From: Richard Blubaugh [rblubaugh@powertechuranium.com]
Sent: Wednesday, November 17, 2010 6:49 PM
To: Yilma, Haimanot
Cc: Burrows, Ronald; jmays@powertechuranium.com; mhollenbeck@powertechuranium.com
Subject: Clarification of Assumptions regarding Drilling Emissions for DDWs
Attachments: response_followupAQ_101117.pdf

Importance: High

Haimanot,

This will go in the mail tomorrow to Ron, however, I wanted to get this response to you as soon as possible so as not to hold up the review any more than absolutely necessary. Please contact me at your convenience should there be further need of clarification.

Richard Blubaugh
Vice President - EH&S Resources
5575 DTC Parkway, Suite 140
Greenwood Village, Colorado 80111
(303) 790-7528
(303) 790-3885 FAX
rblubaugh@powertechuranium.com
www.powertechuranium.com

Please do not print this e-mail unless necessary

Received: from mail1.nrc.gov (148.184.176.41) by OWMS01.nrc.gov
(148.184.100.43) with Microsoft SMTP Server id 8.1.393.1; Wed, 17 Nov 2010
18:51:43 -0500
X-Ironport-ID: mail1
X-SBRS: 5.3
X-MID: 26766577
X-fn: response_followupAQ_101117.pdf
X-IronPort-AV: E=Sophos;i="4.59,213,1288584000";
d="pdf'?scan'208,217";a="26766577"
Received: from exchange.adnet-inc.net (HELO postoffice070.adnet-inc.net)
([65.39.136.68]) by mail1.nrc.gov with ESMTP; 17 Nov 2010 18:51:09 -0500
Received: from DTCLRB (UnknownHost [74.7.185.206]) by
postoffice070.adnet-inc.net with SMTP; Wed, 17 Nov 2010 15:49:14 -0800
From: Richard Blubaugh <rblubaugh@powertechuranium.com>
To: "'Yilma, Haimanot'" <Haimanot.Yilma@nrc.gov>
CC: "'Burrows, Ronald'" <Ronald.Burrows@nrc.gov>,
<jmays@powertechuranium.com>,
<mhollenbeck@powertechuranium.com>
Subject: Clarification of Assumptions regarding Drilling Emissions for DDWs
Date: Wed, 17 Nov 2010 16:49:18 -0700
Message-ID: <054E29BF83284F5F9ABE9AE42C3CCB9A@powertech.local>
MIME-Version: 1.0
Content-Type: multipart/mixed;
boundary="----
=_NextPart_000_0056_01CB8677.636D5190"
X-Mailer: Microsoft Office Outlook 11
Thread-Index: AcuGsgxXhh+1kh3iQ/i0XqZRhlH0Hg==
X-MimeOLE: Produced By Microsoft MimeOLE V6.00.2900.5994
X-Declude-Sender: rblubaugh@powertechuranium.com [74.7.185.206]
X-Declude-Spoolname: 72272238.eml
X-Declude-Whitelist: Authenticated; rblubaugh@powertechuranium.com
X-Declude-RefID: str=0001.0A010209.4CE46A65.00FA,ss=1,vtr=str,vl=0,fgs=0
X-Declude-Note: Scanned by Declude 4.10.59 "http://www.declude.com/x-
note.htm"
X-Declude-Scan: Incoming Score [0] at 15:50:58 on 17 Nov 2010
X-Declude-Tests: Whitelisted
X-Country-Chain:
X-Declude-Code: 0
X-HELO: DTCLRB
X-Identity: 74.7.185.206 | [No Reverse DNS] | powertechuranium.com
X-Note: incoming, from rblubaugh@powertechuranium.com via [No Reverse DNS]
to athurlkill@powertechuranium.com,
haimanot.yilma@nrc.gov, jmays@powertechuranium.com,
mhollenbeck@powertechuranium.com,
ronald.burrows@nrc.gov, 17 Nov 2010 15:50:58 PT,
72272238.eml, 0u, Whitelisted
Return-Path: rblubaugh@powertechuranium.com

RICHARD E. BLUBAUGH
Vice President – Environmental
Health and Safety Resources

POWERTECH (USA) INC.

November 17, 2010

Office of Federal and State Materials and
Environmental Management Programs
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

ATTN: Ron Burrows, Project Manager

Re: Powertech (USA), Inc.'s Response to the U.S. Nuclear Regulatory Commission (NRC) Staff's Verbal Request for Clarification of Response Regarding Inclusion of Emissions from Drilling Disposal Wells; Dewey-Burdock Uranium Project Environmental Review
Docket No. 40-9075; TAC No. J 00533

Dear Mr. Burrows:

This letter and the enclosed material are in response to the follow-up discussion with Haimanot Yilma, Jim Pickryl and Bradley in a PM-to-PM telephonic conference on November 16, 2010. The paraphrased issue is shown below. The response is enclosed with the title of "Emissions from Drilling of Deep Disposal Wells, Dewey-Burdock Project."

Air Quality Issue

The NRC staff sought clarification of the applicants response regarding the issue of "Inclusion of Emissions from Drilling Disposal Wells," specifically on the nature of the "conservative assumptions" made and discussed by the applicant.

The enclosed response should clarify the assumptions used by Powertech to estimate the emissions associated with drilling the four disposal wells, and the contention by Powertech of the conservative nature of its estimate.

We trust this information addresses the requested clarification from NRC's Environmental Review staff. Please contact us at your convenience should you have additional questions or need further clarification regarding our previous submittals.

Respectfully yours,

Richard E. Blubaugh
VP – Environmental Health & Safety Resources

Enclosures
cc: Mark Hollenbeck
John Mays

5575 DTC Parkway, Suite 140
Greenwood Village, CO 80111 USA
Telephone: 303-790-7528
Facsimile: 303-790-3885
Website: www.powertechuranium.com
Email: info@powertechuranium.com

Emissions from drilling of Deep Disposal wells
Dewey-Burdock Project

Assumptions

The following analysis and comparison of emissions from drilling operations is based on the assumption that emissions of well field equipment are proportional to operating drill-rig time.

1. **Rig data provided in ER-RAI-Table**

   Emissions are based on the number of drill rig operating hours. One drill rig (GEFCO Speedstar 30K) operating 10 hours per day, 5 days per week = 2,600 hours/y
   13 rigs: 2600 h/y X 13 rigs = 33,800 operating rig hours per year.
   The emissions from drill rigs listed in the ER-RAI-Tables are based on 33,800 hours of rig operation at full rated 550 horsepower.

2. **Estimate of actual rig hours required per year for drilling operations**

   Tables 1 and 2 provide data on the number of holes to be drilled and the rig hours required for drilling those holes.

   Notes to Tables 1 and 2

   A. The data on the first two well fields (B-1 and D-1) include the pounds of U3O8 resource contained in the mineralized zone and show that each of these wellfields will require more than one year of production operations at 500,000 pounds recovered per well field per year.

   B. The numbers of each type of hole listed under each well field were obtained from Powertech's detailed well field design, which was based on currently available geological data.

   C. Hole count: The columns labeled "hole count" show the actual number of holes of each type that will be drilled for the first year, the year of peak drilling operations (Year 4), and for an average year over the eight year drilling period. Through the previous ISL experience of Powertech personnel, only 50% of the injection and production wells needed to produce the first year's production will be completed in Year 1, the construction year prior to production operations. The remainder of the wells needed for producing the first million pounds will be completed in Year 2, which will be the first year of production. Considering the number of production wells, full production operations will require no more than 200 production wells, operating at 20 gpm each, thereby producing the maximum flow rate of 4000 gpm; therefore approximately 100 production wells will actually be drilled in year 1. No more than four Class V wells will be drilled in year 1. The total hole count for Year 1 operations is estimated to be 646.

   D. Rig Time per hole: The hours of rig time required per hole have been estimated based on a detailed analysis of drilling operations, in which every step in the drilling process has been analyzed and the resulting rig-time for each step has been calculated. For the Class V disposal wells, Powertech received time and cost estimates from drilling contractors who have drilled wells regionally as deep as the Madison aquifer; the estimates indicated

that deep wells can usually be drilled and completed in 2-3 days, but to be conservative, it was assumed that each well would require 75 hours of rig time.

E. In Project Year 2, the remaining patterns will be constructed for Year 2 production, plus enough additional patterns for maintaining the production in Year 3. Drilling operations continue through the first eight project years in order to maintain the desired production rate. The expected numbers of holes to be drilled, and the total hours of drill rig operation required to drill those holes, are listed in Table 2 for each year of well field construction.

3. Conclusions

A. Rig comparison: Although the drilling of a Class V disposal well will require a larger drill rig, such as a Taylor RT 4000M drill rig, the diesel engine within this larger rig is actually smaller, at 425 horsepower, than the 550 hp GEFCO drill rig used for general well field drilling. Thus, 300 hours of full horsepower drilling for four Class V disposal wells will actually produce fewer emissions than the same number of hours of general well field drilling operations.

B. Comparing the estimated rig time, including the drilling of four Class V wells, required in Year 1 from table 1 (13,311 hours) with the rig time basis of the emissions from section 1 (33,800 hours), indicates that the rig hours, and therefore emissions due to drilling in the construction phase, are likely overestimated by over 150 percent. i.e. $\left[\frac{33,800}{13,311} - 1\right] \times 100\%$. In the RAI response submitted previously, this figure was erroneously reported as a 28% overestimation of emissions due to an error made in the number of actual injection and production wells to be drilled in year 1. An analogous computation for Year 4 indicates that even for the peak year of drilling operations, drilling emissions are overestimated for the operational phase by more than 50%.

C. The number of rig hours required for four Class V disposal wells, in Year 1, the construction phase, is less than one percent of the annual rig hours used for computing emissions.

D. The overall conclusion is that even with the conservative assumptions noted above, the estimated emissions contained in the ER-RAI response, and which are based on operating hours of the various equipment, are in large excess of the emissions that will result from the actual drilling operations, including the drilling of four Class V disposal wells.

Table 1: Drill Rig Hours required for well field schedule

	Well Field		Rig time per hole (h)	Year 1 Construction phase drilling		Year 4 Operation phase drilling maximum		Annual mean for Operations phase	
	B-1	D-1		Hole count	Rig hours	Hole count	Rig hours	Hole count	Rig hours
lbs U3O8	1,428,435	3,015,205							
Years of Prod	2.1	4.5							
WF area (ft2)	767,821	1,713,657							
Well type									
delineation holes	77	171	11	248	2728	59	649	52	572
Monitor Well	47	53	26.1	100	2610	90	2349	57	1487.7
Production	189	370	26.1	100	2610	227	5924.7	191	4985.1
Class V DDW	4	4	75	4	300	2	150	1	75
Injection	421	611	26.1	194	5063.4	495	12919.5	406	10596.6
Total hole count/Rig hours Required				**646**	**13,311**	**873**	**21,992**	**707**	**17,716**

Table 2: Hole counts by Project year (MW = monitor well, PW= production well, DDW= deep (Class V) disposal well, IW= injection well).

Project Year	1	2	3	4	5	6	7	8	Total	Oper. Phase Avg.
Delin. hole	248	49	6	59	85	128	34	0	609	52
MW	100	0	34	90	53	63	71	89	500	57
PW	100	265	206	227	180	214	189	57	1438	191
DDW	4	0	0	2	0	0	2	0	8	1
IW	194	543	429	495	360	451	430	133	3035	406
Total holes	646	857	675	873	678	856	726	279	5590	707
Tot. rig hrs	13311	21628	17527	21992	16412	20409	18533	7282	137094	17716