

Central Medical Center
4411 N. Newstead
St. Louis, Missouri 63116



314/382-7979

Reply to: Notice of Violation
From: Central Medical Center
St. Louis, MO
License No. 24-20310-01

We wish to reply to the four violations identified in your notice of violation of August 11, 1989.

Violation 1

Corrective action taken:

The licensee initiated corrective action immediately after the NRC inspection. The data are expressed in dpm/100sqcm.

The licensee will continue to conduct surveys in the future without fail.

Full compliance was achieved on August 1, 1989.

Violation 2

Upon search of the records the linearity data were located for the second and third quarters of 1988 indicating that these tests were performed. Copies of the data are enclosed.

Dose calibrator tests for linearity will be performed on a quarterly basis in the future.

Violation 3

Upon search of the records, the inventory record of the sealed sources was located. The inventory was performed by R. Tim Horner of Syncor, the consulting physicist at that time.

Inventory records for the sealed sources have been maintained quarterly in the past and will be in the future.

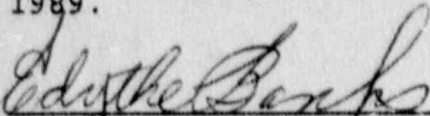
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Violation 4

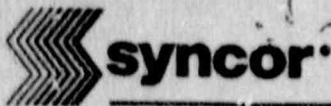
The Radiation Safety Committee met on April 26, 1989 and will continue to meet on a quarterly basis.

The hospital underwent a change of authorized users and radiation safety officer and the committee failed to meet. This has been corrected and the committee will meet quarterly in the future.

Full compliance with all violations was achieved by August 1, 1989.



Edythe Banks
Director of Radiology



Lee File



SYNCOR INTERNATIONAL CORPORATION
WINCHESTER BUSINESS CENTER
6301 WINCHESTER AVENUE, SUITE 302
KANSAS CITY, MISSOURI 64133

**The National
Pharmaceutical
Service Network**

May 12, 1988

Rajeshwar K. Luther, M.D.
Department of Nuclear Medicine
Central Medical Center
4411 North Newstead
St. Louis, Missouri 63115

Dear Dr. Luther:

Enclosed are the reports for the services performed in Nuclear Medicine on May 03, 1988.

All items appeared to be in order at this time with respect to NRC regulations and conditions of your license. I will need to send you the results of the linearity test performed on the dose calibrator for this quarter as soon as I receive the data from Hansa.

If you have any questions concerning this report or if we can be of further service, please do not hesitate to contact me.

Sincerely,

SYNCOR HEALTH PHYSICS GROUP

R. Tim Horner
Health Physicist

NUCLEAR MEDICINE SERVICES PERFORMED

Institution: Central Medical Center
 4411 North Newstead
 St. Louis, Missouri 63115

Date: 05-03-1988

item	required frequency	compliance	
		yes	no
1. Dose Calibrator Calibration			
a. accuracy	quarterly	X	
b. linearity	quarterly	X	
2. Survey Meter Calibration	annual	X	
3. E-Dial Resolution Check			
a.			
b.			
4. Q.A. Program Check			
a. field flood	daily	X	
b. bar phantom	weekly	X	
c. dose calibrator	daily	X	
5. Records Check			
a. radiation surveys	daily	X	
b. wipe test surveys	daily/weekly	X	
c. waste disposal	as needed	X	
d. patient disposition	daily	X	
e. package opening	daily	X	
f. personal monitoring	daily	X	
g. Xenon trap check	monthly	X	
6. Sealed Source Inventory/Wipe			
a. 57-Co CTR-568	semi-annual	X	
b. 137-Cs CDR-562			
c. 57-Co 2I-2001			
7. In-Service Education	annual	X	
8. R.S. Committee Meetings	quarterly	X	
9. Regulatory license expiration		X	
*expires: September 31, 1987			
10. Posting			
a. Parts 19 and 20		X	
b. Notice to Employees		X	
c. emergency procedures		X	
d. license		X	
11. Mo-99 Breakthrough			n/a
12. Radiation Signs Posted		X	

DOSE CALIBRATOR CHECK FOR ACCURACY

Institution: Central Medical Center

Date: 05-03-1988

	Syncon Source			Instit. Source	
	137-Cs	57-Co	133-Ba	137-Cs	57-Co
Manufacturers:	NEN	ORIS	NEN	Amersham	Amersham
Source Number:	NES-356	126-354	NES-358	CDR-562	
Calibrated:	8-08-77	1-20-86	9-25-78	2-01-83	8-01-87
Strengths:	217 uCi	5.55mCi	265 uCi	274 uCi	5.601mCi
Calibration Factor:	220	112	591	220	112
Background:	0	0	0	0	0
Calculated Activity:	171 uCi	.717 mCi	143 uCi	243 uCi	2.77mCi
Measured Activity:	173 uCi	.726 mCi	145 uCi	250 uCi	2.81mCi
Percent Variation:	1.2	1.3	1.4	2.9	1.4

Daily Calibration Check

137-Cs decay ratio: 0.994. 217 uCi as of August 8, 1977

button	previous measure	present measure	percent variation
Tc99m	318 uCi	318 uCi	0.3
I131	224 uCi	224 uCi	0.9
I123	148 uCi	148 uCi	0.7
Xe133	197 uCi	197 uCi	0.0
Ga67	286 uCi	286 uCi	0.0
Tl201	182 uCi	182 uCi	0.0
In111	138 uCi	138 uCi	0.0

Physicist: R. J. [Signature]

Rad Safety Officer: _____

QUARTERLY SURVEY METER CHECK

Institution: Central Medical Center

Date: 05-03-1988

Ludlum Model 3, serial #26027 calibrated on May , 1988
137-Cs source; front of detector: 45 mR/hour

Ludlum Model 5, serial #24448 calibrated on Feb 09, 1980
137-Cs source; bottom centered: 35 mR/hour

Nuclear Associates Xenogard
137-Cs source; check source area: 1.6 MPC

FULL WIDTH HALF MAXIMUM DATA

A) Probe	HV:	B) well	HV:
energy-----	counts	energy-----	counts

FWHM = . %

FWHM = . %

Physicist: R. J. [Signature]

QUARTERLY FILM BADGE EXPOSURES

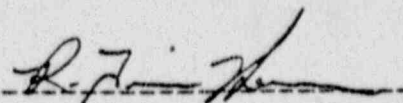
Institution: Central Medical Center
period ending: December 31, 1987

License #24-20310-01
Date: May 03, 1988

	name		exposure	A	B	C	comments
1.	Rajeshwar Luther	G1	M	X			
2.	Rajeshwar Luther	U3	M	X			
3.	Hansa Amin	G1	10	X			
4.	Hansa Amin	U3	M	X			
5.							
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33.							

- A. Less than Investigational Level I
- B. Equal to or greater than Investigational Level I, but less than Investigational Level II
- C. Exposure equal to or greater than Investigational Level II

Physicist: _____



QUARTERLY SEALED SOURCE INVENTORY AND/OR
SEMI-ANNUAL LEAK TEST RECORD

Location: Central Medical Center

Page 01 of 02

Is this a: X Inventory Check
 X Leak Test *

Quarter: 02 Year: 88
Semester: 01 Year: 88

Date performed: May 3, 1988

Performed by: R. Tim Horner *RTH*

Nuclide #1: 137-Cs Amersham
Activity: 274 uCi

Source/serial #: LDR-562
Date assayed: February 1, 1983

Nuclide #2: 57-Co Amersham
Activity: 5.601 mCi

Source/serial #: E Via1/7311MA
Date assayed: August 1, 1987

Nuclide #3:
Activity:

Source/serial #:
Date assayed:

Test Instrument Make: Picker Spectroscafer 4
Model # and serial #: 628436 and 21505

Type of measurement	Nuclide #1	Nuclide #2	Nuclide #3
Efficiency factor (Fe)	.063	.560	
Gross cpm	10	32	
Background cpm	10	30	
Net cpm	0	2	
Net dpm **	0	4	
Net uCi ***	<.005	<.005	
Inventory Status	OK	OK	

Comments

inventoried: May 3, 1988

- * leak test all sources ≥ 100 uCi
- ** net cpm divided by percent efficiency
5
- *** net dpm divided by 2.2×10^4 dpm/uCi
acceptable limit (cpm) = ≤ 0.005 uCi or 1.1×10^4 dpm x Fe

QUARTERLY SEALED SOURCE INVENTORY AND/OR
SEMI-ANNUAL LEAK TEST RECORD

Location: Central Medical Center

Page 02 of 02

Is this a: X Inventory Check
 Leak Test *

Quarter: 02 Year: 88
Semester: Year:

Date performed: May 3, 1988

Performed by: R. Tim Horner *RTH*

Nuclide #1: 57-Co Amersham

Source/serial #: 4664MA

Activity: 5.472 mCi

Date assayed: March 1, 1983

Nuclide #2: 57-Co Flood

Source/serial #: SWD-124614

Activity: 5.5 mCi

Date assayed: April 28, 1983

Nuclide #3:

Source/serial #:

Activity:

Date assayed:

Test Instrument Make:

Model # and serial #:

Type of measurement

Nuclide #1 Nuclide #2 Nuclide #3

Efficiency factor (Fe)

Gross cpm

Background cpm

Net cpm

Net cpm **

Net uCi ***

Inventory Status

- inventory only on Nuclide #1 and #2

Comments

* leak test all sources ≥ 100 uCi

** net cpm divided by percent efficiency

6

*** net cpm divided by 2.2×10^4 cpm/uCi

4

acceptable limit (cpm) = ≤ 0.005 uCi or 1.1×10^4 cpm x Fe

DOSE CALIBRATOR LINEARITY TEST
 Facility: Central Medical Center
 Manufacturer: Capintec
 Model: CRC-10R/10955
 Minutes from midnight of the first day =

Luc Fide

680.00

Standard dose = 5.00 mCi

DATE	TIME	ACTIVITY MEASURED	LAPSED TIME	EXPECTED ACTIVITY	% ERROR
08/02/88	11:20	48.5000 mCi	0	48.7667 mCi	0.55
08/02/88	17:17	24.3000	357	24.5282	0.93
08/03/88	8:45	4.1100	1285	4.1100 Reference	0.00
08/03/88	17:05	1.5700	1785	1.5698	-0.02
08/04/88	8:55	0.2510	2735	0.2521	0.45
08/04/88	16:27	0.1100	3187	0.1056	-4.15
08/05/88	9:55	0.0200	4235	0.0140	-42.38
08/05/88	14:00	0.0146	4480	0.0088	-66.57

Linearity is not acceptable. It should be repeated. If the second test is again not acceptable, the instrument should be returned for repair.

0.02

Keep record two years

Physicist *J. [Signature]* Date 8/15/88
 RSO _____ Date _____

Dose Calibrator Linearity Test

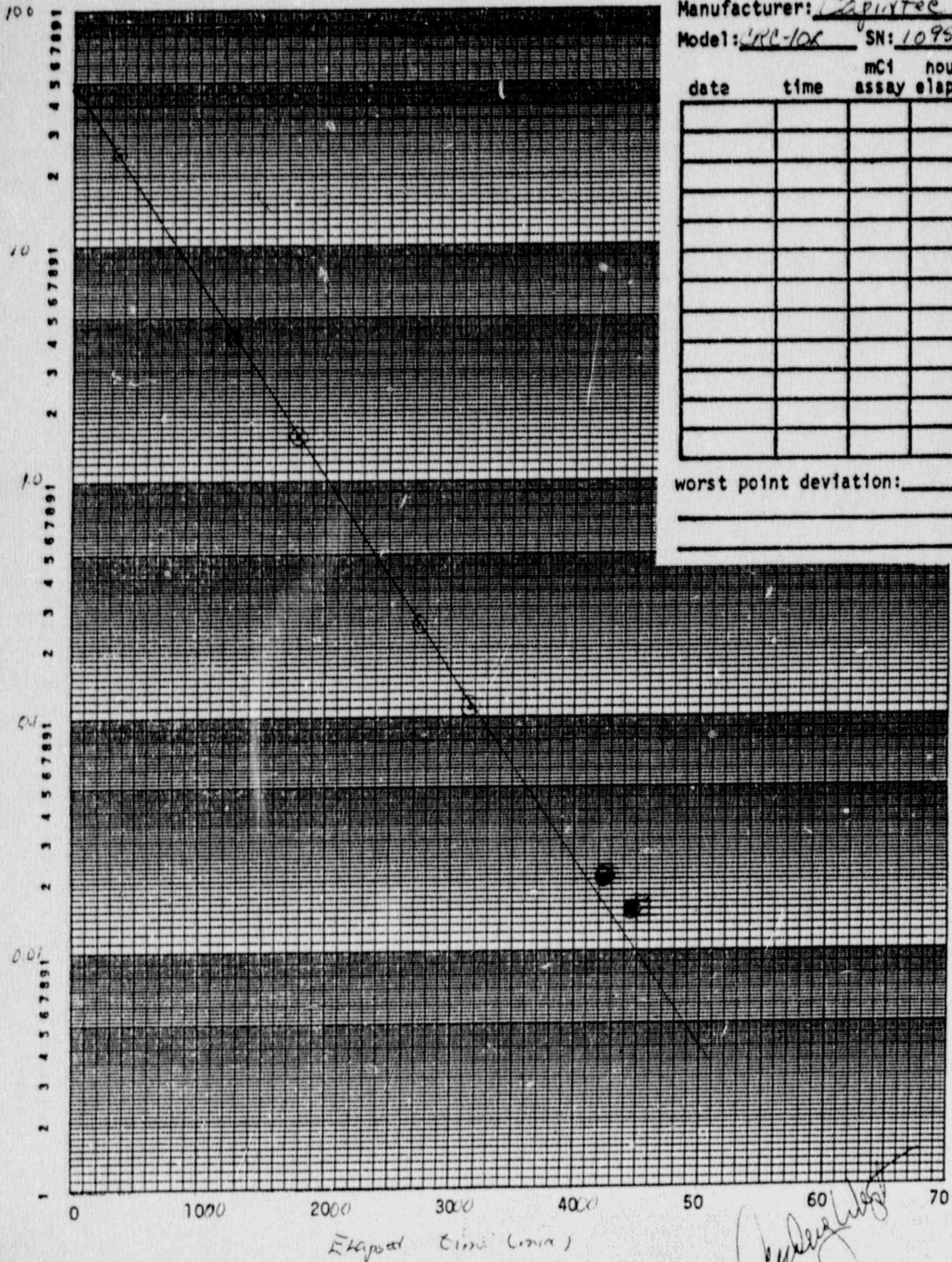
Manufacturer: Capintec

Model: RC-106 SN: 10955

date	time	mCi	hours

worst point deviation: _____

Measured Activity (mCi)



Handwritten signature

DOSE CALIBRATOR LINEARITY TEST

Facility:

Manufacturer: -----

Model: -----

Minutes from midnight of the first day = 445.00

Standard dose = 5.00 mCi

DATE	TIME	ACTIVITY MEASURED	LAPSED TIME	EXPECTED ACTIVITY	% ERROR
05/03/88	7:25	95.8000 mCi	0	94.9712 mCi	-0.87
05/03/88	8:30	84.4000	65	83.8013	-0.71
05/03/88	9:45	73.0000	140	72.5353	-0.64
05/03/88	11:00	63.3000	215	62.7839	-0.82
05/03/88	12:30	52.7000	305	52.7967	0.18
05/03/88	15:10	39.0000	465	38.8011	-0.51
05/03/88	17:15	30.8000	590	30.5030	-0.97
05/04/88	7:05	6.2300	1420	6.1723	-0.93
05/04/88	9:40	4.5800	1575	4.5800 Reference	0.00
05/04/88	11:35	3.6700	1690	3.6705	0.01
05/04/88	14:35	2.6000	1870	2.5956	-0.17
05/04/88	16:05	2.1900	1960	2.1827	-0.33
05/04/88	19:45	1.4300	2180	1.4291	-0.06
05/04/88	21:15	1.1900	2270	1.2018	0.98
05/05/88	6:45	0.3900	2840	0.4011	2.78
05/05/88	8:30	0.3290	2945	0.3277	-0.39
05/05/88	11:50	0.2230	3145	0.2230	0.00
05/05/88	14:00	0.1740	3275	0.1736	-0.21
05/05/88	15:00	0.1540	3335	0.1547	0.45
05/05/88	18:15	0.1060	3530	0.1063	0.26
05/06/88	8:45	0.0192	4400	0.0199	3.58
05/06/88	10:55	0.0150	4530	0.0155	3.25
05/06/88	13:35	0.0112	4690	0.0114	1.70
05/06/88	14:40	0.0100	4755	0.0101	0.73

Linearity is acceptable. Keep record two years

Physicist Audrey West Date 5/13/88

RSD _____ Date _____

*Linearity
for
2nd
quarter 88
We didn't
zero graph
for this one*