

RAS 14573

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
U.S. ARMY)	Docket No. 40-8838-MLA
)	
(Jefferson Proving Ground Site))	

PREFILED SUR-REBUTTAL TESTIMONY OF THOMAS MCLAUGHLIN

1 Under penalty of perjury, I, Thomas McLaughlin, declare as follows: I attest that the
 2 factual statements herein are true and correct to the best of my knowledge, information, and
 3 belief; and the opinions expressed herein are based on my best professional judgment.

4 Q.1. Please state your name.

5 A.1. **U.S. NUCLEAR REGULATORY COMMISSION**
 6 In the Matter of U.S. Army (Jefferson Proving Ground)
 7 Q.2. Docket No. 40-8838-MLA Official Exhibit No. 6
 8 A.2. OFFERED by Applicant/Licensee Intervenor _____
 9 NRC Staff Other _____
 10 previous testimony IDENTIFIED on _____ Witness/Panel _____
 11 responded to the Action Taken: **ADMITTED REJECTED WITHDRAWN**
 12 on responding Reporter/Clerk _____

11 Q.3. I

12 A.3.
13 Mr. Pastorick.

15 Q.4. I

16 A.4. N

17 Q.5. I

18 A.5. N

19 officially hunted

DOCKETED
 USNRC
 October 25, 2007 (2:00pm)
 OFFICE OF SECRETARY
 RULEMAKINGS AND
 ADJUDICATIONS STAFF
 Docket No. 40-8838-ML

TEMPLATE = SECY 055

SECY-02

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1 Under penalty of perjury, I, Thomas McLaughlin, declare as follows: I attest that the
2 factual statements herein are true and correct to the best of my knowledge, information, and
3 belief; and the opinions expressed herein are based on my best professional judgment.

4 **Q.1. Please state your name.**

5 A.1. Thomas McLaughlin.

6 **Q.2. Have you provided testimony previously in this case?**

7 A.2. Yes, this testimony is in addition to my previous testimony in this case. In my
8 previous testimony, I provided my professional qualifications, discussed general issues, and
9 responded to the initial testimonies of STV witnesses. This testimony will now focus specifically
10 on responding to issues raised in the rebuttal testimonies of the STV witnesses.

11 **Q.3. Have you reviewed the rebuttal testimonies of the STV witnesses?**

12 A.3. Yes, I reviewed the rebuttal testimonies of Dr. Henshel, Mr. Norris, and
13 Mr. Pastorick.

Response to Dr. Henshel's Rebuttal Testimony

14 **Q.4. Do you agree with Dr. Henshel's rebuttal testimony?**

15 A.4. No, as explained below.

16 **Q.5. Do you agree with Dr. Henshel's testimony in A.40?**

17 A.5. No, in A.40, Dr. Henshel introduces the fact that both turkey and squirrel are
18 officially hunted at JPG. She also suggests that humans might ingest DU accumulated into
19

1 aquatic organisms on or off site. The Staff was aware that turkeys and squirrels were hunted for
2 brief intervals on the JPG site but did not consider the number and amount of meat in these
3 species to be as significant as the consumption of deer meat harvested on the JPG site. Since
4 no DU was detected in the deer sampled, there is no reason to require the Army to sample
5 turkeys or squirrels for DU contamination at this time. Likewise, there is no reason to have the
6 Army sample for DU in aquatic organisms at this time since no DU has been detected in any
7 surface water samples or sediment samples. We reserve the option to request the Army to
8 sample biota or other media in the future.

9 It is interesting to note that Dr. Henshel relies on stories told by her students in A.20 and
10 A.40 to state that local people near JPG eat whatever they find in the streams. Such anecdotal
11 information lacks scientific significance for the conclusions Dr. Henshel draws based on this
12 information. First, the information does not support a conclusion that people are eating animals
13 that originate from the streams on the JPG site. Second, Indiana law regulates the time and
14 type of animals that can be taken from streams, and even prohibits the harvesting of some
15 species.

16 Under Indiana state law, a person may not take mussels or mussel shells from the
17 streams in the state without a license. See IC 14-22-17-2 and 312 IAC 9-9-3 "Mussels". The
18 Indiana Department of Natural Resources Fishing Guide states that bio-accumulators such as
19 mussels may not be eaten: "It is illegal to collect or take live or dead mussel shells from public
20 waters. A ban on harvesting shells has been in effect since 1991 to protect against a rapid
21 decrease in the abundance and distribution of mussels. Please do not disturb living mussels or
22 take dead shells." (See Indiana Department of Natural Resources, Fishing Guide, page 47)
23 ([http://www.in.gov/dnr/fishwild/fish/fishng/2007RFG/large/Fishing%20Regulations%20pgs%2042](http://www.in.gov/dnr/fishwild/fish/fishng/2007RFG/large/Fishing%20Regulations%20pgs%2042-55.pdf)
24 [-55.pdf](http://www.in.gov/dnr/fishwild/fish/fishng/2007RFG/large/Fishing%20Regulations%20pgs%2042-55.pdf)). Dr. Henshel's testimony does not provide a justification for sampling biota in the
25 streams that originate from the JPG site.

1 **Q.6. Do you agree with Dr. Henshel's statements in A.41 and A.42 that DU has**
2 **affected populations in caves?**

3 A.6. No, I do not. In A.41, Dr. Henshel makes an un-scientific statement that, because
4 a study showed aquatic invertebrates to be affected in DU area caves, this means that "...DU
5 may be migrating via the aquatic pathway...". She makes this statement again in A.42. The
6 Lewis Study, the cave invertebrate survey of Big Oaks National Wildlife Refuge JPG/BONWR
7 conducted by Lewis et al. (<http://www.fws.gov/midwest/BigOaks/Reports/BONWRReport.doc>),
8 actually states "The reason for the absence of fauna remains unknown, but groundwater
9 contamination should be entertained as a cause." Mr. Norris also references this quotation from
10 the Lewis Study in his testimony in A.021. There is no mention in the Lewis Study that DU is
11 present in the groundwater. The area is part of the military testing range and has a number of
12 chemicals from approximately 24 million exploded munitions. Dr. Henshel's testimony is
13 speculating on the cause of the observations noted in the study when there are a myriad of
14 chemicals in the DU impact area and all would have to be taken into account to explain any
15 suspected impacts on aquatic species. This is similar to her initial testimony where she claimed
16 to observe health effects in deer due to DU contamination.

17 **Q.7. Are there other areas of Dr. Henshel's rebuttal testimony that you would like**
18 **to comment on?**

19 A.7. Yes. In A.11 and again in A.19, Dr. Henshel refers to a term "skips" to imply that
20 some of the DU rounds are outside of the DU impact area. She provides no documentation that
21 this is indeed correct but uses her assumption to call for additional testing in the northern
22 reaches of the JPG area outside of the DU impact area. Also in A.11, Dr. Henshel makes the
23 statement that the period of concern for an Environmental Report and Environmental Impact
24 Statement should be longer than the 1000 year period of regulatory concern without providing
25 any supporting evidence.

1 **Q.8. What is your analysis of Dr. Henshel's testimony in A.20?**

2 A.8. As I discussed in my initial testimony in A.14., none of the studies have shown
3 DU contamination in the deer samples. Dr. Henshel is again claiming that there was DU in a
4 deer sample in her testimony at A.20 on page 17 where she states that, "... Mr. Barta would
5 prefer to just ignore the inconveniently contaminated deer from the 1996 SEG report...". As I
6 have previously testified, Mr. Condra's initial testimony confirms that uranium levels in deer are
7 at background levels and refutes Dr. Henshel's testimony that the results of deer sampling have
8 shown any DU contamination in deer.

9 An additional disagreement I have with this answer from Dr. Henshel regards her
10 analysis of fishing habits of her students on page 18. She does not provide evidence of a link
11 between the students' fishing and the JPG site where fishing is prohibited other than in the
12 upstream dammed lake. There is additionally no justification to further examine this issue
13 concerning fishing at the JPG site at this time because no DU has been detected in surface
14 water or sediments.

15 **Response to Mr. Norris' Rebuttal Testimony**

16 **Q.9. Do you agree with Mr. Norris' rebuttal testimony?**

17 A.9. No, as explained below.

18 **Q.10. Having reviewed A.006, do you agree with Mr. Norris' statement that, "... the**
19 **RAI-requested inputs for the RESRAD model are all the information that will be needed to**
20 **compute Total Effective Dose Equivalents..."?**

21 A.10. No, Mr. Norris' testimony is incorrect. NRC Staff did not request inputs for the
22 RESRAD model. Mr. Norris also is confused about the RAIs issued by NRC Staff on May 20,
23 2004 (See ADAMS 041350063) which he lists as a reference and uses in A.013, and the
24 "Request for Details About Parameters Needed for Off-Site Transport Models," dated November
25 4, 2004 (See ADAMS ML042710122) which he appears to reference in his testimony. The RAIs

1 issued on May 20, 2004, did not ask the Army to provide any information on model inputs. The
2 "Request for Details About Parameters Needed for Off-Site Transport Models," dated November
3 4, 2004, specifically asked the Army to report which parameters it could not collect for their off-
4 site transport models due to the presence of unexploded ordnance. No mention is made of
5 RESRAD. The intent of NRC Staff with this request was to establish metrics so that if the
6 formerly requested possession-only license to delay decommissioning indefinitely with reviews
7 every 5 years was granted, NRC Staff would be able to determine when it would be safe from
8 unexploded ordnance for the Army to collect the data needed. Mr. Norris propagates his
9 confusion concerning the Staff's request of the Army in A.007.

10 **Q.11. Do you agree with Mr. Norris' testimony in A.015?**

11 A.11. I disagree with Mr. Norris' description of the Field Sampling Plan (FSP) being
12 designed to depend on only a partial or limited characterization of the site. His response seems
13 to imply that there will be gaps of data or characteristics that are necessary. This is misleading
14 in that the parameters necessary for the modeling of a radiological dose will either be provided
15 through site specific data or will be substituted with conservative values that are protective of
16 human health. In this way, the site will be "fully" characterized so that there are no missing data
17 or characteristics of the site necessary for calculating radiological doses. Dr. Ridge provides
18 further testimony regarding bounding and conservative values.

19 **Q.12. Do you agree with Mr. Norris' testimony in A.016?**

20 A.12. No, Mr. Norris refers to the biota studies in caves cited by Dr. Henshel as
21 evidence of impairment associated with DU. Mr. Norris is unscientifically and unjustifiably tying
22 DU to the limited observations from the biota studies in the caves, which I have already
23 discussed in my response to Dr. Henshel's testimony.

1 **Q.13. Do you agree with Mr. Norris' testimony in A.019?**

2 A.13. No, Mr. Norris in the last paragraph of A.019 on page 32 states that there is DU in
3 the Big Creek water. Mr. Norris is misinterpreting the data due to the large uncertainties
4 associated with measuring uranium isotopes at environmental levels. See the testimony of
5 Mr. Condra.

6 **Q.14. Do you agree with Mr. Norris' testimony in A.023?**

7 A.14. No, I disagree with Mr. Norris' testimony regarding fractionation and his
8 description of the FSP characterization of the site. In A.023, Mr. Norris states "In my pre-filed
9 direct testimony I suggest that there is evidence that chemical fractionation may be modifying the
10 U-238/U-234 activity ratios and that the nature of that fractionation is such that U-234 is
11 disproportionately mobile and U-238 is disproportionately attenuated." This statement is
12 incorrect. Mr. Norris testimony did not discuss the chemical fractionation of U-238/U-234, rather
13 his testimony relied on a paper by Rademacher *et al.* which only discussed fractionation of U-
14 238/U-235, entirely different from U-238/U-234. My rebuttal testimony stated several reasons
15 why the experimental results from Rademacher *et al.* could not be incorporated into the
16 sampling program at JPG.

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I, Thomas McLaughlin, do declare under penalty of perjury that my statements in the foregoing testimony are true and correct to the best of my knowledge and belief.



Thomas McLaughlin

Executed at Rockville, MD
This 21st day of September, 2007.