

BUX-MONT RADIOLOGY GROUP

295 EAST STREET ROAD

WARMINSTER, PA 18974

DIAGNOSTIC RADIOLOGY

NORMAN HAUSER, M. D.

FRANK A. PIRO, M. D.

TELEPHONE: 672-4372

June 19, 1996

United States Nuclear
Regulatory Commission
Charles W. Hehl, Director
Division of Nuclear Materials Safety

License # 37-17377-01
Docket # 030-12658
Cal # 1-96-004

Dear Mr. Hehl:

In response to your letter and routine inspection by Mr. Louis Manning of May 7, 1996, we have taken all corrective measures as listed below.

1. Our Quality Control for the dose calibrator has been corrected and tests have been performed and checked by me. The records have all been checked, signed and dated by me. The dose calibrator has been checked out and is now being used properly with the correct settings. We consulted the nuclear pharmacist on this matter who advised us of the proper settings and confirmed our results. I have enclosed a letter from him stating this.
2. Our technologist has become thoroughly familiarized with the proper use of the dose calibrator and is doing the proper confirmatory measurements now. I have been and will continue to check her readings.
3. I have taken the measures of prescribing the proper dose for patients who are going to be scheduled for I131 thyroid testing before the studies are performed. The scripts will be documented.
4. Our Co 57 and Cs 137 reference standards have been and continue to be checked and the readings are falling well within the 10% deviation range. These readings are being documented and confirmed by me. The readings are being done 2 times a week when no patients are scheduled and also prior to each patient's study.
5. The leak test will be done at 6 month intervals as required by 10 CFR 35.59. It was just performed and documented.

PAGE 1

JUN 20 1996

9611290254 961113
PDR ADOCK 03012658
C PDR

BUX-MONT RADIOLOGY GROUP

295 EAST STREET ROAD
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6. The I131 Capsule will be calibrated by us prior to administrating it to the patient. The dose will be confirmed by me, signed and dated.
7. Both the technician and myself, the Radiation Safety Officer have a TLD ring monitor and will use it when handling any nuclear material. This is in addition to the usual film badge which we wear.

If we have missed anything please let me know and I will promptly comply and/or correct.

Sincerely yours,

Norman Hauser M.D.
Norman Hauser, M.D.

NH/jks

Digital Dosimeter
Model # 34-061
Serial # 3003

DOSE CALIBRATOR ACCURACY

Source: Co⁵⁷
Serial#: 5206070-050
Cal. Date: 4-27-93
Activity: 5.5mCi

Actual Activity: .341
*Assayed Activity: .333, .340, .333 = .335
% Variance: .018

$$\frac{.335 - .341}{.341} = .018$$

Source: 20mCi Tc^{99m}
Serial#: TC0409-1170
Cal. Date: 4-26-96
Activity: 35.420

Actual Activity: 34.9
*Assayed Activity: 35.0, 35.2, 34.9 = 35.03
% Variance: .011

$$\frac{35.03 - 35.42}{35.42} = .011$$

* Average of three readings

$$\% \text{ Variance} = \frac{\text{Assayed Act.} - \text{Actual Activity (decay corrected)}}{\text{Actual Activity (Decay corrected)}}$$

Action Level: $\pm 5\%$

Corrective Actions: none needed

Performed by: SK

Date: 4-26-96

*M. Hansen MD -
OK - 4/26/96*

Source: Cs¹³⁷
Serial#: 212004
Cal. Date: 3-17-86
Activity: .218

Actual Activity: .214, .219, .220 = .218
*Assayed Activity: .218
% Variance: .0

$$\frac{.218 - .218}{.218} = 0$$

Source: _____
Serial#: _____
Cal. Date: _____
Activity: _____

Actual Activity: _____
*Assayed Activity: _____
% Variance: _____

Sodium Pertechnetate
TC0409-11703 35.420 mCi/ml 09:00
20.00 mCi .56 ml
Disp 20.000 mCi +/- 10%

Synco International Corp
650 Elmwood Avenue
Sharon Hill PA 19079
Burlmont Radiology

610/461-7226
Dr. HAUSER

Tc^{99m} Sodium Pertechnetate 26 APR 96 # 920547
Lot TC0409-11703 Expires 04/26/96 14:00
Qty. Ordered 20.00 mCi
Assay 35.420 mCi/ml As Of 09:00
Volume .56 ml
Qty. Dispensed 20.00 mCi +/- 10%
Qty. Admin. 35.420 mCi As Of 9/26/96 By SK

Pt. Per Phys Order

SOURCE *PH*

C
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C
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Y

Apr 16, 17, 18 1996

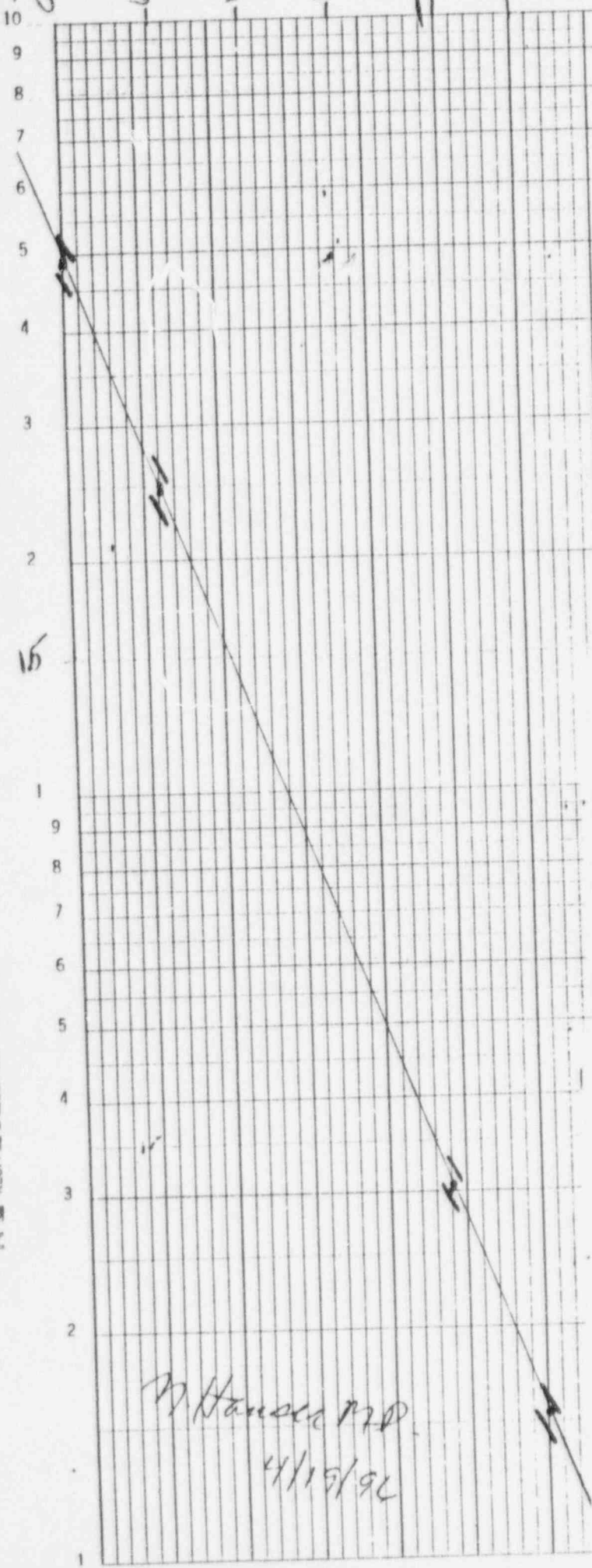
(Digital Isotope Calibrator
Model # 31001
Serial # 3603)

Blue = Actual Reading
Red = Thioactivity Reading
Black = $\pm 5\%$ range

404310

15

SEMI-LOGARITHMIC * 2 CYCLES X 3 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.



M. Hansen MD
4/15/96

Sycon International Corp
810 Clarendon Avenue
Sharon Hill PA 19079
Buxmont Radiology

Dr. HAUSEF 610/461-7226

Techn Sodium Pertechnetate 16 APR 96 # 915565
Lot 110408-10/03 Expires 04/16/96 14:00

Qty. Ordered 50.00 mCi As Of 09:00
Assay 35.419 mCi/ml
Volume 1.41 ml
Qty. Dispensed 50.00 mCi $\pm 10\%$
Qty. Admin. mCi for Dr By

Pl. For Phys Order Linearity Check

Sycon International Corp
810 Clarendon Avenue
Sharon Hill PA 19079
Buxmont Radiology
221 East Street Road
Warminster PA 18974

Dr. HAUSEF # 915565

R 1c79m Sodium Pertechnetate

Procedure Linearity Check Date 16 APR 96
Lot No. 110408-10/03 Expires 04/16/96 14:00
Qty. Ordered 50.00 mCi
Assay 35.419 mCi/ml As Of 09:00
Volume Dispensed By Checked

(over ->)

<u>Actual Reading</u>			
pril			
16	900 48.9	0 hrs.	
	300 24.9	6 hrs.	
17	900 3.13	24 hrs.	
	300 1.54	30 hrs.	
18	900 .19	48 hrs.	
	300 .09	54 hrs.	

$$\left[\begin{array}{l} \text{0 hrs} \\ 48.9 \times 1.05 = 51.3 \\ \times .95 = 46.4 \end{array} \right]$$

$$\begin{array}{l} \text{6 hrs} \\ 24.9 \times 1.05 = 26.1 \\ \times .95 = 23.6 \end{array}$$

$$\begin{array}{l} \text{24 hrs} \\ 3.13 \times 1.05 = 3.29 \\ \times .95 = 2.97 \end{array}$$

$$\begin{array}{l} \text{30 hrs} \\ 1.54 \times 1.05 = 1.61 \\ \times .95 = 1.53 \end{array}$$

This activity Reading

$$1.54 \times 31.633 = 48.7$$

$$\times 15.853 = 24.4$$

$$\times 1.995 = 3.07$$

$$\times 1.0 = 1.54$$

$$\times .126 = .19$$

$$\times .06 = .09$$

$$\frac{48.9 - 48.7}{48.7} \times 100 = 4\%$$

$$\frac{24.9 - 24.4}{24.4} \times 100 = 2\%$$

$$\frac{3.13 - 3.07}{3.07} \times 100 = 2\%$$

$$\frac{1.54 - 1.54}{1.54} \times 100 = 0\%$$

$$\frac{.19 - .19}{.19} \times 100 = 0\%$$

+ 5% range

YORK

MEDICAL PHYSICS

LEAK TEST CERTIFICATE

Facility: Bux-mont Radiology
295 E Street Road
Warminster, PA 18974
ATTN: Nuclear Medicine

Lab #: 72

Page 1 of 1

Wipe Date: 01-Feb-96 Frequency: Semi-Annual
 Counting Date: 12-Feb-96 Next Due: 01-Aug-96

Sample No.	1	2	N/A
Radionuclide	Co-57	Cs-137	
Manufacturer	NEN	CIS	
Type	DCRS	DCRS	
Serial No.	S206070-050	220/171	
Cal. Date	4/27/93	3/17/86	
Activity	5.5 mCi	9.97 MBq	
Net CPM	9	7	
Results in uCi	5.55E-06	4.15E-05	

Action Level: Any contamination greater than 0.005 uCi or 5.00E-03.

Test Results: Passed

Recommendation: Removable contamination is within the action level.

Counting Equipment: Nucleus Quantum 8 MCA with well
Serial #: 9109-0502

Wiped By: _____

Calculated By: Deen Wilson, Authorized User

Reviewed By: _____, Facility R.S.O.

Leak testing of radioactive sealed sources should be performed on a semi-annual basis, unless otherwise specified in your radioactive material license.



ALARA Review • Radiology Tube Calibration • Survey Meter Calibration

23659 Via Del Rio • Yorba Linda, CA 92687 • R.A.M.L. NO. 5535-30 • 714/692-9675 • FAX 714/692-5348

OK
M. Hansen MD
3/6/96

Certificate of Instrument Calibration

Facility: Buxmont Radiology
 Manufacturer: Bicron
 Detector Type: GM
 Battery Check: OK
 Calibration Geometry: Perpendicular

Model: 2000
 Detector Model: Pancake
 Dedicated Check Source: n/a

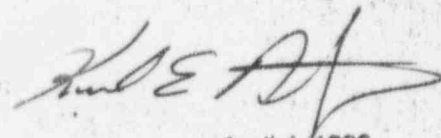
ID #: 097
 Serial No. A868L
 Serial No. A881L
 mR/hr
 Window: Closed

Scale Multiplier	Distance (cm)	Calculated Reading	Measured Reading	Correction Factor
X 1000	45.8	1500	1450	1.03
X 1000	79.3	500	500	1.00
X 100	144.7	150	140	1.07
X 100	250.6	50	52	0.96
X 10	328.5	15	15	1.00
X 10	374.8	5.0	5.0	1.00
X 1	143.3	1.5	1.5	1.00
X 1	248.1	0.5	0.5	1.00
X 0.1	138.5	0.15	0.15	1.00
X 0.1	239.9	0.05	0.05	1.00

OK
M. Hansen MD
4/15/96

Mid-America Calibrations
 5500 Buena Vista
 Suite 101
 Shawnee Mission, Kansas 66205
 913/789-8757

Calibrated By



Date Calibrated: April 4, 1996
 Date Due: April 4, 1997
 Kansas License #: 33-B429-01
 Arkansas License #: ARK-525-BP

The above instrument was calibrated with a J.L. Shepherd Model 28-6A, 1.2 Ci Cs-137 calibrator, serial #10018, or a Ludlum Model 500-2 Pulsar, serial #127533.
 The output is traceable to the NBS (N.I.S.T.) and all instruments are calibrated in accordance with MIL-STD 45662A and ANSI N323-1978.
 Pancake probes are calibrated to the back of the probe.

Run Date 04/03/96

DOSE CALIBRATOR QUALITY CONTROL WORK SHEET

Run Time 14:58

Product Id : 15137B Cs-137
Reference Standard
Manufacturer Name :
Calibrator Serial#:

Calibration Assay : 269.500 uCi
As Of : 12:00 03/17/96
Half Life : 30.174 Y
Worksheet Period : 364.000 Days

Worksheet Beginning Time : 12:00
Date : 04/01/96
Worksheet Ending Time : 12:00
Date : 03/31/97

Date	(-5%)	Calc Assay	(+5%)	Meas Assay Background	Date	(-5%)	Calc Assay	(+5%)	Meas Assay Background
04/01/96	1	203.280	213.975	224.678	05/19/96	1	202.667	213.334	224.000
04/02/96	1	203.767	213.265	224.664	05/20/96	1	202.654	213.320	223.986
04/03/96	1	203.254	213.952	224.649	05/21/96	1	202.641	213.307	223.972
04/04/96	1	203.241	213.938	224.635	05/22/96	1	202.629	213.293	223.958
04/05/96	1	203.229	213.925	224.621	05/23/96	1	202.616	213.280	223.944
04/06/96	1	203.216	213.911	224.607	05/24/96	1	202.603	213.267	223.930
04/07/96	1	203.203	213.899	224.593	05/25/96	1	202.591	213.253	223.916
04/08/96	1	203.190	213.885	224.579	05/26/96	1	202.578	213.240	223.902
04/09/96	1	203.178	213.871	224.565	05/27/96	1	202.565	213.226	223.888
04/10/96	1	203.165	213.858	224.551	05/28/96	1	202.552	213.213	223.874
04/11/96	1	203.152	213.844	224.536	05/29/96	1	202.540	213.200	223.860
04/12/96	1	203.139	213.831	224.522	05/30/96	1	202.527	213.186	223.845
04/13/96	1	203.126	213.817	224.508	05/31/96	1	202.514	213.173	223.831
04/14/96	1	203.114	213.804	224.494	06/01/96	1	202.501	213.159	223.817
04/15/96	1	203.101	213.790	224.480	06/02/96	1	202.489	213.146	223.803
04/16/96	1	203.088	213.777	224.466	06/03/96	1	202.476	213.132	223.789
04/17/96	1	203.075	213.764	224.452	06/04/96	1	202.463	213.119	223.775
04/18/96	1	203.063	213.750	224.438	06/05/96	1	202.450	213.106	223.761
04/19/96	1	203.050	213.737	224.423	06/06/96	1	202.438	213.092	223.747
04/20/96	1	203.037	213.723	224.409	06/07/96	1	202.425	213.079	223.733
04/21/96	1	203.024	213.710	224.395	06/08/96	1	202.412	213.065	223.719
04/22/96	1	203.011	213.696	224.381	06/09/96	1	202.399	213.052	223.705
04/23/96	1	202.999	213.683	224.367	06/10/96	1	202.387	213.039	223.691
04/24/96	1	202.986	213.669	224.353	06/11/96	1	202.374	213.025	223.677
04/25/96	1	202.973	213.656	224.339	06/12/96	1	202.361	213.012	223.662
04/26/96	1	202.960	213.643	224.325	06/13/96	1	202.349	212.998	223.648
04/27/96	1	202.948	213.629	224.311	06/14/96	1	202.336	212.985	223.634
04/28/96	1	202.935	213.616	224.296	06/15/96	1	202.323	212.972	223.620
04/29/96	1	202.922	213.602	224.282	06/16/96	1	202.310	212.958	223.606
04/30/96	1	202.909	213.589	224.268	06/17/96	1	202.298	212.945	223.592
05/01/96	1	202.897	213.575	224.254	06/18/96	1	202.285	212.931	223.578
05/02/96	1	202.884	213.562	224.240	06/19/96	1	202.272	212.918	223.564
05/03/96	1	202.871	213.548	224.226	06/20/96	1	202.259	212.905	223.550
05/04/96	1	202.858	213.535	224.212	06/21/96	1	202.247	212.891	223.536
05/05/96	1	202.846	213.522	224.198	06/22/96	1	202.234	212.878	223.522
05/06/96	1	202.833	213.508	224.184	06/23/96	1	202.221	212.865	223.508
05/07/96	1	202.820	213.495	224.170	06/24/96	1	202.209	212.851	223.494
05/08/96	1	202.807	213.481	224.155	06/25/96	1	202.196	212.838	223.480
05/09/96	1	202.795	213.468	224.141	06/26/96	1	202.183	212.824	223.466
05/10/96	1	202.782	213.454	224.127	06/27/96	1	202.170	212.811	223.452
05/11/96	1	202.769	213.441	224.113	06/28/96	1	202.158	212.798	223.437
05/12/96	1	202.756	213.428	224.099	06/29/96	1	202.145	212.784	223.423
05/13/96	1	202.743	213.414	224.085	06/30/96	1	202.132	212.771	223.409
05/14/96	1	202.731	213.401	224.071	07/01/96	1	202.120	212.757	223.395
05/15/96	1	202.718	213.387	224.057	07/02/96	1	202.107	212.744	223.381
05/16/96	1	202.705	213.374	224.043	07/03/96	1	202.094	212.731	223.367
05/17/96	1	202.692	213.361	224.029	07/04/96	1	202.081	212.717	223.353
05/18/96	1	202.680	213.347	224.014	07/05/96	1	202.069	212.704	223.339

Digital Isotope Calibrator
Model # 34-061
Serial # 3603

Run Date 04/05/96

DOSE CALIBRATOR QUALITY CONTROL WORK SHEET

Run Time 14:40

Product Id : C057DC Co-57
Reference Standard
Manufacturer Name :
Calibrator Serial#:

Calibration Assay : 5.500 mCi
As Of : 12:00 04/27/93
Half Life : 271.700 D
Worksheet Period : 364.000 Days

Worksheet Beginning Time : 12:00
Date : 04/01/96
Worksheet Ending Time : 12:00
Date : 03/31/97

Date	(-5%)	Calc Assay	(+5%)	Meas Assay Background	Date	(-5%)	Calc Assay	(+5%)	Meas Assay Background
01/01/96	1	0.341	0.350	0.377	05/19/96	1	0.302	0.317	0.333
01/02/96	1	0.340	0.358	0.376	05/20/96	1	0.301	0.317	0.332
01/03/96	1	0.339	0.357	0.375	05/21/96	1	0.300	0.316	0.332
01/04/96	1	0.338	0.356	0.374	05/22/96	1	0.299	0.315	0.331
01/05/96	1	0.337	0.355	0.373	05/23/96	1	0.299	0.314	0.330
01/06/96	1	0.337	0.354	0.372	05/24/96	1	0.298	0.313	0.329
01/07/96	1	0.336	0.353	0.371	05/25/96	1	0.297	0.313	0.328
01/08/96	1	0.335	0.352	0.370	05/26/96	1	0.296	0.312	0.327
01/09/96	1	0.334	0.352	0.369	05/27/96	1	0.295	0.311	0.327
01/10/96	1	0.333	0.351	0.368	05/28/96	1	0.295	0.310	0.326
01/11/96	1	0.332	0.350	0.367	05/29/96	1	0.294	0.309	0.325
01/12/96	1	0.331	0.349	0.366	05/30/96	1	0.293	0.309	0.324
01/13/96	1	0.331	0.348	0.365	05/31/96	1	0.292	0.308	0.323
01/14/96	1	0.330	0.347	0.364	06/01/96	1	0.292	0.307	0.322
01/15/96	1	0.329	0.346	0.364	06/02/96	1	0.291	0.306	0.322
01/16/96	1	0.328	0.345	0.363	06/03/96	1	0.290	0.306	0.321
01/17/96	1	0.327	0.344	0.362	06/04/96	1	0.290	0.305	0.320
01/18/96	1	0.326	0.343	0.361	06/05/96	1	0.289	0.304	0.319
01/19/96	1	0.326	0.343	0.360	06/06/96	1	0.288	0.303	0.318
01/20/96	1	0.325	0.342	0.359	06/07/96	1	0.287	0.302	0.318
01/21/96	1	0.324	0.341	0.358	06/08/96	1	0.287	0.302	0.317
01/22/96	1	0.323	0.340	0.357	06/09/96	1	0.286	0.301	0.316
01/23/96	1	0.322	0.339	0.356	06/10/96	1	0.285	0.300	0.315
01/24/96	1	0.321	0.338	0.355	06/11/96	1	0.284	0.299	0.314
01/25/96	1	0.321	0.338	0.354	06/12/96	1	0.284	0.299	0.314
01/26/96	1	0.320	0.337	0.353	06/13/96	1	0.283	0.298	0.313
01/27/96	1	0.319	0.336	0.353	06/14/96	1	0.282	0.297	0.312
01/28/96	1	0.318	0.335	0.352	06/15/96	1	0.282	0.296	0.311
01/29/96	1	0.317	0.334	0.351	06/16/96	1	0.281	0.296	0.310
01/30/96	1	0.317	0.333	0.350	06/17/96	1	0.280	0.295	0.310
05/01/96	1	0.316	0.332	0.349	06/18/96	1	0.279	0.294	0.309
05/02/96	1	0.315	0.332	0.348	06/19/96	1	0.279	0.293	0.308
05/03/96	1	0.314	0.331	0.347	06/20/96	1	0.278	0.293	0.307
05/04/96	1	0.313	0.330	0.346	06/21/96	1	0.277	0.292	0.306
05/05/96	1	0.313	0.329	0.345	06/22/96	1	0.277	0.291	0.306
05/06/96	1	0.312	0.328	0.345	06/23/96	1	0.276	0.290	0.305
05/07/96	1	0.311	0.327	0.344	06/24/96	1	0.275	0.290	0.304
05/08/96	1	0.310	0.326	0.343	06/25/96	1	0.274	0.289	0.303
05/09/96	1	0.309	0.326	0.342	06/26/96	1	0.274	0.288	0.303
05/10/96	1	0.309	0.325	0.341	06/27/96	1	0.273	0.287	0.302
05/11/96	1	0.308	0.324	0.340	06/28/96	1	0.272	0.287	0.301
05/12/96	1	0.307	0.323	0.339	06/29/96	1	0.272	0.286	0.300
05/13/96	1	0.306	0.322	0.338	06/30/96	1	0.271	0.285	0.299
05/14/96	1	0.305	0.322	0.338	07/01/96	1	0.270	0.284	0.299
05/15/96	1	0.305	0.321	0.337	07/02/96	1	0.269	0.283	0.297
05/16/96	1	0.304	0.320	0.336	07/03/96	1	0.268	0.282	0.296
05/17/96	1	0.303	0.319	0.335	07/04/96	1	0.268	0.282	0.296
05/18/96	1	0.302	0.318	0.334	07/05/96	1	0.268	0.282	0.296

Digital T5scope Calibrator
Model # 34-061
Serial # 3603

Source Check

1995

C057 Serial# 5206070-050

CS-137

Serial# 220/171

1/30/95 OK RK
2/28/95 OK ✓ L
3/30/95 OK L
4/28/95 ✓ OK L
5/30/95 ✓ OK L
6-28-95 ✓ OK L
7-31-95 ✓ OK L
8/31/95 ✓ OK L
9/28/95 ✓ OK L
10/31/95 ✓ OK L
11/28/95 ✓ OK L
12/27/95 ✓ OK L

2-1-96 ✓ OK L
2-28-96 ✓ OK L
3-26-96 ✓ OK L
4-25-96 11:00am ✓ OK RK .332 M.H.
5-30-96 10:00am ✓ OK RK .307 M.H.

1/30/95 ✓ OK L
2/28/95 ✓ OK L
3/30/95 ✓ OK L
4/28/95 ✓ OK L
5/30/95 ✓ OK L
6-28-95 ✓ OK L
7-31-95 ✓ OK L
8/31/95 ✓ OK L
9/28/95 ✓ OK L
10/31/95 ✓ OK L
11/28/95 ✓ OK L
12/27/95 ✓ OK L

2-1-96 ✓ OK L
2-28-96 ✓ OK L
3-26-96 ✓ OK L
4-25-96 11:00 ✓ OK RK 2.18 M.H.
5-30-96 ✓ 10:20 ✓ OK 2.16 M.H.

BUX-MONT RADIOLOGY GROUP

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QUALITY MANAGEMENT PROGRAM - I-131

10CFR35.32 - (Regulatory Guide 8.33)

Before any administration of I-131 or I-125 in a dosage greater than 30 microcuries, the following procedures must be taken.

1. The Safety Officer, Dr. Norman Hauser prescribes and signs all prescriptions for I-131 to give to patient. This capsule is calibrated and written down showing the amount of pill and time before we do a phantom intact to the patient and checked and signed by the safety officer.
2. Check identification of patient. Always look at the referral and reason why the study is being done. Check another source of ID (ex. drivers license, SS#, etc.)
3. Ask the patient if he has any allergies, or if female 45 and under if there is a chance of pregnancy.
4. The patient is to sign his signature on the back of the caption card, as well as on our log followed by technician's signature.
5. If technologist does not understand or is not clear in her mind on any of the procedures, she is to consult with and get clarification from the Radiation Safety Officer or his assistant before proceeding.
6. The dosage is to be calibrated and written down with the time it is administered to the patient and the patient is to be given instructions on when to return.
7. The radiologist shall always check the dosage and calibrations and date, initial (or sign) our records,
8. The radiologist shall review the QM program quarterly with his staff to make sure QM control is being performed.

Norman Hauser, M.D.
Radiation Safety Officer