

CARDIOVASCULAR CENTER, P.C.

TELEPHONE 616 381-3963

DMB COPY

E. Enrique Leguizamon, M.D.
Michael F. Macken, M.D.
Evalt Ayerdi, M.D.

John E. Francis, M.D.
William B. Campbell, M.D.
Robert J. LaPenna, M.D.

April 8, 1985

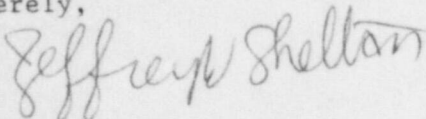
Rose Douglas
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Dear Ms Douglas:

Please find a copy of the letter in response to your NRC inspection. I do not know why the original was not received.

If there are questions or further information is needed, please contact me at your earliest convenience.

Sincerely,



Jeffrey Shelton

JS:ac

8504260148 850408
REG3 LIC30
21-018912-01 PDR

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APR 17 1985

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LICENSE NO: 21-18912-01

1. Failure to perform the linearity test on the Capintec CRC-5 dose calibrator from March 1984 to November, 1984.

The linearity test for the second quarter was performed, but the values were not plotted and graphed. As of this date, the values of the second quarter linearity test have been plotted and graphed, and a copy is enclosed for your inspection. The dose calibrator was not tested for linearity in the third quarter due to the death of Jeff Grames, C.N.M.T. The fourth quarter linearity was performed, and a copy is enclosed for your inspection.

To insure compliance with this item in the future, I have scheduled specific dates for the completion of the linearity test. As of this date we are in full compliance with this item.

2. Failure to perform leakage tests on our cesium-137 sealed calibration source from January 13, 1984 to October 16, 1984.

I have spoken with Tony Mason, M.S., from Medical Physics Consultants concerning this item of noncompliance. Mr. Mason assured me that Medical Physics Consultants will complete the sealed source leak testing every quarter to meet the six-month leak testing requirements. This test will be completed prior to April 16, 1985. When completed, this item will be in full compliance with NRC regulations.

3. The Cardiovascular Center has been transporting radioactive material since 1983 without shipping papers for the mobile nuclear medicine service.

Enclosed is a copy of the shipping paper that the Cardiovascular Center will use when transporting radioactive material in our mobile nuclear medicine service. This paper will be used each time radioactive material is transported to or from a mobile site. Full compliance was achieved on February 27, 1985, with the use of this form.

4. Since 1983, the Cardiovascular Center has been shipping radioactive material for the mobile nuclear medicine service in a container without labeling.

Any package containing radioactive material that is transported by the Cardiovascular Center will be labeled according to Department of Transportation regulations. The appropriate radioactive warning label will be determined by using a survey meter to measure the highest radiation level at the external surface of the shipping box,

DOSE CALIBRATOR LINEARITY TEST

Location Cardiovascular CenterDate 6/11/84Radionuclide Technetium-99m (half-life = 6.02 h)

Elapsed Time Time (h)	Time	Measured x CF	Activity = Calculated (x 5%)	= +/- Limits
0	288	31.633	288	0.05 14.4
6	145	15.853	144	0.05 7.2
24	17.5	1.995	18.2	0.05 0.91
30	9.1	1.000	9.1	0.05 0.46
48	1.13	0.126	1.15	0.05 0.06

1. Multiply the 30 hour value by the correction factors to obtain calculated activities.
2. Plot MEASURED vs. CALCULATED for each time interval.
3. Multiply the CALCULATED values by 0.05 to obtain deviation limits.
4. Verify that each deviation is less than the +/- 5% limit.

0 hours 0% error

6 hours 0.7% error

24 hours 3.8% error

30 hours 0% error

48 hours 1.7% error

and one meter (39 inches) from the external surface to determine label White I or Yellow II or III. Since February 27, 1985, the appropriate label has been affixed to the shipping container.

<u>SURFACE</u>	<u>ONE METER (Transport Index)</u>	<u>LABEL TO BE USED</u>
0.5 mR/hr or less	None	Radioactive White I
0.6 mR/hr to 50mR/hr	0.1 mR/hr to 1.0 mR/hr	Radioactive Yellow II
50.1 mR/hr to 200mR/hr	1.1 mR/hr to 10 mR/hr	Radioactive Yellow III

I hereby affirm that all actions described in this document have been carried out and that all statements contained herein are true.

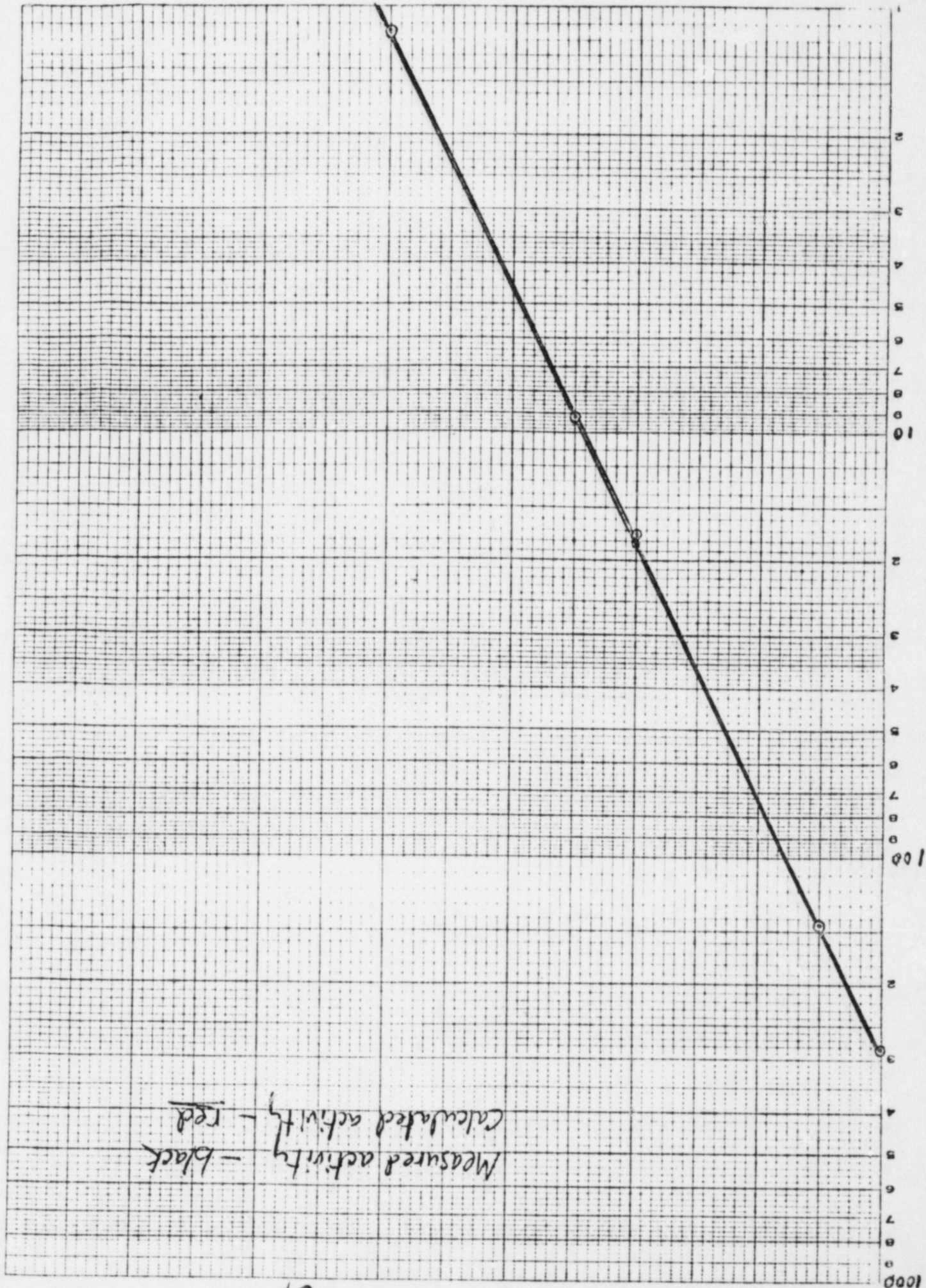


E. Enrique Leguizamon, M.D.

EEL/cw

3 CYCLES X 12 DIVISIONS PER INCH

Activity (mCi)



6-11-84

DOSE CALIBRATOR LINEARITY TEST

Location Cardiovascular Center Date 11-14-84

Radionuclide Technetium-99m (half-life = 6.02 h)

Elapsed Time Activity
Time (h) Measured x CF = Calculated (x 5%) = +/- Limits

0	412	31.633	408	0.05
6	205	15.853	204.5	0.05
24	25.4	1.995	25.7	0.05
30	12.9	1.000	12.9	0.05
48	1.61	0.126	1.62	0.05

Measured

Calculated

1. Multiply the 30 hour value by the correction factors to obtain calculated activities.
2. Plot MEASURED vs. CALCULATED for each time interval.
3. Multiply the CALCULATED values by 0.05 to obtain deviation limits.
4. Verify that each deviation is less than the +/- 5% limit.

0 hour	0.95% error
6 hours	0.24% error
24 hours	1.2% error
30 hours	0% error
48 hours	0.6% error

11-14-84

Linearity

measured - black
calculated - red

1000

9
8
7
6
5
4
3
2

100

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SHIPPING PAPER
RADIOACTIVE MATERIAL NOS

DATE: 3-21-85

FROM:

TO:

Cardiovascular Center, P.C.
BORGESS PROFESSIONAL BUILDING NORTH
1717 SHAFFER STREET SUITE 108
KALAMAZOO, MICHIGAN 49001

Lee Memorial Hospital
420 West High Street
Dowagiac, MI 49047

Sample

NUMBER OF UNITS	RADIONUCLIDE	CHEMICAL FORM	PHYSICAL FORM	ACTIVITY	TRANSPORT INDEX	CATEGORY
1	Technetium 99m	Sulfur Colloid	liquid	4.0mCi	0.1	White I
1	Technetium 99m	Medronate MDP	liquid	16.4mCi	0.1	White I

Transport Index: Determined from the highest radiation levels measured at one meter (39 inches) from the shipping box.

SHIPPERS CERTIFICATION: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Signature: Anthony Surczynski C.N.M.T.