



DEPARTMENT OF THE ARMY  
UNITED STATES ARMY TANK - AUTOMOTIVE AND ARMAMENTS COMMAND  
ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER  
PICATINNY ARSENAL, NEW JERSEY 07806-5000

October 12, 2006

Q-5  
MS-16

Docket Nos. 03005215  
04006377  
Control Nos. 138807  
138808

License Nos. 29-00047-02 / SUB-348

Radiation Protection Office  
Quality Engineering & System Assurance Sciences Div.  
Quality Engineering and System Assurance Directorate

Ms. Betsy Ullrich  
Nuclear Materials Safety Branch 2  
Division of Nuclear Materials Safety  
U.S. Nuclear Regulatory Commission – Region I  
475 Allendale Road  
King of Prussia, Pa. 19406

RECEIVED  
REGION 1  
2006 OCT 16 PM 2:40

Dear Ms. Ullrich,


This correspondence is in response to your letter dated 17 August 2006 (encl 1). Each question that was posed in the 17 August letter has been addressed. As such please find enclosed a disc that contains an updated copy (revision 4) of the New World Technology, Final Report, Picatinny Arsenal Radiological Remediation / Release Surveys and Sampling Project, Revision 4, September 27, 2006, Project No. USA 99-109. Of note, also included on the disc is an update to Appendix JJ, entitled RESRAD Build Version 3.22 and RESRAD Version 6.3 Modeling Code Data. The additional updated information provided here, along with the information contained in the other associated appendices (part of our April 28, 2006 correspondence to your office on this matter) should demonstrate that all parameters now satisfy the remediation standards for the unrestricted free release of Building 167 and it's associated grounds, Magazine 3018, and Bunker 3030. Please note that data provided in the report regarding characterization surveys of other areas on post are for information purposes only, and are not part of the present unrestricted release request of the aforementioned buildings and associated grounds .

The information contained on the enclosed disc, according to Mr. Dan Spicuzza of New World Technology Inc., is in an NRC acceptable PDF format, compatible with the ADAMS system and in accordance with NRC guidance for electronic submittals found at <http://www.nrc.gov/site-help/eie/guid-elec-submission.pdf> and / or <http://www.nrc.gov/site-help>. The mailing of this correspondence will be followed by an email to your office containing attachments of those same PDF files for your use as well.

As a further aid in your review of the additional information submitted in this correspondence enclosure 2 is provided. Enclosure 2 contains a consolidated presentation of the answers prepared by New World Technology to the NRC's questions of 17 August 2006, which in turn have been incorporated into the report (revision 4) submitted here.

Points of contact regarding this correspondence are Mr. Joseph Fabiano, (973) 724-3742, email [jfabiano@pica.army.mil](mailto:jfabiano@pica.army.mil), or the undersigned at (973) 724-3126, email [rfliszar@pica.army.mil](mailto:rfliszar@pica.army.mil).

Sincerely,



Richard W. Fliszar  
RDECOM-ARDEC Radiation Protection Officer

Copies Furnished (w/o encl):

AMSRD-AAR-QES-C (Mr. Tim Grealy)  
Commander, HQ U.S. Army Joint Munitions Command, ATTN: AMSJM-SF (Mr. Frank Whitaker)  
Commander, HQ U.S. Army Materiel Command, AMC Surgeon General's Office  
ATTN: AMCPE-SG-R (Major Robert Prins)  
Commander, HQ U.S. Army Research, Development and Engineering Command,  
ATTN: AMSRD-MSF (Mr. Jimmy Hamilton)



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

August 17, 2006

Docket Nos. 030-05215  
040-06377  
Control Nos. 138807  
138808

License Nos. 29-00047-02  
SUB-348

Richard W. Fliszar  
Radiation Protection Officer  
Department of the Army  
U.S. Army Research, Development and Engineering  
Command  
Armament Research, Development and Engineering  
Center  
Picatinny, NJ 07806-5000

SUBJECT: DEPARTMENT OF THE ARMY, REQUEST FOR ADDITIONAL INFORMATION  
CONCERNING APPLICATION FOR AMENDMENT TO LICENSE, CONTROL  
NOS. 138807 AND 138808

Dear Mr. Fliszar:

This is in reference to your letter dated April 28, 2006, and the document "New World Technology, Final Report, Picatinny Arsenal Radiological Remediation/Release Surveys and Sampling Project, Revision 3, January 30, 2006, Project No. USA 99-109" (Final Report, Rev.3) requesting to amend Nuclear Regulatory Commission License Nos. 29-00047-02, and SUB-348. In order to continue our review, we need the following additional information:

1. In a previous letter dated September 15, 2004, we requested additional information. Based on a review of the Final Report, Rev. 3, the requested information is provided in Section 5.2. However, although the the documentation generated in developing the area factors and the DCGL for barium-133 are included in Appendix JJ, the sensitivity analyses do not appear to be included in the Final Report, Rev. 3. Please provide the sensitivity analyses used to identify the key parameters which have the largest effect on the calculated dose.
2. Your letter requests release for unrestricted use of Building 167 and its surrounding grounds, Bunker 3030, and Magazine 3018. Your submission included characterization survey information for other areas, and it does not appear that any action to amend your license is requested for the other areas. If the additional information for other areas requires our review and amendment of the license, please make that request in a separate letter from this action for release of the three areas described above.
3. Your letter stated that the proposed Derived Concentration Guideline Levels (DCGLs) were based on RESRAD Build Version 3.21 and RESRAD Version 6.21. However, the report submitted stated that RESRAD Build Version 3.22 and RESRAD Version 6.3

Encl 1

R. Fliszar  
Department of the Army

2

were used. Confirm which codes were actually used in the report submitted with your letter.

4. Page 5 of the Final Report, Rev. 3, states that thorium-232 (Th-232) is one of several radionuclides whose presence would have little effect on the results of the final status surveys. Considering the very low screening value for residual Th-232, explain why you believe this radionuclide will not affect the final status surveys.
5. Explain why the values of the DCGLs for several radionuclides in Table 3 on page 22 are different from those listed in Table 6 on page 27.
6. An error message is listed on the bottom of page 24. Please provide the information that should be there.
7. Section 9.18 and 9.19 discuss contaminated concrete in the Building 167 basement. The concentration of residual contamination in the concrete is compared to the soil screening values. The soil screening values are not approved criteria for contaminated concrete. At this time, the NRC does not have screening values for solid contaminated materials. You should propose a DCGL for your concrete, and show that such material meets the NRC's unrestricted release criteria of 25 millirem in a year (or your criteria of 15 millirem in a year).

Current NRC regulations and guidance are included on the NRC's website at [www.nrc.gov](http://www.nrc.gov); select **Nuclear Materials; Medical, Academic, and Industrial Uses of Nuclear Material**; then **Toolkit Index Page**. Or you may obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-888-293-6498. The GPO is open from 7:00 a.m. to 8:00 p.m. EST, Monday through Friday (except Federal holidays).

We will continue our review upon receipt of this information. Please reply to my attention at the Region I Office and refer to Mail Control Nos. 138807, and 138808. If you have any technical questions regarding this deficiency letter, please call me at (610) 337-5040.

If we do not receive a reply from you within 30 calendar days from the date of this letter, we will assume that you do not wish to pursue your application.

Sincerely,



Betsy Ullrich  
Senior Health Physicist  
Commercial and R&D Branch  
Division of Nuclear Materials Safety



New World Environmental Inc., d.b.a.

New World Technology *Bringing you the Technology of the New World*

Phone: 925-443-7967 Fax: 925-443-0119

From: Daniel M. Spicuzza, NWT Project Manager

Date: September 27, 2006

RE: NRC Letter Request for Additional Information Concerning Application  
Amendment to License Control NOS. 138807 and 138808 dated 17 August, 2006

The comments requiring additional information requested in the above referenced letter are provided below with a response/resolution to each of the comments:

- 1) Comment: In a previously letter dated September 15, 2004 we requested additional information. Based up on the review of the Final Report Rev. 3, the requested information is provided in Section 5.2. However, although the documentation in generating the area factors and DCGL for barium-133 are included in Appendix JJ, the sensitivity analyses do not appear to be included in the Final Report Rev. 3. Please provide the sensitivity analyses used to identify the key parameters which have the largest affect on the calculated dose.

Response: A sensitivity analysis was run with a multiplier/divisor of 2.0 for the following input parameters which had the largest affect on the calculated dose:

- Area of contaminated zone
- Thickness of contaminated zone
- External gamma shielding factor
- Outdoor time fraction
- Livestock intake of soil

The table below provides a summary of the sensitivity analysis.

Input Parameter	Calculated Dose in
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	mrem/year
Thickness of Contaminated Zone	
0.3 meters	16.6
0.15 meters	14.8
0.075 meters	9.2
Area of Contaminated Zone	
12 meters	14.8
6 meters	14.8
3 meters	14.8
Outdoor Time Fraction	
0.5	21.0
0.25	14.8
0.125	11.8
External Gamma Shielding Factor	
1.0	18.5
0.7	14.8
0.49	12.2
Livestock Intake of Soil	
1.0 kg/day	14.8
0.5 kg/day	14.8
0.25 kg/day	14.8

The graphical results of the sensitivity analyses runs are presented in Appendix JJ in the revised report.

- 2) Comment: Your letter requests release for unrestricted use of Building 167 and its surrounding grounds, Bunker 3030, and magazine 3018. Your submission included characterization survey information for other areas, and it does not appear that any action to amend your license is requested for the other areas. If additional information for other areas requires our review and amendment of the license, please make that request in a separate letter from this action for release of the three areas described above.

Response: The Final Report does not require NRC review for license amendment for other than Building 167 and associated grounds, Magazine 3018 and Bunker 3030.



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- 3) Comment: Your letter stated that the proposed Derived Concentration Guideline Levels (DCGLs) were based on RESRAD Build Version 3.21 and RESRAD Version 6.21. However, the report submitted stated that RESRAD Build Version 3.22 and RESRAD Version 6.3 were used. Confirm which codes were actually used in the report submitted with your letter.

Response: The proposed DCGL's were calculated using RESRAD Build Version 3.22 and RESRAD Version 6.3 modeling codes.

- 4) Comment: Page 5 of the Final Report Rev.3 states that thorium-232 (Th-232) is one of several radionuclides whose presence would have little affect of the results on the final status surveys. Considering the very low screening values for residual Th-232, explain why you believe this radionuclide will not affect the final status surveys.

Response: The text on page 5 of the next report revision was revised to state:

"NOTE: Based on historical survey files, the minimal presence of radionuclides such as barium-133, chlorine-36, europium 152-154, iodine-129, iron-59, lead-219, phosphorous-32, nickel-63, ruthenium 103, cerium 144, scandium-46, silver-110, cobalt-60, sodium-22, sulfur-35, thallium-204, and zirconium-95 not mentioned above, would have a very minimal affect on the results of the final status surveys performed."

It should be noted that RESRAD Build Version 3.22 calculations were in fact run for Th-232 in calculating the DCGLs, and the data is included in Appendix JJ of the Final Report.

- 5) Comment: Explain why the value of the DCGLs for several radionuclides in Table 3 on page 22 are different from those listed in Table 6 on page 27.

Response: Some of the values in Table 6 were in error and have been corrected to match the values in Table 3 in the next report revision.

- 6) Comment: An error message is listed on the bottom of page 24. Please provide the information that should be there.



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Response: The reference to "Table 4" has replaced the error message in the next report revision.

- 7) Comment: Section 9.18 and 9.19 discuss contaminated concrete in the Building 167 basement. The concentration of residual contamination in the concrete is compared to the soil screening values. The soil screening values are not approved criteria for contaminated concrete. At this time NRC does not have screening values for solid contaminated materials. You should propose a DCGL for your concrete, and show that such material meets the NRC's unrestricted release criteria of 25 millirem in a year (or your criteria of 15 millirem in a year).

Response: The text in Section 9.19 of the next report revision was revised to state:

"Following decontamination and resurvey of the two areas, a composite concrete sample (both areas combined into one sample) was collected from both areas and sent to the offsite laboratory for gamma spectroscopy analysis. The result of the sample was 0.41 pCi/g and 0.50 pCi/g for Bi-214 and Pb-214 respectively.

Resurveys of the decontaminated areas (2.6 net dpm/100cm<sup>2</sup> gross alpha, and 304 net dpm/100cm<sup>2</sup> gross beta) showed compliance with the DCGLs of 78 dpm/100cm<sup>2</sup> gross alpha, and 20,000 dpm/100cm<sup>2</sup> gross beta for building surfaces.

The result of the post decontamination concrete sample is provided in Volume 3, Appendix HH of this report."