submitted into ADAMS as an Agency record.

NRC staff could not locate responses to all or part of the following RAIs in Powertech's submittal:

- TR-RAI-P&R-1
- TR-RAI-P&R-4
- TR-RAI-P&R-5 (Replacement text that references the ER not found.)
- TR-RAI-P&R-6 (Replacement text that references the ER not found.)
- TR-RAI-P&R-9 (Replacement text not found.)
- TR-RAI-P&R-10 (Second half of requested information and revised text not provided.)
- TR-RAI-P&R-11 (Revised tables not found.)
- TR-RAI-P&R-12a
- TR-RAI-P&R-13 (Replacement text not found.)
- TR-RAI-P&R-14d
- TR-RAI-P&R-14f
- TR-RAI-P&R-14g
- TR-RAI-P&R-14j
- TR-RAI-P&R-16(1) (Could not locate replacement pages as indicated in the response.)
- TR-RAI-P&R-16(2) (Could not locate replacement pages as indicated in the response.)
- TR-RAI-P&R-17 (Could not locate replacement pages as indicated in the response.)
- TR-RAI-RI-3 (Frequency of inspections performed by designee.)
- TR-RAI-2.5-8
- TR-RAI-2.5-10
- TR-RAI-2.5-11
- TR-RAI-2.7-3 (Figures 2.7-12 and 2.7-13)

- TR RAI-2.9-15 (Could not locate replacement pages as indicated in the response.)
- TR RAI-2.9-20 (Could not locate revised text as indicated in the response.)
- TR RAI-2.9-21
- TR RAI-2.9-26 (Could not locate replacement pages as indicated in the response.)
- TR RAI-2.9-27b (Identical to TR RAI-2.9-26)
- TR RAI-2.9-28 (Identical to TR RAI-2.9-26)
- TR RAI-2.9-29 (Identical to TR RAI-2.9-26)
- TR RAI-2.9-37d (Laboratory documentation requested in the RAI could not be located.)
- TR-RAI-3.2 (Replacement text that references ER not found.)
- TR RAI-3.1-7 (Could not locate replacement pages as indicated in the response.)
- TR RAI-3.1-8 (Identical to TR RAI-3.1-7)
- TR-RAI-5.2-3 (Could not locate replacement pages as indicated in the response.)
- TR-RAI-5.7.2-2 (Could not locate replacement pages as indicated in the response.)
- TR-RAI-5.7.3-7 (Could not locate replacement pages as indicated in the response.)
- TR-RAI-5.7.7-10 b (Could not locate replacement pages as indicated in the response.)
- TR-RAI-5.7.8-3a (Replacement text that references ER not found.)
- TR-RAI-5.7.8-4 (Replacement text that references ER not found.)
- TR-RAI-6.1-3 (Replacement text that references ER not found.)

#### **Process and Restoration Issues –**

- TR-RAI-P&R-2: According to the exhibit, some of the newly identified mine workings appear to be within or in close proximity to proposed wellfield areas. Their exact location (horizontally and vertically), size, and effect on newly proposed project operations were not provided.
- TR-RAI-P&R-8: Replacement exhibits indicate 66 boreholes extend below the production aquifer. Within these exhibits, the applicant provided logs for three (in the Burdock area) of the 20 test holes that penetrate the Morrison, thus all requested logs were not provided.

#### **Miscellaneous Issues –**

- TR-RAI-MI-1a: The applicant did not specifically identify those chemicals used in uranium processing that have the potential to impact radiological safety.
- TR-RAI-MI-1b: Storage locations of liquid oxygen and barium chloride not found.
- TR-RAI-MI-3: Applicant states that a backup system is not needed for power outage. Satisfactory justification is not provided.
- TR-RAI-MI-4b: Detailed costs not found.
- TR-RAI-MI-4c: Discussion too limited for staff to draw conclusion.

#### **Meteorology –**

- TR-RAI-2.5-11

#### **Hydrology –**

- TR-RAI-2.7-4: Replacement text refers to "relocation of specific structures and facilities out of drainage paths," but does not specifically address the plant to plant pipeline and wellfield wells (some of which are flowing artesian) within significant surface water channel flow.
- TR-RAI-2.7-8: Requested information (static head information for all wells) is not complete. On replacement page 2-181, reference to Appendix 2.7-A (water levels and elevations) is not present.
- TR-RAI-2.7-9: Applicant does not provide complete information.
- TR-RAI-2.7-10
- TR-RAI-2.7-11: Applicant does not provide complete information.
- TR-RAI-2.7-15: Preliminary review of the Statistical Table resulted in staff confusion. Some of the numbers for the n-analyzed column do not appear correct and NA and ND were not defined.

### **Background and Radiological Characteristics –**

- TR RAI-2.9-1: Applicant only provided sufficient justification for two permit boundary sampling sites.
- TR RAI-2.9-5: The response given by the applicant does not appear relevant for environmental sampling.
- TR RAI-2.9-11: Applicant did not characterize adjacent lands for livestock other than cattle.
- TR RAI-2.9-12: Applicant did not address the RAI. (1) Applicant's statement on vegetable gardens (p. 2-377 of revised text) is incorrect. (2) Applicant did not discuss how it determined there were no vegetable gardens as requested in the RAI.
- TR RAI-2.9-13: Applicant's answer is not responsive to the RAI. (1) Applicant did not attempt to identify livestock and poultry as requested in the RAI. (2) Applicant incorrectly limited its review to the Permit Area and did not follow the guidance in RG 4.14/3.46 of sampling livestock raised within 3 km/3.3 km from the mill site.
- TR RAI-2.9-14: The applicant did not answer the RAI. They agreed that game animals exist in the permit area but do not provide justification for not analyzing them.
- TR RAI-2.9-16: Applicant did not provide sufficient justification for not collecting the recommended samples or propose an alternative.
- TR RAI-2.9-17a: Applicant's answer is not responsive to the question. In Tables 2.9-19 of the TR and 10-1 of Appendix 2.9-A, the applicant included the term "ND" and did not include the error associated with these "ND" measurements. These practices are inconsistent with RG 4.14, Regulatory Position 7.5.
- TR RAI-2.9-17b: Applicant's answer is not responsive to the RAI.
- TR RAI-2.9-19: See TR RAI-2.9-1 above.
- TR RAI-2.9-24: See TR RAI-2.9-1 above.
- TR RAI-2.9-25: Applicant did not provide the information requested in the RAI. The RAI specifically requested the laboratory reports for TLD results. The applicant provided a table that they generated.
- TR RAI-2.9-32: Considering the response to TR RAI-2.9-32b, it is not clear how useful the data is even from a purely qualitative standpoint.
- TR RAI-2.9-32c: Applicant should understand the magnitude of errors involved with predicting site-wide exposure rates.

- TR RAI-2.9-33: Reviewer found only three of four Pb-210 samples that met the RG 4.14 recommendations for LLD in the Dewey area.
- TR RAI-2.9-34: (1) Applicant did not provide sufficient justification for not collecting surface soil samples as recommended by RG 4.14. (2) Applicant placed air sampling stations in only two major downwind sectors. Therefore, at least one surface soil sample location is missing. (3) Applicant states that the total number of samples is consistent with RG 4.14, based on additional subsurface samples. However, it is not consistent with NUREG-1569 which recommends taking both sets of data (0-5 cm and 0-15 cm).
- TR RAI-2.9-35c: Applicant did not discuss how it was determined that these data represented an extreme manifestation of random variability (ASTM 2002) as requested in the RAI.
- TR RAI-2.9-37a: Applicant provided the EPA reference by name, but reviewer could not locate the submitted EPA reference, as indicated in the response.
- TR RAI-2.9-37b: This procedure does not appear to be approved by the EPA. Applicant did not provide justification for using this procedure as requested by the RAI.
- TR RAI-2.9-38b: (1) Applicant did not justify the removal of data points considered to be outliers. See TR-RAI-2.9-35c. (2) Reviewer cannot corroborate applicant's statement that the R-squared value does not apply in this situation. Reviewer also cannot corroborate applicant's use of the Central Limit Theorem.
- TR RAI-2.9-39c: (1) Applicant takes credit for the Ra-226/Gamma count relationship in response to RAI 2.9-40 (a) and (b). Applicant should understand the errors involved in deriving estimated Ra-226 concentrations across the site. (2) Figure 2.9-7 should be revised to show areas with no data.
- TR RAI-2.9-40a,b: (1) It is not clear what criteria the applicant is using to determine baseline soil sampling locations. (2) Applicant appears to treat the entire Permit Area as one "milling area". RG 4.14 makes a distinction between milling "area" and milling "site". Dewey and Burdock are two separate milling areas and, as such, should each meet the recommendations in RG-4.14 and NUREG-1569 or justification otherwise. (3) Reviewer found only three of four (10% of 40 -RG 4.14) samples meeting the LLD for Pb-210 in the Dewey area. (4) Applicant takes credit for Ra-226 correlation surveys but reviewer cannot confirm the validity of this correlation.
- TR RAI-2.9-40c: Reviewer cannot confirm the validity of the Ra-226 correlation surveys.
- TR RAI-2.9-43a: Applicant does not address how its selection of 11 subimpoundments is consistent with RG 4.14 or how the 11 subimpoundments are representative of the 40 total impoundments that are there.
- TR RAI-2.9-44: Applicant did not address the RAI.
- TR RAI-2.9-46: (1) BVC01 is not consistent w/ RG 4.14. (2) PSC01 does not appear to be immediately downstream of the area of influence.
- TR RAI-2.9-47: Applicant did not address the RAI. Applicant provided a reason but not a justification as requested in the RAI.
- TR RAI-2.9-48: Applicant did not address the RAI. Applicant discusses finalizing the constituents list. However, NRC staff notes that RG 4.14 is dated April 1980 and was available to the applicant.

#### **Gaseous and Airborne Particulates –**

- TR-RAI-4.1-1b: Effect of open doorways and convection vents during favorable weather condition on radon effluent air flow and employee exposure both inside and outside the plant is not provided.

- TR-RAI-4.1-2: The discharge location(s) for the yellowcake drying and packaging system is not provided as requested in the RAI.

#### **Management Control Program –**

- TR-RAI-5.2-1: Applicant did not correct deficiencies noted by reviewer. Applicant does not propose any commitment how it will meet the requirements listed in the RAI.

#### **Radiation Safety Training –**

- TR-RAI-5.5-1: This is one of several cases where the applicant directs the reviewer to various parts of the Technical Report but does not answer the RAI. Instructions for pregnant woman based on RG 8.13 are not provided.
- TR-RAI-5.5-3: An exact copy of 10 CFR 19.12 is provided as an appendix instead of the proposed written radiological safety instructions that was requested in the RAI.

#### **External Radiation Exposure Monitoring Program –**

- TR-RAI-5.7.2-1: Applicant has not provided a description of survey instrumentation sufficient to measure gamma radiation that exceeds 5 mrem in 1 hour.

#### **In-Plant Airborne Radiation Monitoring Program –**

- TR-RAI-5.7.3-1c: Applicant provided information related to airborne uranium, but did not address radon and daughters as requested in the RAI.
- TR-RAI-5.7.3-3a: Facility drawings for monthly/weekly samples were not provided for non-airborne areas.
- TR-RAI-5.7.3-3e: There is no commitment to perform surveys as described in the RAI.
- TR-RAI-5.7.3-6a: Applicant did not address the RAI. Applicant assumes that the terms "soluble" and "inhalation class D" are interchangeable.
- TR-RAI-5.7.3-6b: Applicant did not address the RAI. See NRC staff review of Technical Report RAI-5.7.3-6a above. Applicant did not address NRC staff guidance given at the 2009 UR Workshop as requested in the RAI. Reviewer is referred to Technical Report Section 5.7.4.1 but no technical justification can be found here.

#### **Exposure Calculations –**

- TR-RAI-5.7.4-4: Applicant didn't describe the prenatal radiation exposure program that is consistent with RG 8.13 as requested in the RAI.
- TR-RAI-5.7.4-5: 10 CFR 20.2103 provides requirements for records retention. The applicant does not provide information regarding this requirement as requested in the RAI.

#### **Contamination Control Program –**

- TR-RAI-5.7.6-1: RAI not addressed. Applicant discusses dose rates but not contamination levels. Applicant did not provide beta gamma contamination limits and actions levels consistent with RG 8.30 and ALARA.

#### **Airborne Effluent and Environmental Monitoring Program –**



- TR-RAI-5.7.7-1a: Reviewer could not find applicant's statement "will be sampled quarterly" in the text of the Technical Report.
- TR-RAI-5.7.7-4: Air sampling stations are not consistent with RG 4.14.
- TR-RAI-5.7.7-5: Applicant did not provide an operational monitoring program consistent with RG 4.14.
- TR-RAI-5.7.7-6: Applicant's response does not address the RAI.
- TR-RAI-5.7.7-11: Although applicant states that sampling will be done in three sectors with highest predicted airborne concentrations, it provided justification for only two primary downwind locations.
- TR-RAI-5.7.7-12: The placement of air monitoring stations is not consistent with RG 4.14.
- TR-RAI-5.7.7-13: Response does not address RAI. There is no discussion of the manner in which Powertech will specifically account for occupational dose throughout the Permit Area. Discussion points should include means of monitoring in the Permit Area (or effluents directly) and how doses will be calculated (e.g., exposure times).
- TR-RAI-5.7.7-15: The statement in 5.7.7.1 "these detectors are not fitted with a thoron proof filter, therefore, radon progeny is also detected." is inaccurate. The ICRP dose conversion factor is not consistent with 10 CFR 20, Appendix B, Table 2.
- TR-RAI-5.7.7-16: Applicant did not answer the question because it did not include monitoring in its response.

#### **Groundwater and Surface Water Monitoring Program –**

- TR RAI-5.7.8-10: Section 3.1.3.1.2 does not provide the requested information.
- TR RAI-5.7.8-17: Figures TR-RAI 5.7.7-9 and 5.7-19 are not provided.