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U.S. Nuclear Regulatory Commission  
Division of Nuclear Materials Safety  
Region 1  
2100 Renaissance Blvd.  
King of Prussia, PA 19406

License No. 19-00296-10  
Docket No. 03001786  
Control No. 584275

Dear Sir or Madam:

The attached document is being submitted in response to the 9/11/2014 request for additional information.

Please let me know if you have additional questions. I may be reached at 301-594-0922 or [nnewman@nih.gov](mailto:nnewman@nih.gov).

Sincerely,

A handwritten signature in blue ink that reads "Nancy E. Newman".

Nancy E. Newman

cc: Dr. Brad Wood, Chair, RSC

1. *The historical site assessment section did not specify all of the unsealed isotopes used at the facility and a description of why the isotopes were not considered in the survey plan.*

Open form radionuclides used at the facility were identified as Tritium, 14-Carbon, 51-Chromium, 32-Phosphorous, 33-Phosphorous, 35-Sulphur and 125-Iodine.

Additionally Uranium, natural was reportedly used at the facility, likely from generally licensed materials. The review of acquisition records revealed that material usage has declined in recent years and that the total radioactive material received in a calendar year could be measured in millicuries. Open form radionuclides were decayed from the date of receipt to March 1, 2014. After completing this decay calculation, the radionuclides that could remain at the site as possible contaminants were identified as Tritium, 14-Carbon and Uranium, natural.

2. *The historical site assessment section stated that sealed sources were used at 5 Research Court. Please provide the leak test results for all sources requiring leak testing that were used at the facility. Alternately, state that there have been no leaking sources used in the facility.*

The types of sources were commonly small reference standards, check sources and electron capture devices. An irradiator was in use until recently. The irradiator was relocated to another facility on 3/25/14. No record was found to indicate any of these sources had leaked.

3. *It was noted that the calculation of Equation 6-14 to determine  $P(n>2)$  used the improper variable  $t$ .  $t$  in this calculation is the measurement interval time and not the time the probe needs to be held to wait for another count for investigation.*

Yes, and we apologize for the oversight. A typographical error was made in identifying a variable in the equation. The following paragraph from page 10 of the Final Status survey report has been revised to read:

“The probability of detecting two or more counts when passing over one half the DCGL, 125 dpm/100cm<sup>2</sup> was determined (NUREG-1575, 6.7.2.2 (6-14)) and time interval a surveyor will dwell over the suspect area (NUREG 1575, 6.7.2.2 (6-13)) is provided in Table 3. An example of the variables used in solving equation (6-14) is provided in Table 4.”

An error was made in calculating t ( $t = d/v$ ). Tables 3 and 4 have been revised to reflect the revised determination of t.

**Table 3: Probability of Detecting 2 or More Counts When Passing over 125DPM/100cm<sup>2</sup>**

Scaler/rate meter Serial nr	Detector	Reference Bkg (cpm)	U-nat Eff (4pi)	P (n≥2)
147494	43-37	3	8	.21
147494	43-68	3	7	.19
144866	43-37	9	7	.32
144866	43-68	1	8	.17
149987	43-37	9	8	.35
149987	43-68	4	7	.21
183988	43-37	5	7	.23
183988	43-68	2	8	.19

**Table 4: Variables in Equation (6-14)**

Variables		Detector Type	
		43-37	43-68
0.5 x DCGL	G	125	125
Efficiency (4pi)	E	.08	.07
Window width (cm)	D	16	11.7
Scan speed (cm/s)	V	4.1	2.9
Bkg	B	3	3
T (d/v)	t	3.9	4.0
P(n≥2) in %		.21	.19