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FACSIMILE TRANSMISSION

To: Ms. Robin Elliott From: Kevin

Date: 6-9-14 Number of pages 3 (including cover sheet)

Miscellaneous Comments: Here is the info you needed, if I can be of any further assistance please call me at 860 548-9700. Kevin

If there are any problems with this transmission, please telephone our office at:

19 Woodland Street
Hartford, CT 06105
(860) 525-1234

7 Elm Street
Enfield, CT 06082
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21 Woodland Street
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To: Robin Elliott, Health Physicist
USNRC Region I
2100 Renaissance Blvd, Suite 100
King of Prussia, PA 19406-2713

June 9, 2014

RE: Information requested on dose calibrator linearity testing.

Dear Ms. Elliott:

We are supplying your agency with the start dates of the dose calibrator linearity tests performed in the last several years, as you requested:

Year	Enfield	Hartford	Simsbury
2010	2/08	1/11	2/02
	6/14	6/15	4/26
	9/13	-	8/16
	11/29	11/16	11/29
2011	3/14	2/08	3/15
	6/13	4/26	5/23
	9/20	9/12	8/29
	12/06	12/05	11/28
2012	3/21	1/16	-
	6/11	4/10	4/16
	8/27	7/09	8/20
	-	-	-
2013	2/20	1/16	-
	5/13	4/15	5/20
	7/23	7/15	7/15
	12/30	10/15	12/16

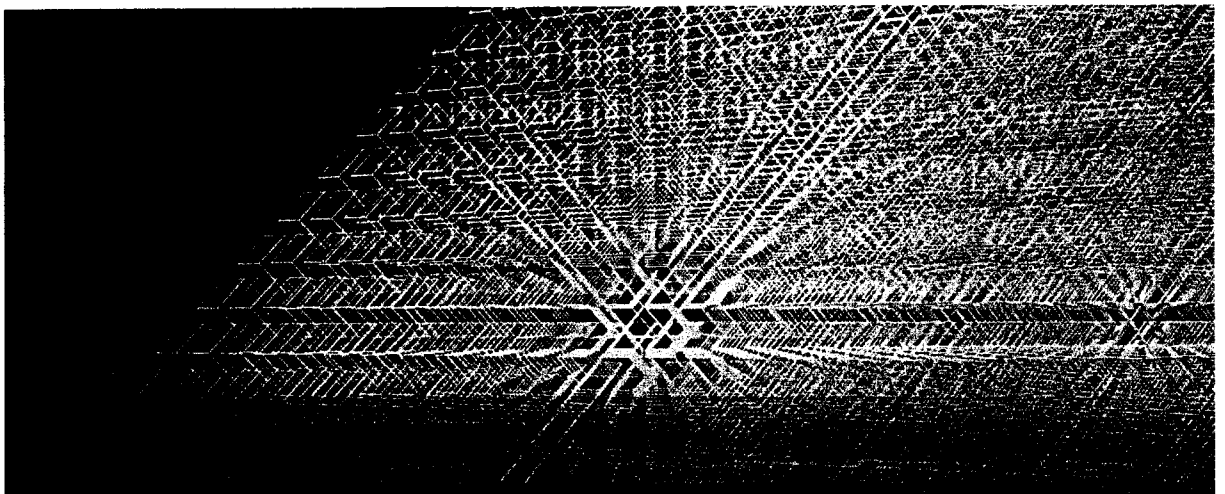
The dose calibrator units at each office are the Capintec, Model 15R. We use the IAEA Technical Reports Series No. 454, "Quality Assurance for Radioactivity Measurement in Nuclear Medicine" as the basis for the dose calibrator performance testing. It was published in November 2006 and provides useful information for a nuclear

medical laboratory. In Table 4, on page 69 of the IAEA report, the frequency of the linearity test is shown as being "upon acceptance/after repair" and then on an "annual" basis. We strive to complete this test on a quarterly basis, but we are meeting the frequency criteria of linearity tests as presented in the IAEA report.

If you have any questions or desire additional information, please me at 860-525-8901.

Respectfully,

John T. Cardone, MD
RSO



TECHNICAL REPORTS SERIES NO. 454

Quality Assurance for Radioactivity Measurement in Nuclear Medicine

IAEA
International Atomic Energy Agency

The value t is calculated as the time difference between the measurement and reference times and is taken as negatively signed if the measurement time is before the reference time.

VII.6.5. Presentation of results

Calculate and record the activity of the sample and its uncertainty, and confirm that it is within the requirements of the request form.

VII.6.6. Uncertainty estimation

Uncertainties must be estimated in accordance with Ref. [13].

VII.7. CRITERIA FOR APPROVAL/REJECTION

Table 4 details the performance checks to be carried out upon acceptance of the radionuclide activity calibrator and periodically thereafter, as well as after repair, together with the appropriate pass/fail criteria. These criteria will also form part of the technical specification of the calibrator. Procedures for carrying out the tests listed in Table 4 can be found in Section VII.8.

VII.8. PERFORMANCE CHECK PROCEDURES

VII.8.1. Check source response

Objective. Measurement of the check source response establishes the constancy of the system's response by examining the reproducibility in measuring a constant source over a long period of time, which is an indicator of the reproducibility of the electrometer and the integrity of the ionization chamber gas pressure. Ideally, at least one relatively long lived source in a reproducible geometry will be measured each day before the calibrator is used. Caesium-137 is a good option because of its long half-life and radionuclidic purity, although other radionuclides such as ^{57}Co, ^{60}Co or ^{226}Ra can be used. The procedure is as follows:

TABLE 4. PASS/FAIL ACCEPTANCE CRITERIA FOR PERFORMANCE CHECKS OF RADIONUCLIDE ACTIVITY CALIBRATORS

Test	Frequency of testing				Pass/fail criterion
	Upon acceptance/ after repair	At the start of each day of use	Monthly	Annually	
High voltage	✓	✓	✓	✓	±1%
Display	✓	✓	✓	✓	—
Zero adjustment	✓	✓	✓	✓	Within range of adjustment
Clock accuracy	✓	✓	✓	✓	±1 min
Background	✓	✓	✓	✓	±20% of current mean
Check source response (constancy)	✓	✓	✓	✓	±2% of reference value
Accuracy (over normal operating range)	✓			✓	Nuclide dependent; ±2% (SSRLs), ±5% (other laboratories)
Precision	✓		✓	✓	±1%
Relative responses	✓	✓	✓	✓	±2% of reference value
Subsidiary calibrations	✓			✓	±1% of reference value
Linearity	✓			✓	Within 2% (SSRLs) or 5% (other laboratories) of true value over operating range (compare with linear fit of data)
Geometry	✓				New factor must be determined for every change in geometry (SSRLs), or when effect of geometry is >5% (other laboratories)