The University of Vermont

Richard H. Cate
Vice President for Finance and Administration
and University Treasurer

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May 31, 2013

Commercial and R&D Branch
Division of Nuclear Material Safety
U.S. Nuclear Regulatory Commission, Region I
2100 Renaissance Boulevard
Renaissance Park
King of Prussia, PA 19406

Attn: Betsy Ullrich

Ref License No.: 44-00728-13
Docket No. 030-13022
Control No. 579668

Re: Request for more information of Decommissioning Fund Plan (DFP)

Dear Ms. Ullrich,

This letter is in response to your letter dated April 3, 2103 requesting for more detailed information regarding the Decommissioning Fund Plan submitted by the University of Vermont on December 7, 2012. Three specific areas were cited in your letter that needed more detailed information; 1) the description of the building and rooms that may require decontamination, 2) the labor cost including methods used for decontaminated facility components, and 3) non-labor costs including packaging materials, shipping, equipment, and other laboratory cost.

Attached is the updated information you requested with revised DFP cost estimates.

After updating and revising our cost estimates with more detailed information, the University of Vermont's DFP and financial assurance (FA) remains adequate.

Thank you,

Richard H. Cate
Vice President Finance & Administration
and University Treasurer

cc. Keddy Bharathan, Director, Radiation Safety Office
Mary Dewey, Director, Risk Management & Safety

NMSS/RGNI MATERIALS-002

OFFICE OF THE VICE PRESIDENT FOR FINANCE AND ADMINISTRATION
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***Question 1:* Facility Description, rooms and buildings, square footage, components, and volume of residual radioactive contamination.**

The building materials of University of Vermont research laboratories consist of; brick, cinderblock, sheetrock, wood, concrete with tile covered floors, windows with metal frames, chemical fume hoods or biological cabinets, soap-stone and/or stainless steel benches and sinks.

Currently, there is approximately 25,000 square feet of laboratory space that is authorized for radioactive material use and/or storage. Of that space, 26 laboratories, totaling 12,555 square feet are authorized to use unsealed radioactive materials with half-lives greater than 120-days. There are a total of 11 fume hoods in these 26 laboratories. Below is a list of laboratories authorized to use radioactive materials with a half-life greater than 120 days.

Room Number	Building	Room Type	Square Footage	Cotains Fume Hood?	Any Residue Contamination?
122	Colchester Research Facility	Inactive	173	Yes	No
006	Rowell	Waste Storage	245	No	No
007	Rowell	Waste Storage	435	No	No
013	Rowell	Handling	224	Yes	No
242	Colchester Research Facility	Counting Room	139	No	No
B405	Given	Handling	1,044	Yes	No
C403	Given	Handling	651	Yes	No
C411	Given	Handling	319	Yes	No
C312	Given	Handling	464	No	No
C321	Given	Handling	494	No	No
C347	Given	Storage	188	No	No
E305	Given	Inactive	395	Yes	No
E317	Given	Storage	452	No	No
340	HSRF	Handling	771	Yes	No
425	HSRF	Handling	214	No	No
208	Marsh Life Science	Inactive	111	No	No
306	Stafford	Handling	493	Yes	No
311	Stafford	Cold Room	69	No	No
316	Stafford	Handling	1,194	Yes	No
121A	Terrill	Handling	82	Yes	No
121B	Terrill	Handling	139	No	No
430	Dewey Hall	Handling	86	No	No
228	Colchester Research Facility	Handling	979	Yes	No
121	Colchester Research Facility	Inactive	2,406	No	No
319	Stafford	Counting Room	198	No	No
235	Hills	Handling	590	No	No
Totals: 26 labs			**12,555**	**11 fume hoods**	**No residual contamination**

There is no fixed radioactive contamination on floors, walls, ceilings, bench tops, fume hoods, sinks, ventilation ductwork, or plumbing fixtures currently in any radiation laboratory at the University of Vermont. No legacy radiation contaminated sites are identified in University of Vermont buildings or surrounding environment. The University of Vermont does not allow sanitary sewer disposal of radioactive materials. No ground water or soil contamination is present. No air ventilation ductwork or plumbing is contaminated. Personnel that use radioactive materials and also the Radiation Safety Office routinely monitor for radiation contamination. If contamination is found, steps are taken to decontaminate or remove and dispose the contaminated item at that time. No remediation is required to meet release criteria since no areas of fixed contamination are present in facilities and building components in University of Vermont research laboratories

The University of Vermont ships its radioactive waste on a regular basis. It only stores waste for decay that has a half-life less than 120-days. All long-lived waste is sorted and processed and sent for disposal via our waste broker, Bionomics, for burial or final processing. No more than 20 cubic feet of radioactive waste with a half-life greater than 120-days is expected to be present at the time of decommissioning.

This updated information does not change the cost estimate that the University of Vermont submitted on December 7, 2012.

<u>Question 2:</u> Description of techniques and methods that will be used to decontaminate facility components.

Chemical decontamination is the method of choice for removing radioactive contamination in research laboratory facilities and equipment. It is relatively inexpensive and in most situations additional equipment is not required. Also, chemical decontamination involves relatively minor problems of air borne radioactive contamination. Simple processes, such as brushing, washing, scrubbing, and vacuum cleaning, will be used, as necessary. These processes are generally labor intensive, but they have the advantage of being simple and versatile.

Unsealed radiation users at the University of Vermont are trained to perform chemical decontamination as soon as the contamination is detected. The type of research activities and levels of radioactive materials used in laboratories diminishes the potential for facilities and the surrounding environment to become contaminated. No large volumes and activities of radioactive materials are used. No evaporation inside fume hoods is allowed. Facilities, lab equipment and components are monitored for radioactive contamination on a regular basis.

At this time, no dismantling of components, building debris, restoration of buildings or grounds or site stabilization and monitoring is required. If contamination events occur in a research laboratory they are typically less than one liter and low radioactivity. When contamination is identified it is decontaminated or it is removed and disposed as radioactive waste.

Since laboratory components, fume hoods, ventilation duct-work, sanitary sewer components are not contaminated only a minimal amount of decontamination is expected to be necessary at the time of decommissioning. Added cost estimates for chemical decontamination are $3,000 for materials and supplies and $3,000 for additional radioactive waste disposal of items generated in the decontamination process.

This updated information adds an additional cost of $6,000 to the DFP that the University of Vermont submitted on December 7, 2012.

Question 3: ***Additional non-labor cost of decontamination, including packing materials, shipping, other equipment such as personal protective equipment and laboratory cost.***

The cost of non-labor items from decontamination should be minimal because of the limited use of radioactive materials with a half-life greater than 120-days at the University of Vermont. The volume and total activity of radioactive materials used and the scope of their use in research laboratories will lessen the cost of non-labor charges required for decontamination.

The following is an addition of non-labor cost associated with decontamination (not including disposal):

Packing materials & shipping	$ 1,000
Equipment and supplies	$ 2,000
3rd Party Laboratory use	$20,000
Total:	$23,000

This updated information adds an additional cost of $23,000 to the DFP that the University of Vermont submitted on December 7, 2012.

New Revised Cost Estimates to the DFP

Estimate 1:
The new, updated estimated cost to decommission, disposal and/or transfer of all radioactive materials that would be done by the Radiation Safety Office personnel at UVM;

RSO Operating Budget for 1 year	$295,779 *(includes salaries)*
Disposal of unsealed sources	$100,000
Disposal of sealed sources	$ 70,000
Transfer to other licensees	$ 10,000
Decontamination process	$ 6,000 * *new added cost*
Non-labor charges	$ 23,000 * *new added cost*
Total:	$504,779

With NRC recommended 25% contingency factor: $630,974

Estimate 2:
The new, updated estimated cost to decommission, disposal and/or transfer of all radioactive materials that would be done by an outside contractor;

We estimate that 3 persons would be needed to decommission the University in a year's time. One Health Physicist and two Health Physics Technicians would be hired.

Health Physicist	$125/hour
Two HP Techs.	$50/hour (each)

Total:	$225/hour

52 weeks x 40 hours/week x $225/hour = $468,000 salary needed for decommissioning.

We estimate the total cost for a 3rd party to decommission the University of Vermont;

Cost of contractor	$468,000 *(salaries)*
Disposal of unsealed sources	$100,000
Disposal of sealed sources	$ 70,000
Transfer to other licenses	$ 10,000
Decontamination process	$ 6,000 * *new added cost*
Non-labor charges	$ 23,000 * *new added cost*
Total:	$677,000

With NRC recommended 25% contingency factor: $846,250

The requested information has slightly increased the cost estimates for decommission of the University of Vermont. The certified financial assurance submitted on December 7, 2012 of $1,125,000 is still sufficient to cover the revised, increased cost estimates.