

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 30-03137/85-01

Docket No. 030-03137

License No. 37-11258-01

Priority 3

Category G

Licensee: Doctor's Osteopathic Hospital

252 West 11th Street

Erie, Pennsylvania 16501

Facility Name: Metro Health Center

Inspection At: Erie, Pennsylvania

Inspection Conducted: August 8, 1985

Inspectors:

Francis Costello
Nancy A. Dennis, Health Physicist

8/16/85
date

Approved by:

John D. Kinneman, Chief
Nuclear Materials Safety Section A

8/16/85
date

Inspection Summary: Routine unannounced inspection of radiation safety program on August 8, 1985.

Areas Inspected: Organization and scope of program; dose calibrator; security; survey instruments; meetings of the Radiation Safety Committee; surveys; and assay of individual patient doses.

Results: 15 apparent violations were identified: failure to possess an operable dose calibrator (Section 3); failure to perform daily constancy test of dose calibrator (Section 3); inadequate security of licensed materials (Section 4); failure to calibrate survey meter (Section 5); inoperable low-level survey meter (Section 5); failure to conduct quarterly meetings of the Radiation Safety Committee (Section 6); failure to perform required annual ALARA review (Section 6); failure to perform daily radiation and contamination surveys (Section 7); failure to perform weekly surveys and wipe tests (Section 7); failure of personnel to perform contamination monitoring of hands and clothing (Section 7); failure to monitor trash prior to disposal (Section 7); failure to perform required package surveys (Section 7); failure to wipe the final source container upon package receipt (Section 7); and failure to assay each individual radiopharmaceutical dose (Section 8).

DETAILS

1. Persons Contacted

Arthur Calabrese, Ph.D., D.O., M.D., Radiation Safety Officer and
President of the Hospital's Board of Directors
Luis Hernandez, Hospital Administrator
Ray Kiendl, Technical Director of Radiology Services
John P. Cox, M.D., Radiologist
Jim Campbell, CNMT, AART, Nuclear Medicine Technician

2. Organization and Scope of Program

Dr. Calabrese, the Radiation Safety Officer, is also Chairman of the hospital's Radiation Safety Committee (see organization chart, Appendix A of this report). The hospital's Administrator, Mr. Luis Hernandez, reports directly to Dr. Calabrese. Mr. Ray Kiendl, the Technical Director of Radiology Services, oversees the Nuclear Medicine/Ultrasound Department and reports to Mr. Hernandez. The Supervisor of the Nuclear Medicine/Ultrasound Department is Mr. Gulnac. The hospital's only nuclear medicine technologist, Mr. Jim Campbell, reports to Mr. Gulnac.

The Nuclear Medicine Department, on the average, handles 5-6 patients per day and conducts 10-12 xenon studies a year.

The physicians listed as authorized users are as stated in License No. 37-11258-01 with the exception that D. B. Gordon, M.D. is no longer affiliated with the hospital. In addition to the physicians listed, John P. Cox, M.D., a radiologist who has practiced at the hospital for the last two years, has been reading scans under the supervision of Dr. Calabrese. Dr. Cox and the hospital have been, in the last six months, completing Dr. Cox's training in Nuclear Medicine and have been gathering the information required for completion of a preceptor statement to add Dr. Cox as an authorized user. During the exit interview, Mr. Hernandez agreed that an application for amendment to add Dr. Cox as an authorized user would be filed within 30 days from the date of inspection.

In addition to the above, the inspector noted that the hospital officially changed their name last year from Doctor's Osteopathic Hospital to Metro Health Center. The hospital's Administrator thought the lawyer for the hospital had requested an amendment prior to the inspection; however, no record of such correspondence was found in NRC files. During discussions in the exit interview, the Administrator agreed to file an amendment within 30 days of the inspection to reflect the hospital's name change.

The hospital employs Nuclear Medicine Associates of Cleveland, Ohio as a consultant. Quarterly audits are conducted by the consultants and a written report of their findings is addressed to the Radiation Safety Officer and to the other authorized users.

3. Dose Calibrator

The dose calibrator was inoperable on the day of inspection. The dose calibrator was so unstable that the inspector waited unsuccessfully for eight minutes for the dose calibrator to stabilize. The Nuclear Medicine Technician physically struck the dose calibrator saying that "sometimes it settles down if you hit it." There was no change in the apparently random values displayed on the dose calibrator, even after the technician struck the instrument. The technician and the Technical Director reported the dose calibrator had been in this condition for three months, although it generally stabilized on a value after being struck. Every channel routinely used by the Department was tested on the day of inspection and was found to be inoperable in like fashion. This malfunction of the dose calibrator prevents the hospital from accurately assaying patient doses within $\pm 10\%$ and from properly determining the quantity of molybdenum-99 activity prior to administration of radiopharmaceuticals to patients. Although, during this three-month period, values had been recorded for the activity of radiopharmaceutical doses, for moly-breakthrough measurements, and for daily constancy checks, these values were invalid because the dose calibrator was malfunctioning.

The finding that the dose calibrator was inoperable and had not been repaired is an apparent violation of License Condition 18.

Item 10 of the application dated August 6, 1982 requires that the licensee conduct daily constancy checks each day with a cesium-137 standard for each of the different nuclides to be assayed that day. If this measurement is not within $\pm 5\%$ of the activity shown at the time of the most recent accuracy test, arrangements must be made for immediate repair of the dose calibrator.

During the inspection, it was noted that daily constancy checks were not performed during the month of October, 1984, and were only performed for 16 days from January through June in 1985. Daily constancy tests were also not performed on July 1, 2, 3, 5, 15, 30 and on August 7, 1985.

The failure to perform daily constancy checks is an apparent violation of License Condition 17.

Problems with the consistency and the linearity of the dose calibrator were noted by the hospital's consultant and documented in their reports of March 11, 1985 and of June 10, 1985. (See Appendix B). In the June 10 report, the consultant stated that the manufacturer had suggested that replacement of the chamber may be required. He indicated this was sent to the hospital in writing, at which this time the consultant wrote, "It is suggested at this time that consideration should be given to replacing this unit."

At the July 30, 1985 Radiation Safety Committee meeting, the following statements were made: "The deficiencies cited by Nuclear Medicine Associates, not including equipment deficiencies, will be corrected within 60 days. Mr. Kiendl will approach the Building and Planning and Finance Committee with a proposal of equipment needs as soon as the list is complete." As of the day of the inspection, Mr. Kiendl's list of equipment needs was not complete and no appointment had been scheduled to meet with the Building and Planning and Finance Committee.

4. Security

The nuclear medicine Hot Lab was locked upon the inspector's arrival at the Nuclear Medicine Department. It was found, however, that security of licensed materials was not adequate during the weekend, when a spent generator is exchanged with the vendor for a new one-curie generator. Licensee representatives stated that it has been the hospital's practice to place the spent generator, containing about 17 millicuries of Mo-99/Tc-99m, in a portable 2' x 3' lead-lined box on Friday at the close of business and wheel this container into either the film reading room or one of the restrooms in the emergency room complex. The inspector observed that there was no lock on the lead-lined box. The box was labelled "Caution Radioactive Materials. Examination of the rooms in the emergency room complex revealed that there was no lock on either the restroom door or on the film reading room door. Continuous surveillance of the licensed material by the emergency room complex staff could not be assured, according to Nuclear Medicine staff personnel.

The failure of the licensee to ensure the security or constant surveillance of licensed materials against unauthorized removal is an apparent violation of 10 CFR 20.207.

5. Survey Instruments

The license requires that the hospital have an operable and calibrated high-level survey meter and low-level survey meter and that these survey instruments be calibrated on an annual basis. During inspection it was noted that the licensee's high level survey meter, Victoreen Model 740F, S/N 2207, was last calibrated on June 13, 1984.

The finding that the licensee's high-level survey meter was not calibrated for more than one year is an apparent violation of License Condition 17.

The consultant's report dated June 10, 1985 noted that the high-level meter would be due for calibration three days after their visit and that all "survey meters should be sent to their office for calibration at least one month prior to their due date for calibration."

The consultant's report also indicated that the licensee's low-level survey meter had recently been replaced but had not yet been calibrated. During the inspection, the licensee's low-level meter, a Picker CV700, was found to be operable and was properly calibrated on June 19, 1985.

The consultant's report of June 10, 1985 also noted that "The department has not had an operable low-level G-M survey meter for almost six months at this time." It is apparent that failure to perform the various required surveys from February to July, 1985, as discussed in sections 7 and 8 of this report, is related to the loss of use of their low-level survey meter during this period of time.

6. Meetings of the Radiation Safety Committee

The Radiation Safety Committee minutes from 1984-1985 were reviewed during the inspection. The Radiation Safety Committee did not meet quarterly, as required by Item 7 of the licensee's application dated August 6, 1982. There were no meetings of this committee during the third or fourth quarters of 1984 nor during the first and second quarters of 1985.

The finding that the Radiation Safety Committee did not meet quarterly is an apparent violation of License Condition 17.

The Radiation Safety Committee did meet July 30, 1985 to restate the purposes of the Radiation Safety Committee and to discuss the radiation safety deficiencies noted in their consultant's report of June 10, 1985. A copy of the minutes of this meeting is attached as Appendix C to this report. In the minutes, it was stated that, outside of equipment deficiencies, radiation safety deficiencies reported by Nuclear Medicine Associates would be corrected within 60 days. The plan of action for correcting these deficiencies, and the individuals responsible for correcting the radiation safety deficiencies, were not addressed in the minutes of the Radiation Safety Committee. During the inspection, however, licensee representatives stated that primary responsibility for correction of the deficiencies rested with Mr. Gulnac, the Nuclear Medicine/ Ultrasound Supervisor. Mr. Gulnac was not available on the day of inspection.

The ALARA review and formal annual review of the radiation safety program by the Radiation Safety Committee, required by the licensee's ALARA program, had not been performed for the year of 1984. The consultant's reports (Appendix B) from March 11 and June 10, 1985 indicated that review of the ALARA program had not been performed.

The failure of the Radiation Safety Committee to conduct a survey of the hospital's ALARA program and a formal annual review of the radiation safety program is an apparent violation of License Condition 17.

7. Surveys

The licensee is required by Item 17 of their application dated August 6, 1982 to survey, on a daily basis, all elution, preparation and injection areas with a G-M survey meter. The inspector determined during discussions with licensee personnel that daily surveys were not conducted

from February, 1985 to the day of inspection, a period of six months. The finding that daily surveys were not being done by the licensee was also reported to the licensee by their consultant in both the March and June audit reports (see Appendix B).

The finding that required daily surveys of the elution, preparation, and injection areas were not performed is an apparent violation of License Condition 17.

Weekly G-M surveys and wipe tests are also required by the licensee's application for all areas within the laboratory. Discussions with licensee personnel revealed that neither G-M surveys nor wipe tests were performed by the licensee from November 30, 1984 to July 31, 1985. In addition, weekly wipe tests were not conducted prior to November 16, 1984 and no wipe tests were performed for the week of July 31, 1985, the first week after an operable, calibrated survey meter was available.

Inspection findings also indicate that the thallium cardiac imaging and technetium-99m stress tests have been conducted in the hospital's cardiac imaging room. No daily surveys or weekly surveys of this area were being included in the daily and weekly surveys conducted by the Nuclear Medicine staff.

Failure of the licensee to perform weekly GM surveys and wipe tests of the laboratory areas is an apparent violation of License Condition 17.

The licensee's technicians are required by the lab's "General Rules for Safe Use of Radioactive Material" to monitor their hands and clothing for contamination after each procedure or before leaving the laboratory area. Although the license is not in the practice of recording these surveys, it is apparent that these surveys were not performed from February to July 1985 when the licensee did not possess an operable low-level survey meter.

Failure of the licensee to perform personnel contamination monitoring of hands and clothing is an apparent violation of License Condition 17.

License Condition 16B requires that, prior to disposal as normal waste, radioactive waste will be monitored to assure that its radioactivity level is not significantly different from background. No surveys of radioactive trash were made prior to disposing of material in the routine trash from October 17, 1983 to February 22, 1985. The consultant's reports of March 11 and of June 10, 1985, indicated that waste surveys were not being conducted.

Failure to survey radioactive trash prior to disposal in normal trash is a violation of License Condition 16.

The licensee is required by their license to conduct surveys of all incoming packages for radioactive contamination. Package surveys from February to July 1985 were not conducted even though numerous packages containing radioactive material were received during that period, as the licensee did not possess an operable, calibrated low-level survey meter during that time. In addition package survey records were not available from January 1-20, 22-31 and from July 29-August 8, 1985 periods when packages containing radioactive materials were also received. The licensee's consultant reported these findings in both their March 11 and June 10 reports.

The licensee is required by their license to wipe the outer surface of the final source container when doing a package survey. Package surveys reviewed from August 1-8, 1985, did not contain these measurements.

Failure to perform the required surveys of incoming packages containing radioactive materials is an apparent violation of License Condition 17.

8. Assay of Individual Patient Doses

The licensee is required to assay each patient radiopharmaceutical dose in the isotope dose calibrator prior to administration and to ensure that the dose administered does not exceed the prescribed dose. A review of the patient log book and the isotope receipt records, where actual activity of the doses administered is recorded, indicated that, for two of the three days checked, that individual doses administered by the Nuclear Medicine Department were not assayed prior to administration and the patient's names were not recorded on specific individual isotope receipt records for a total of seven patients (four patients on March 7, 1985 and three patients on April 15, 1985).

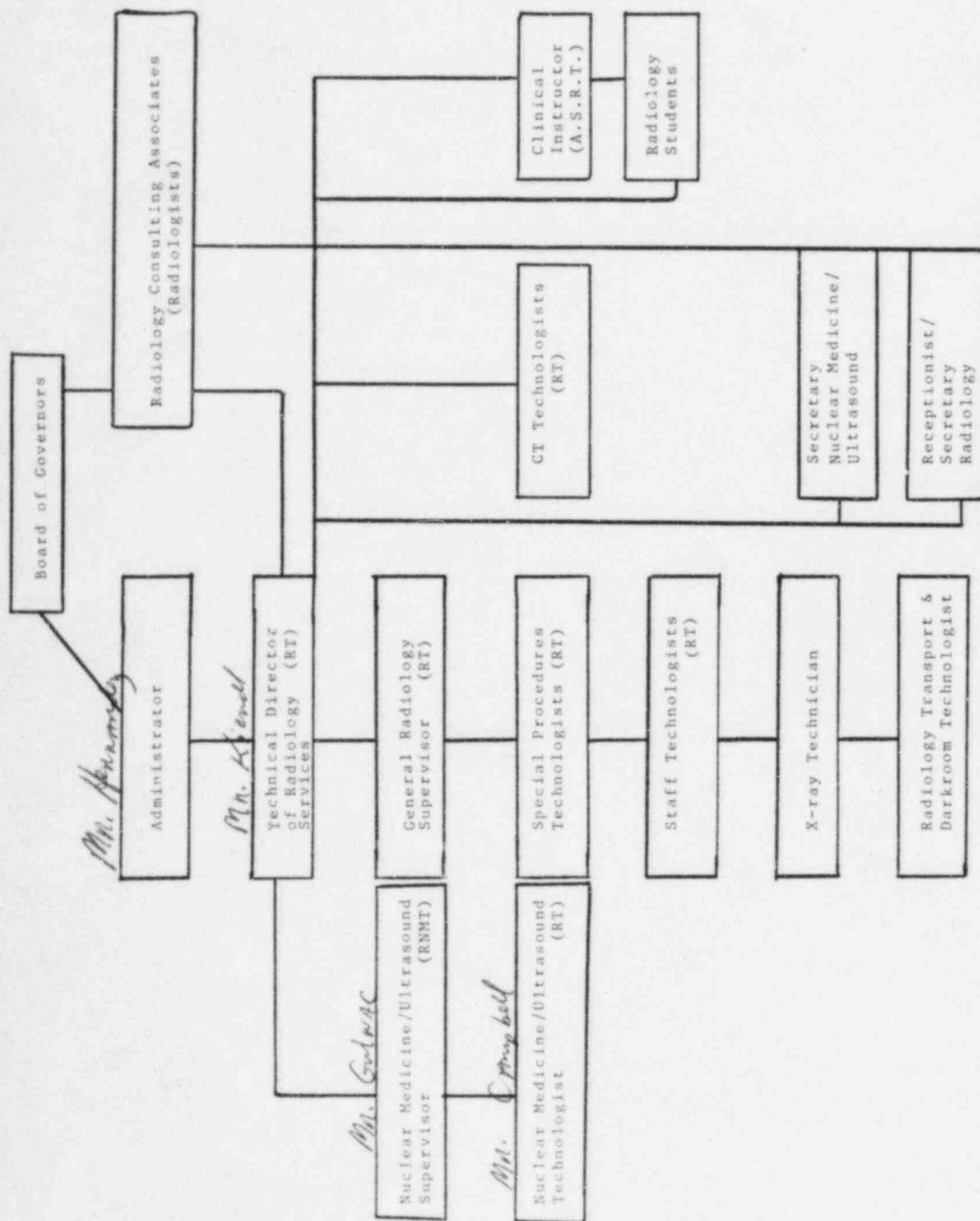
Failure to assay each administered dose is a violation of License Condition 17.

9. Exit Interview

During discussions with the Hospital Administrator, the Technical Director and the Nuclear Medicine Technician at the close of the inspection, all the apparent violations were identified. The Hospital Administrator agreed to immediately obtain the use of an operable, calibrated isotope dose calibrator by Monday, August 12, 1985 and to amend their security procedures to ensure the security of molybdenum/technetium generators from unauthorized removal on weekends from the emergency room area. The administrator also agreed to file, within 30 days, a request for an amendment reflecting the change in the name of the hospital to Metro Health Center and to submit preceptor statements for Dr. Cox.

Dr. Calabrese President

*Dis. Cot, Asch, Siddhant
Gruille, Anavilla*



DEPARTMENT OF RADIOLOGY ORGANIZATIONAL CHART

Appendix A

Deunis

9700 Garfield Blvd.
Cleveland, Ohio 44125
(216) 641-5799

NUCLEAR MEDICINE ASSOCIATES
CONSULTANT'S REPORT

Facility: Metro Health Center

Date of Visit: 6/10/85

City: Erie, Pennsylvania

Dr(s): A.B. Calabrese, N. Reich, F. Seidelmann, P. Janicki

Technologist(s): Larry Gulnac (Chief Tech); Jim Campbell

During this visit nuclear medicine instrumentation was checked for proper operation. Results of the equipment evaluation can be found within the pages of this report. Records and record-keeping required by the various regulatory agencies were reviewed for compliance. The attached Health Physics Survey form identifies each of the documents that were checked and indicates their current status. Items of special regard are discussed below.

Quality control studies were conducted on each of the gamma cameras. It was noted on the Series 100 camera the gamma spectrum was displayed outside the window by approximately 50% when in fact the energy spectrum was actually within the designated window. Department personnel were aware of this discrepancy and accounted for it when calibrating the camera. It was also noted uniformity on this instrument was less than optimal when compared against other cameras we see during our visits that are of this approximate vintage. Mr. Gulnac indicated the instrument had been serviced after our last evaluation. It was suggested on the next service call that the service representative be requested to adjust the gamma spectrum and attempt to improve uniformity if possible. Measurement parameters on the Series 110 gamma camera were comparable to those during our previous evaluations. Films from each study are attached and should be kept on file for reference.

The numbered paragraphs below are intended to correlate numerically with questions on the attached Health Physics Survey form.

1,2. Status of the Federal and State licenses was checked. Information has still not been received from Dr. Cox that would allow the preparation of an amendment to add him on each license. This item was discussed with Dr. Cox and appropriate Supplements A & B were reviewed in detail. Dr. Cox indicated he would obtain the required preceptor signatures and forward the forms to our

Appendix B

office. The importance of adding Dr. Cox to your license was reiterated. Please review the report of our last visit for details on this subject.

6. The department had on file a procedure manual which appeared to be acceptable. Mr. Gulnac explained the recent JCAH inspector suggested that some pages in the procedure manual using the former "Doctor's Hospital" logo should be replaced with current pages reflecting the "Metro Health Center" logo. This change was still needed.

9, 10. Personnel dosimetry records were reviewed. No atypical exposures were noted. Several individuals were removed from our summary report that is included in the attached pages.

12. The Radiation Safety Committee had not met since May, 1984. This has repeatedly been found as an item of deficiency during our quarterly reviews. The Committee must meet four times a year to comply with the requirements of both the Federal and State licenses.

13. Mr. Gulnac indicated continuing education was being documented but on a hospital wide basis. There was no specific continuing education in nuclear medicine. It is suggested that possibly our quarterly visits could be used for this purpose. Essentially during our visits we review the radiation safety program in its entirety, and it is suggested that this may constitute four hours per quarter of continuing education. However, records of this effect would have to be kept on file to comply with JCAH requirements.

14, 15. The status of investigational drugs was reviewed. Essentially, no investigational drugs had been used in quite some time. However, activities of the Investigational Review Committee and reporting compliance with the Food and Drug Administration were still uncertain. These items had been questioned during our last visit. Please refer to the cover letter of that report for more details on this subject.

17, 18. The procedure for receipt of radioactive materials was checked. Due to the lack of availability of a survey meter, surveys of incoming packages could not be done. This is a somewhat serious deficiency which most likely will be cited as an area of noncompliance during this next Federal or State inspections.

19. The program for return of radioactive materials to suppliers was checked. Although returns were somewhat infrequent, it was noted those packages which had been sent out had not been wipe tested for removable contamination. It was explained this particular wipe test was a requirement under DOT regulations which are obliged to be followed due to NRC regulations.

23. Records of isotope use were checked. It was noted lot numbers are not recorded for kits that are used in patient preparations. Lot numbers for the generator were on file. It was pointed out recording of lot numbers is not a requirement by any particular agency, but it may be advantageous at some point in time to be able to state in court whether or not a particular radiopharmaceutical had been used for a patient administration in which there was some medical legal complication. It was further explained that we were not aware of any incidents in which this had happened to date, but to be forewarned is to be prepared.

28. The Molybdenum contamination limits were reviewed with Mr. Gulnac. It was the impression of this consultant that Mr. Gulnac did not feel comfortable with his knowledge of the exact limits. The importance of knowing these values was explained. It is suggested these limits be reviewed periodically to ensure all department personnel either know them or know where to find them if needed.

30. The records of surveys of outgoing waste were reviewed. Some confusion was generated on this point. The existing records appear to indicate that no trash had been discarded from 10/17/83 to 2/22/85. Either other records were being kept, or the surveys of outgoing trash were not being done. Regardless, the records that were available for review at this time would not be found acceptable by an inspecting agency.

32, 33, 34, 35. Area surveys had not been done since our last visit. Surveys of the dose preparation area and monitoring of the hands also could not be done. The department has not had an operable survey meter except within several weeks just prior to this visit. These items were also found deficient during our last evaluation.

39. Mr. Gulnac indicated flood studies were not being conducted on the gamma camera each day of use. This is a requirement in the conditions of the license.

40. Calibration of the probe and well had not been done since mid-August, 1984. It was pointed out these instruments should be calibrated each day of use and a record kept on file of the calibration findings.

41. Constancy readings on the dose calibrator done with the in-house Cs-137 reference standard were checked. It was noted these were done sporadically, in which there were week long gaps in between tests. Also, the dose calibrator had not been checked since May 8, 1985. It was explained that this was an obvious violation of the condition of the license and most likely would result in a noncompliance citation on subsequent inspections.

42, 43. The dose calibrator was checked for constancy, accuracy and activity linearity. All test parameters were acceptable. It was noted the linearity test was not started with an elution from a Monday (new) generator. This should be done for each quarterly evaluation as required by the license conditions.

Stability of the dose calibrator was quite unsatisfactory at this time. Although average readings from the various nuclides displayed accurate results, fluctuations in these readings were in excess of 25 - 30%. Personnel had to physically strike the dose calibrator to make it "settle down" to obtain a positive reading. Mr. Campbell commented when the dose calibrator had been sent out for its most recent repair that the manufacturer had suggested that replacement of the chamber may be required. He indicated this was sent to the hospital in writing, but the correspondence could not be located at this time. If in fact this is the case, it is suspected that it would be quite expensive to effect this repair. It is suggested at this time that consideration should be given to replacing this unit, providing it is cost effective. Justification for this recommendation is based on the reaction our organization feels an inspector would have if he were to observe the instrument's performance. This may prove to be somewhat embarrassing.

44. The status of the department's survey meters, as alluded to above, was unsatisfactory. The department has not had an operable low level G-M survey meter for almost six months at this point in time. A replacement unit had been acquired several weeks prior to this visit, but had not been sent out for calibration. It was explained the instrument must be calibrated within the previous 12 months in order for it to be found acceptable by the Federal and State agencies. It was further recommended that another low level survey meter be acquired to be used as a backup unit so that at least one calibrated instrument will be available while the alternate unit is away for calibration. It was also noted the Cutie Pie was due for calibration three days following this visit. It was explained that any of the survey instruments should be sent to our office at least one month prior to their due date for recalibration, regardless of whether or not it coincides with our quarterly visits. Otherwise, the hospital is again in non-compliance with its license conditions.

50. Status of the disaster program was checked. Mr. Gulnac indicated he thought there was a disaster program on file in the hospital that addressed nuclear disasters. It was explained that if this was not the case, a program could be acquired from our office if requested.

55. Management's annual review of the ALARA Program was deficient. This review is required under the ALARA commitment. Apparently the review was attempted to be met by having members of the management team attend the Radiation Safety Committee meetings. However, since the Committee had never met in

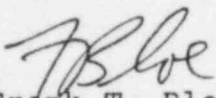
compliance with its program, then management's commitment was also lacking. This item should be address as soon as possible.

59. The annual review of radiation safety for non-occupational personnel has been due since January, 1985. This item had been identified during our previous visit as being deficient. No corrective action had been implemented to date.

60. Review of the radiation safety program by the Radiation Safety Officer was not documented. This could be done either by a form incorporated into our report for this purpose, or during the quarterly Radiation Safety Committee meetings. The forms incorporated into our reports were not filled in. The Committee had not met as mentioned above. Mr. Gulnac also indicated the RSO reviewed our quarterly reports and initialled them to indicate same. However, several of the reports were checked, and no initials were noted.

The Ludlum uptake probe and well counter were evaluated. All test parameters exhibited acceptable results.

Sealed sources were inventoried and logged on the attached inventory form. Leak tests were performed as required. Attached is a report indicating no removable contamination was found.


Frank T. Blo
Consultant

FTB:jed

HEALTH PHYSICS SURVEY

DATE: June 10, 1985

FACILITY: Metro Health Center

The attached Health Physics Survey is a quarterly review of your Radiation Safety Program. This survey satisfies the Radiation Safety Officer's (RSO) quarterly requirements of ALARA in this regard. Please review carefully, noting any deficiencies and suggest recommendations for corrections below:

ITEM (If any)

CORRECTION

RSO

NUCLEAR MEDICINE HEALTH PHYSICS SURVEY

FACILITY: Metro Health Center

LOCATION: Erie, Pennsylvania

	DATE	3/19/84	6/4/84	9/11/84	12/3/84	3/11/85	6/10/85
1. NRC license current. Users, materials, possession limits, RSO Expires: 12/31/87 Last Amend: 24	NO	*	*	*	YES	NO	
	*				*	*	
					(A)		
2. State Regis/Lic. current. Expires: 11/30/88 Last Amend:	YES	YES	YES	YES	YES	NO	
					*	*	
3. Facilities description current. Equipment list current. Future plans/changes considered.					YES	YES	
4. License application available for reference.	YES	YES	YES	YES	YES	YES	
5. NRC regulations available for reference. Update:	YES	YES	YES	YES	YES	YES	
	*						(B)
6. Operating Procedure available	YES	YES	YES	YES	YES	YES	
7. Last Regulatory Inspection report on file. Corrective action: Inspection Date:	YES	YES	YES	YES	YES	YES	
		NRC					
		7/29/81					
8. New employee exposure report on file:	YES	YES	YES	YES	YES	YES	
9. Film badge record in order. Reviewed through:	YES	YES	YES	YES	NO	YES	
	2/14/84	3/15/84	7/25/84	9/15/84	1/14/85	4/14/85	

 (A) Never received preceptor information for Dr. Cox.
 (B) Subscribes to Title 10.

NUCLEAR MEDICINE HEALTH PHYSICS SURVEY

#10 QUARTERLY FILM BADGE SUMMARY

DATE: 3/19/84 6/4/84 9/11/84 3/11/85 3/11/85 6/10/85

QUARTER END: 1/14/84 4/14/84 7/14/84 10/14/84 1/14/85 4/14/85

ID #	NAME	WB	F	WB	F	WB	F	WB	F	WB	F	WB	F	
1).	018	Calabrese	0	--	0	--	0	--	20	--	0	--	0	--
2).	020	Gulnac, L.	380	230	210*	130	110	0	50	0	150	20	70 100	
3).	079	Faulkner, D.	20	--	0	--	60	--	20	--	0	--	0	--
4).	110	Campbell, J.	360	120	130	260	100	210	60	120	80	130	50 150	

NUCLEAR MEDICINE HEALTH PHYSICS SURVEY

	DATE:	3/19/84	6/4/84	9/11/84	12/3/84	3/11/85	6/10/85
11. Regulatory Guide 8.13 records current	YES	YES	YES	YES	YES	YES	YES
12. Radiation Safety Committee minutes current Quarterly meeting dates:	YES *	YES 5/22/84	DUE *	OVER DUE*	NO	NO	
13. Continuing education documented	YES	YES	YES	YES	YES	YES	YES *
14. Investigational Drug records current: Last IRC meeting:	NO *	3.)	3.)	3.)	?		(C)
15. Annual report or notice of termination: IRB FDA	(A)	(A)	(A)	(A)	?		(C)
16. Sealed Sources inventoried	YES	YES	YES	YES	YES	YES	YES
17. Written policy available & in effect for receipt of radioactive materials.	YES	YES	YES	YES	YES	NO	NO
18. Package receipt program includes surveys at surface, three feet, empty packing materials and wipe tests.	YES	YES *	YES	YES	YES	NO	NO
19. Package return program includes package survey(s), wipe tests, shipping papers, package seals, & DOT labels as needed.	YES	YES (B)	YES (B)	YES (B)	YES NOT YET	NO	NO *

20. Reserved.

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- A. 1. Antimony Tri-Sulfide Colloid 1573 thru Cadema Medical Products, Inc.
 2. Laveen Shunt Patency studies with TCSC
 3. FDA approval date not know, suspected 4/84.
- B. Generators returned to manufacturer.
- C. Status uncertain.

NUCLEAR MEDICINE HEALTH PHYSIC SURVEY

DATE:	3/19/84	6/4/84	9/11/84	12/3/84	3/11/85	6/10/85
21. Radioactive materials properly stored.	YES	YES	YES	YES	YES	YES
22. Radionuclide disposition records in order.	YES	YES	*	YES	YES	YES
23. Lot numbers recorded.	YES	YES	YES	YES	YES	NO*
24. Mo/Tc ratio indicated on disposition form.	YES	YES	YES	YES	YES	YES
25. Mo-99 assay procedure on file.	YES	YES *	YES	*	NO	YES
26. Competency for Mo-99 assay documented.	YES	YES	YES	YES	YES	YES
27. Alternate procedure available for Mo-99 assay.	YES	YES	YES	YES	YES	YES
28. Mo-99 limits and action exceeded are known.	YES	YES	YES	YES	YES	?
29. Each patient dose assayed. All nuclide mod/set available.	YES	YES	YES	YES	YES	YES
30. Waste records indicate amount, date, and survey results in mR/hr.	YES	YES	YES	YES	NO	?

NUCLEAR MEDICINE HEALTH PHYSICS SURVEY

	DATE:	3/19/84	6/4/84	9/11/84	12/3/84	3/11/85	6/10/85
31. Radioactive labels defaced according to 10 CFR 20.203.	YES	YES	YES	YES	YES	YES	
32. Area survey performed weekly. Stress lab surveys done weekly.	NO NO *	YES *	*	*	NO	NO	
33. Area survey results recorded in units of mR/hr or "dpm".	NO *	YES	YES	YES	NO	NO	
34. Survey meter check source reading recorded.	NO *	YES	YES	YES	YES	--	
35. Prep. area monitored daily. Not recorded.	NO *	YES	YES	YES	?	NO	
36. Hands monitored daily. Not recorded.	YES	YES	YES	YES	YES	--	
37. Syringe shields available, intact and used.	YES	YES	YES	YES	YES	YES	
38. Gloves available. Gloves used.	YES YES	YES YES	YES YES	YES YES	YES YES	YES YES	
39. Daily floods on camera are current.	*	YES	YES	YES	YES	NO	
40. Daily equipment calibration checks are current (day of use)	*	YES	YES	YES	YES	NO	

NUCLEAR MEDICINE HEALTH PHYSICS SURVEY

	DATE:	3/19/84	6/4/84	9/11/84	12/3/84	3/11/85	6/10/85
41. Dose Calibrator records current. Accuracy: 5% Constancy: 5%	YES	YES	YES	YES	NO	NO	
42. Accuracy check performed annually: Last date performed:	YES	YES	*	YES	YES	YES	
	3/19/84	6/4/84		6/4/84	3/11/85	6/10/85	
43. Quarterly activity linearity check performed.	YES	YES	*	WILL SEND	YES	YES	
44. Survey meter calibration current.	YES	YES	*	YES	NO	NO	
45. Survey meter calibration form on file.	YES	YES *	YES	YES	YES	YES	
46. Proper radiation signs posted.	YES	YES	YES	YES	YES	YES	
47. Emergency procedures posted. Telephone numbers posted.	YES YES	YES YES	YES YES	YES YES	YES YES	YES YES	
48. NRC-3; 10 CFR 19.11; State posting requirements met.	YES	YES	YES	YES	YES	YES	
49. Decontamination kit available.	YES	YES	YES	YES	YES	YES	
50. Radioactive disaster program available.	YES	YES	YES	YES	YES	?	

NUCLEAR MEDICINE HEALTH PHYSICS SURVEY

	DATE:	3/19/84	6/4/84	9/11/84	12/3/84	3/11/85	6/10/85
51. Room ventilation checked (A) Hood periodically. Last date:	Room	355cfm 1320cfm	YES	360cfm 1420cfm	YES	220cfm 1440cfm	YES
52. Evacuation time known for xenon release. 13 min.		YES	YES	YES	YES	YES	YES
53. Xenon traps monitored.		YES	YES	YES	YES*	(C)	YES 4/17/85
54. ALARA program in effect. Date approved by NRC.		YES	YES	YES	YES	YES	YES
55. Annual management survey of ALARA.		NO *	(B)	(B)	(B)	*	NO *
56. Authorization for dose administration.		YES	YES	YES	YES	YES	YES
57. Misadministration reports current.		NONE	NONE	NONE	NONE	NONE	NONE
58. Annual review of radiation safety for occ. personnel. Date:		NO *	YES NMA	YES	YES NMA	YES NMA	YES NMA
59. Annual review of radiation safety for non-occ. personnel. Date:		YES 1/3/84	YES	YES	YES	NO	NO
60. Health Physics Survey review by Radiation Safety Officer.		YES	YES	YES	YES	NO	?

(A) Hood: 2' x 2' (150cfm), Room: Large Vent = 1.5' x 1.5' (Room I = 600cfm; Room II = 250cfm)
(All access doors are closed during xenon study so small ceiling vent is not a factor.)

(B) Mr. Kevin Rovito (Assistant Adm) review minutes to RSC.

(C) No Xenon studies since last visit.

NUCLEAR MEDICINE HEALTH PHYSICS SURVEY

	DATE	3/19/84	6/4/84	9/11/84	12/3/84	3/11/85	6/10/85
61. Restricted area secured.	YES	YES	YES	YES	YES	YES	YES
62. Dose Calibrator Geometry Evaluation current and documentation on file.	YES	YES	YES	YES	YES	NO*	YES
Most recent date performed:	7/6/82				(A)	3/11/85	

(A) Not done on loaner.

SURVEY METER REPORT

FACILITY: Metro Health Center

LOCATION: Erie, Pennsylvania

TYPE MFG.	Ion Victoreen	G-M Victoreen	G-M Victoreen
MOD# S/N	740-F 2207	CDV-700 6B 102151	CDV-700 6B 124781
CK SOURCE AND GEOMETRY	ImCi Cs-137 at probe end	Integral with open window	Integral with open window
CALIBRATED	9/14/83	9/14/83	
CALIBRATED	6/13/84		
CALIBRATED			

	B mR Z	B mR Z	B mR Z
	A ---- E	A ---- E	A ---- E
	T hr R	T hr R	T hr R
DATE:	T O	T O	T O

3/19/84	OK-N/A-OK	OK-3.2/--	
6/4/84	OK-N/A-OK	OK-3.1-N/A	
9/11/84	OK-N/A-OK	OK-3.2-N/A*	
12/3/84	OK-40.0-OK	Corroded *	
3/11/85	OK-40.0-OK	Broken	
6/10/85	OK-40.0-OK		OK-3.1-N/A

DOSE CALIBRATOR CONSTANCY EVALUATION

FACILITY: Metro Health Center

LOCATION: Erie, Pennsylvania

DOSE CALIBRATOR: Capintec (Squibb) CRC-16

STANDARD: Cs-137 1.0mCi, 1/1/75

CONSTANCY READINGS

DATE		Xe-133 188 uCi	Co-57 112 uCi	Mo-99 030 mCi	Tc-99m 080 mCi	I-123 A / B uCi	I-125 319 uCi	I-131 151 uCi	Ga-67 100 mCi
3/19/84	B			2.27	1.60	671		1115	1271
	M	965	1334	2.25	1.60	727/	650	1116	1420
6/4/84	B			2.27	1.57	699	650	1116	
	M	955	1325	2.24	1.55	722/	648	1116	1.4
9/11/84		Unit returned to Capintec for repair.							
12/3/84	B			2.22	1.52	715	640	1089	1.390 (C)
	M	940	1309	2.23	1.53	715/	641	1091	1.390
3/11/85	B			2.25	1.54	(C)	640	1080	--- (C)
	M	933	--	2.21	1.54	707/	650	1080	1.44
6/10/85	B			2.25	1.4	850	600	(C)	(C)
	M	950	1300	2.00	1.56	700/	650	1080	1.460

A = 277 (p, 2n)

B = 380 (p, 5n)

C Erratic

DOSE CALIBRATOR EVALUATION

FACILITY: Metro Health Center

LOCATION: Erie, Pennsylvania

DOSE CALIBRATOR: CRC-16

STANDARD: Cs-137, 1.0mCi 1/1/75

CONSTANCY CHECK ACCURACY & LINEARITY CHECK

DATE	Cs-137 (220) Assay/Read (uCi)	Cs-137 (220) Assay/Read (uCi)	Ba-133 (624) Assay/Read (uCi)	Co-57 (112) Assay/Read (mCi)	ZERO	BKG.	ACTIVITY LINEARITY
3/19/84	809 / 861	197 / 202	187 / 182	2.81 / 2.83	OK	OK	462mCi-740uCi
6/4/84	805 / 854	187.1/187.5	190.2/182	1.05 / 1.05	Adjusted	OK	435mCi-67mCi
9/11/84	Unit returned to Capintec for repair.						
12/3/84	844 / 849	(A)				OK	*
3/11/85	790 / 837	204 / 199	175 / 174	1.125/1.168	OK	OK	193mCi-330uCi
6/10/85	786 / 830	191 / 195	172 / 175	.895/ .880	OK	14uCi	294mCi-410uCi

 (A) Dose calibrator readjusted by Capintec. Accuracy performed by manufacturer at time of repair.

CAMERA EVALUATION

MODEL: Ohio Nuclear 110

FACILITY: Metro Health Center

LOCATION: Erie, Pennsylvania

DATE	PHA (C) (W)	INTEN. (M)	(C) SENSIT. CPM/uCi	(B) SATUR	(B) FLOOD	(B) INTRIN RES-DIR	(E) MEAS- LING	UNIFOR CORR LOSS	LINEARITY
6/4/84	711/200			77K		5/32 --	No	N/A	OK
9/11/84	708/200	475	382	78K		5/32 --	No	N/A	Fair
12/3/84	702/200	475	397	81K	Poor		No	N/A	Fair
6/10/85	705/200	500	380	76K	Fair	5/32 --	No	N/A	OK

TECHNIQUE PARAMETERS:

6

- A. 2 x 10 counts.
- B. No Pb ring
- C. GAP collimator
- D. Normal 0.711 - 9.488
- E. 4 on 1 format.

CAMERA EVALUATION

MODEL: Ohio Nuclear 100

FACILITY: Metro Health Center

LOCATION: Erie, Pennsylvania

DATE	PHA Center	INTEN. (M) (P)	SENSIT. CPM/uCi	SATUR HI/NOR/LO	FLOOD	INTRIN RES-DIR	OFF PEAK FLOOD	MEAS- LING	LINEARITY
3/19/84	550	280	301	80	*	5/32"-1/8"	OK		OK
6/4/84	542	285	187*	92		1/8" -1/10"	OK	No	OK
9/11/84	532	280	309	95	OK	1/8" -1/10"	OK	No	OK
12/3/84	559	215		97	Poor				
3/11/85	567	370 215		96	Poor	1/10" ---	OK	No	OK
6/10/85	542	215	303	89	Fair	1/10"-1/12"	OK	No	OK

TECHNIQUE PARAMETERS:

- 6
- A. 2 x 10⁶ counts, 20% window; 1 x 10⁶ cts. started 6/4/84.
- B. 4 on 1 format on 8 x 10 film
- C. Sensitivity: L.E. Med. Res.

INSTRUMENT EVALUATION DATA
WELL SYSTEM

MODEL: Ludlum Spectrometer FACILITY: Metro Health Center LOCATION: Erie, Pennsylvania

CALIBRATION DATA						ENERGY LINEARITY		
DATE	(A) NUCLIDE	(B) HIGH VOLT.	CPM	(C) RESOL.	(D) CHI2	<u>TEST</u>	NUCLIDE	CPM
3/19/84	Cs-137	375	17,848	9.3%	0.955			
6/4/84	Cs-137	374	12,890	9.2%	0.898			
9/11/84	Cs-137	372	12,883	8.8%	0.816			
12/3/84	Cs-137	372	15,135	12%	0.913			
6/10/85	Cs-137	369	15,045	11.2%	1.77			

-
- A. Cs-137 point source, DOH's Cs-137 Disc, 10 uCi on well top, sign down; Brown lead removed.
 - B. Threshold 652, Window 20
 - C. Normal resolution 8% - 12%
 - D. Normal range: 0.711 - 9.488

INSTRUMENT EVALUATION DATA
UPTAKE SYSTEM (Model 261)

MODEL: Ludlum Spectrometer FACILITY: Metro Health Center LOCATION: Erie, Pennsylvania

CALIBRATION DATA						ENERGY LINEARITY		
DATE	(A) NUCLIDE	(B) HIGH VOLT.	CPM	(C) RESOL.	(D) CHI2	<u>TEST</u>	NUCLIDE	CPM
3/19/84	Cs-137	269	20,520	9.9%	0.437			
6/4/84	Cs-137	270	21,848	9.3%	*1.23			
9/11/84	Cs-137	270	22,254	8.9%	2.42			
12/3/84	Cs-137	270	20,278	9.0%	5.0			
6/10/85	Cs-137	267	22,716	9.8%	3.15			

-
- A. DOH's 10 uCi Cs-137 button up on crystal face
 - B. Threshold 652 Window 20; clock time, multiplier = 100 Kev, window in
 - C. Normal resolution 8% - 12%
 - D. Normal range: 0.711 - 9.488

SEALED SOURCE INVENTORY

FACILITY: Metro Health Center DEPARTMENT: Nuclear Medicine LOCATION: Erie, Pennsylvania

Nuclide:	Cs-137	Cs-137	Cs-137	Co-57	Co-57	Cs-137
Type:	Solid vial	Vial liquid	Vial liquid	Button	Button	Button
Assay: (Date)	1mCi 1/1/75	11.5uCi 9/1/72	2.5uCi 2/12/70	50uCi 6/82	50uCi 1/79	10uCi 3/75
Mfgr.	Mallinc.	Squibb	Abbott	NEN	NEN	NEN
S/N:	045-55AH	CS137AS	011	NES-289	NES-289	NEN-1315

DATE

3/19/84	X	X	X	X	X	X
6/4/84	X	X	X	X	X	X
9/11/84	X	X	X	X	X	X
12/3/84	X	X	X	X	X	X
3/11/85	X	X	X	X	X	X
6/10/85	X	X	X	X	X	X

X - INDICATES SOURCE INVENTORIED

1. Source not inventoried/could not locate.
2. Source in long term decay storage area.

LEAK TEST ANALYSIS REPORT (WIPE)

FACILITY: Metro Health Center

LOCATION: Erie, Pennsylvania

DEPARTMENT: Nuclear Medicine

ATTENTION:

Analysis of the WIPE used to conduct a leak test on the sealed sources identified below reveals removable contamination was less than .005 uCi unless otherwise noted.

SOURCE: Cs-137 Solid vial, 1mCi, 1/1/74

S/N 045-55AH

DATE:	3/19/84	6/4/84	9/11/84	12/3/84	3/11/85	6/10/85
WIPE #:	431	848	1290	1819	2400	2846
WIPE CPM:	41	52	54	34	40	30
BKG. CPM:	43	49	53	34	39	27
NET CPM:	0	3	1	0	1	3
CPM FOR .005 uCi:	945	945	945	945	945	945

SOURCE:

DATE:

WIPE #:

WIPE CPM:

BKG. CPM:

NET CPM:

CPM FOR
.005 uCi:

RADIATION SAFETY COMMITTEE MEETING

METRO HEALTH CENTER
Erie, Pennsylvania

July 30, 1985

The quarterly meeting of the Radiation Safety Committee was held Tuesday, July 30, 1985 in the Nuclear Medicine Department.

Members present: A. B. Calabrese, D.O.

James Campbell

John P. Cox, D.O.

Larry Gulnac

Andrea Hoffman

Raymond T. Kiendl

Jay Loeffert

Mr. Kiendl opened the meeting by describing what the Radiation Safety Committee was and who the members are to be, i.e. an authorized user for each type of use permitted by the license, a representative of the nursing staff, a representative of the institution's management and the Radiation Safety Officer. The meetings are to be held quarterly and they will be in January, April, July and October. The last Radiation Safety Committee meeting was held May 22, 1984.

Mr. Kiendl stated that there were many radiation safety deficiencies cited by Nuclear Medicine Associates. We are in the process of correcting these deficiencies which include some equipment deficiencies. Mr. Kiendl will approach the Building and Planning and Finance Committee with a proposal of equipment needs as soon as the list is complete. He will also be meeting with Mr. Hernandez and Mr. Rovito to discuss what, when and how we will obtain the different equipment. The deficiencies cited by Nuclear Medicine Associates, not including equipment deficiencies, will be corrected within 60 days.

Mr. Gulnac gave the film badge report from May '84 through July '85. He stated that overall there were no high readings, but that in March, 1985 numerous badges came back saying "the control badge for these badges was damaged. These readings were done using Siemmons Gammasonics control badge as a control for that lot." Dr. Gallagher has been added to the list of film badges and the new Radiology Students will be getting their film badges and report through Gannon University.

Mr. Campbell reported on ALARA. For the benefit of new committee members ALARA was defined in regards to this Committee. It was noted that it is this Committee's responsibility to set up the ALARA program and to see that these guidelines are met. The ALARA program is to be discussed and evaluated during each of these meetings. In keeping with this program Nursing Inservices concerning ALARA were conducted in 3-Main and CCU. If other nursing units desire such inservices they may be scheduled through this Committee. Also noted was a change in the generator receipt program. This new program was designed to decrease exposure to non-occupational personnel.

Appendix C

Daily Constancy Checks.

DATE	9 ^{2m} TC	9 ^{4m} Mo	(112) 5 ⁷ Co	(188) 1 ³⁵ X ₂	(220) 1 ³⁵ Co	(100) 6 ⁷ Co	1 ³⁵ I	BKG	TECH
7.2.84	1810	2.20	1535	1066	853	1575	1346	-	Jc
7.3.84	1813	2.22	1527	1101	849	1593	1367	0	Jc
7.4.84	1797	2.24	1523	1059	848	1557	1359	-1	Jc
7.5.84	1801	2.27	1519	1053	833	1563	1347	-1	Jc
7.6.84	1798	2.33	1506	1074	842	1549	1323	-1	Jc
7.9.84	1810	2.28	1501	1065	860	1581	1310	-1	Jc
7.10.84	1822	2.26	1511	1057	866	1592	1297	-1	Jc
7.11.84	1864	2.23	1509	1060	871	1623	1291	-1	Jc
7.12.84	1857	2.22	1520	1082	874	1591	1280	0	Jc
7.13.84	1878	2.24	1642	1105	910	1667	1260	-1	Jc
7.16.84	1884	2.26	1618	1096	883	1588	1274	0	Jc
7.17.84	1891	2.26	1587	1073	887	1575	1295	-1	Jc
7.18.84	1907	2.27	1565	1029	870	1582	1316	-1	Jc
7.19.84	1902	2.28	1576	1084	846	1549	1300	-1	Jc
7.20.84	1898	2.29	1599	1103	861	1571	1351	0	Jc
7.23.84	1843	2.29	1619	1125	862	1546	1376	-1	Jc
7.24.84	1877	2.32	1606	1131	859	1544	1375	-1	Jc
7.25.84	1950	2.31	1543	1119	855	1572	1376	-1	Jc
7.26.84	1969	2.28	1537	1120	873	1581	1371	-1	Jc
7.27.84	1898	2.27	1591	1120	1058	1612	1287	-1	Jc
7.30.84	1873	2.27	1587	1147	992	1572	1297	-1	Jc
7.31.84	1856	2.31	1595	1187	981	1578	1281	-1	Jc
8.1.84	1893	2.36	1594	1213	987	1561	1314	-1	Jc
8.2.84	1901	2.59	1626	1187	994	1601	1357	-1	Jc
8.3.84	1962	2.70	1690	1197	1012	1616	1372	-1	Jc
8.6.84	1985	2.85	1656	1195	1072	1626	1384	-1	Jc
8.7.84	1998	2.88	1680	1216	1087	1654	1406	-1	Jc
8.9.84	1852	2.67	1574	1135	1015	1552	1309	-1	Jc
8.10.84	1956	2.66	1547	1129	1013	1537	1300	-1	Jc
8.13.84	1855	2.65	1546	1123	1011	1518	1291	-1	Jc
8.14.84	1852	2.63	1553	1117	994	1522	1287	-1	Jc
8.15.84	1850	2.65	1625	1170	1059	1703	1363	-1	Jc
8.16.84	1853	2.5	1600	1.2	1.1	1.6	1.3	0	Jc

CPE
 Ref. 1
 18.1.84

2

Date	^{99m} Tc	⁹⁹ Mo	⁵⁷ Co	¹³³ Xe	¹³⁶ Cs	⁶⁷ Ga	¹³¹ I	BKG	TECH
9.17.84	1470	2.12	1242	896	815	1306	1043	-1	JW
9.18.84	1486	2.20	1261	898	824	1327	1046	-1	JW
9.19.84	1482	2.17	1248	888	804	1344	1040	-1	JW
9.20.84	1480	2.11	1235	873	791	1307	1036	-1	JW
9.21.84	1468	2.07	1241	890	798	1318	1037	-1	JW
9.24.84									
9.25.84									
9.26.84									
9.27.84	1493	2.21	1251	891	789	1329	1041	-1	JW
9.28.84									
10.1.84									
10.2.84									
10.3.84									
10.4.84									
10.5.84									
10.8.84									
10.9.84									
10.10.84									
10.11.84									
10.12.84									
10.15.84									
10.16.84									
10.17.84									
10.18.84									
10.19.84									
10.22.84									
10.23.84									
10.24.84									
10.25.84									
10.26.84									

3:

Date	^{99m} Tc	^{99m} Mo	⁵¹ Cr	¹³⁵ Xe	¹³⁷ Cs	⁶⁰ Co	¹³⁷ I	BK6	TECH
10.29.84									
10.30.84									
10.31.84	1456	2.14	1241	897	786	1317	1041	-1	JW
11.1.84	1467	2.23	1236	892	793	1331	1041	-1	JW
11.2.84	1458	2.24	1242	886	787	1331	1035	-1	JW
11.5.84									
11.6.84	1497	2.19	1301	891	797	1301	1045	-1	JW
11.7.84									
11.8.84	1528	2.16	1318	888	812	1298	1036	-1	JW
11.9.84	1519	2.14	1286	878	790	1283	1033	-1	JW
11.12.84	1475	2.18	1252	882	782	1287	1032	-1	JW
11.13.84	1489	2.25	1309	849	805	1293	1029	-1	JW
11.14.84	1503	2.23	1288	854	822	1296	1035	-1	JW
11.15.84	1512	2.23	1297	859	812	1298	1033	-1	JW
11.16.84									
11.19.84	1539	2.24	1317	847	1339	836	1098	-1	JW
11.20.84	1549	2.27	1314	850	1391	840	1095	-1	JW
11.21.84	1501	2.49	1324	857	1402	851	1094	-1	JW
11.22.84	1562	2.37	1316	839	1387	839	1182	-1	JW
11.23.84	1493	2.11	1249	892	1317	828	1137	-1	JW
11.26.84	1531	2.22	1293	845	1334	1377	1094	-1	JW
11.27.84									
11.28.84	1535	2.21	1303	843	838	1383	1086	-1	JW
11.29.84	1489	2.19	1314	877	831	1322	1047	-1	JW
11.30.84	1471	2.17	1232	877	821	1320	1032	-1	JW
12.3.84	1440	2.14	1232	876	777	1320	1033		JW
12.4.84	1487	2.12	1312	891	830	1321	1040	-1	LG
12.5.84	1521	2.31	1326	841	832	1322	1081	-1	LG
12.6.84	1492	2.21	1389	856	813	1370	1103	-1	LG
12.7.84	1471	2.16	1319	849	821	1362	1121	-1	LG

DATE	99mfc	99m ₁₁₀	112 S'Co	116 137/e	260 137C	160 676m	131 T	61/46	1ech
2-8-85	1519	2.47	1363	924	825	1386	1056	-1	LG
2-13-85	1543	2.25	1363	942	843	1387	1086	-1	LG
2-18-85	1564	2.21	1291	933	831	1373	1078	-1	LG
2-13-85	1533	2.25	1301	943	844	1382	1055	-1	LG
3-18-85	1550	2.26	1296	941	838	1385	1081	-1	LG
3-19-85	1535	2.26	1297	939	842	1387	1086	-1	LG
3-20-85	1547	2.25	1294	938	839	1376	1078	-1	LG
3-22-85	1548	2.27	1208	942	843	1395	1096	-1	LG
4-8-85	1550	2.25	1305	943	841	1389	1086	-1	LG
4-10-85	1540	2.23	1301	937	838	1395	1085	-1	LG
4-29-85	1547	2.24	1299	938	841	1385	1087	-1	LG
4-30-85	1536	2.21	1302	935	837	1379	1080	-1	LG
5-2-85	1542	2.23	1304	939	846	1382	1085	-1	LG
5-8-85	1537	2.22	1301	936	838	1381	1080	-1	LG
6-25-85	1517	2.21	1280	926	826	1359	1063	-1	LG
6-27-85	1528	2.21	1283	927	829	1368	1074	-1	LG
7-8-85	1510	2.21	1286	929	833	1364	1065	-1	LG
7-9-85	1547	2.25	1295	943	837	1381	1079	-1	LG
7-10-85	1545	2.23	1362	939	838	1375	1081	-1	LG
7-11-85	1526	2.22	1279	934	833	1380	1077	-1	LG
7-12-85	1531	2.23	1281	934	834	1379	1078	-1	LG
7-16-85	1533	2.22	1289	933	835	1377	1076	-1	LG
7-17-85	1536	2.21	1291	933	836	1379	1079	-1	LG
7-18-85	1530	2.23	1282	930	831	1368	1071	-1	LG
7-19-85	1527	2.22	1293	935	837	1378	1080	-1	LG
7-22-85	1510	2.19	1289	931	835	1368	1072	-1	LG
7-23-85	151	2.21	1291	933	833	1370	1069	-1	LG
7-24-85	1.52	2.23	1287	932	835	1372	1074	-1?	LG
7-25-85	1534	2.22	1282	926	829	1367	1071	-1	LG
7-26-85	1.53	2.22	1285	929	831	1369	1072	-1	LG
7-29-85	1.51	2.20	1281	928	830	1365	1068	-1	LG
7-31-85	1.52	2.22	1279	926	835	1362	1070	-1	LG
8-1-85	1.53	2.18	1280	928	833	1367	1072	-1	LG
8-2-85	1.52	2.21	1287	927	832	1363	1069	-1	LG
8-5-85	1.52	2.20	1280	924	831	1354	1069	0	LG
8-6-85	1.53	2.21	1278	924	830	1365	1071	-1	LG
8-8-85	1.52	2.23	1294	935	837	1374	1076	-1	LG

5

Date	⁹⁹ Tc	⁹⁹ Mo	¹¹² ⁵⁷ Co	¹⁸⁸ ¹³³ Xe	²²⁰ ¹³¹ Cs	¹⁹⁰ ⁶³ Ga	¹³¹ I	CKG	TECH
12.10.84	1482	2.31	1262	861	812	1292	1021	-1	LG
12.11.84	1451	2.20	1271	840	826	1307	1036	-1	LG
12.12.84	1512	2.01	1281	910	857	1351	1049	-1	LG
12.13.84	1547	2.23	1298	940	843	1382	1087	-1	LG
12.14.84									
12.17.84	1560	2.25	1303	949	848	1390	1094	-1	LG
12.18.84	1563	2.26	1314	952	851	1398	1095	-1	LG
12.19.84	1558	2.22	1316	947	847	1389	1088	-1	LG
12.20.84	1561	2.31	1297	942	841	1392	1086	-1	LG
12.21.84	1548	2.24	1262	924	852	1396	1077	-1	LG
12.24.84	1551	2.19	1281	912	816	1381	1062	-1	LG
12.25.84	1562	2.22	1311	921	821	1364	1071	-1	LG
12.26.84	1561	2.23	1309	916	819	1376	1069	-1	LG
12.27.84	1557	2.25	1296	919	832	1394	1076	-1	LG
12.28.84	1548	2.31	1271	924	841	1387	1081	-1	LG
12.31.84	1555	2.25	1268	936	820	1376	1072	-1	LG

1-2-85	1561	2.22	1289	940	816	1393	1069	-1	LG
1-3-85	1552	2.24	1319	937	831	1386	1091	-1	LG
1-4-85	1559	2.31	1298	941	845	1374	1084	-1	LG
1-7-85	1557	2.29	1309	944	837	1382	1078	-1	LG
1-8-85	1561	2.27	1276	943	827	1391	1072	-1	LG
1-9-85	1548	2.18	1289	937	833	1385	1071	-1	LG
1-10-85	1549	2.22	1301	928	841	1379	1081	-1	LG
1-11-85	1542	2.27	1299	916	847	1373	1087	-1	LG
1-14-85	1561	2.31	1316	923	839	1385	1095	-1	LG
1-15-85	1544	2.20	1307	919	843	1377	1089	-1	LG
1-16-85	1551	2.26	1295	927	839	1371	1079	-1	LG
1-17-85	1547	2.27	1302	938	841	1379	1084	-1	LG
1-18-85	1560	2.21	1317	928	850	1376	1081	-1	LG
1-21-85	1557	2.29	1296	931	841	1381	1076	-1	LG
1-22-85	1549	2.30	1301	936	816	1371	1071	-1	LG
1-23-85	1549	2.21	1299	927	821	1379	1077	-1	LG

NOTE: SHADED AREAS MUST BE FILLED IN BY THE CUSTOMER
WHEN RETURNING GENERATORS TO MALLINCKRODT.

MFD. BY THE **SEAR** CORPORATION

TO:
Consignee **MALLINCKRODT DIAGNOSTICS**
2703 WAGNER PL.
MARYLAND HEIGHTS, MO 63043

Surface - .09 mil/in
3' -> .01 mil/in

DATE 7-19-85	YOUR MALLINCKRODT ACCOUNT NO C 2325
FROM SHIPPER METRO Health Center	
DEPT. Nuclear Medicine	
STREET 252 W 11th	
CITY ERIE	STATE PA
ZIP 16501	

DESCRIPTION AND CLASSIFICATION

(Proper Shipping Name, Class and Identification Number per 172.101, 172.202, 172.203)

RADIOACTIVE MATERIAL NOS UN2982 NMFC 164900 SUB 1 CLASS 70

NO. OF UNITS	RADIONUCLIDE	FORM	ACTIVITY	CATEGORY White I Yellow II Yellow III	TRANSPORT INDEX PER PKG.	TYPE CON- TAINER	(WEIGHT SUBJECT TO CORRECTION)	RATE	CHARGES (FOR CARRIER USE ONLY)
1	MO99	SODIUM MOLYBDATE SOLID	17mCi	II	0.2 mil/h	A	35#		
	MO99	SODIUM MOLYBDATE SOLID				A			
	MO99	SODIUM MOLYBDATE SOLID				A			
	MO99	SODIUM MOLYBDATE SOLID				A			

Note—Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

\$.40 per pound

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]
Signature

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

Freight
Charges
Collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each

carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

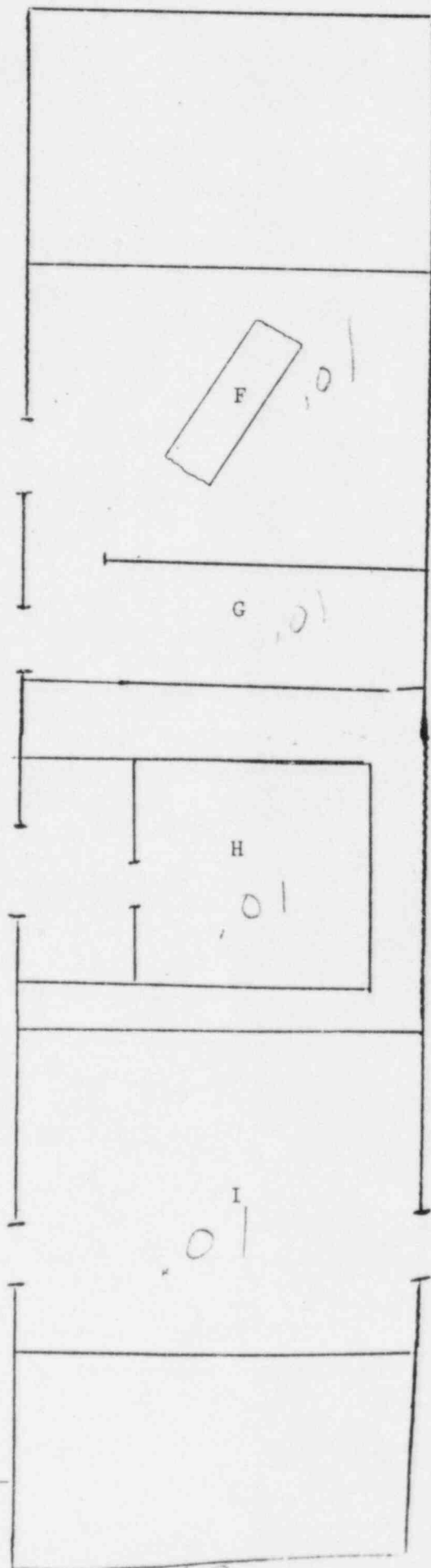
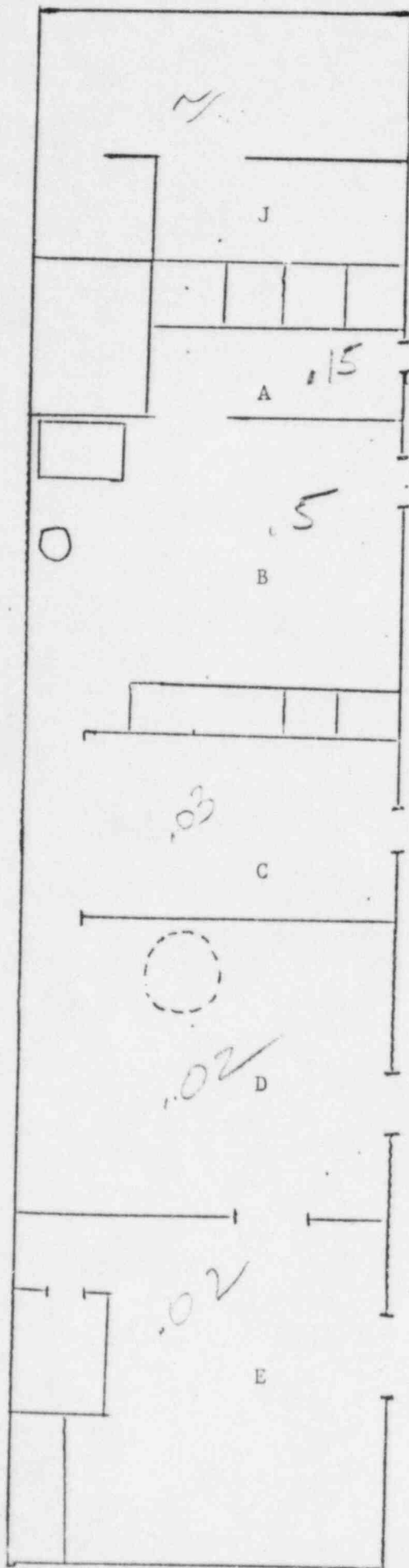
SHIPPER (NAME OF INSTITUTION) METRO Health Center	CARRIER
YOUR SIGNATURE <i>[Signature]</i>	PER
DATE 7-19-85	DATE

MKNU 17296 (R 9/84)

SHIPPER'S COPY

GM Meter check source: 1.5 mR/hr.

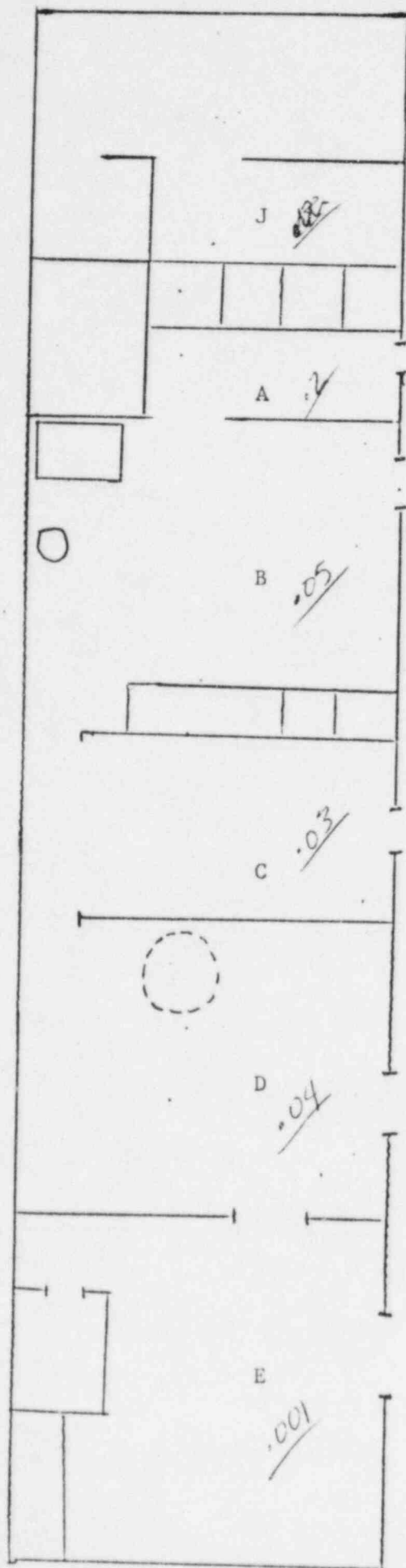
Date: 7-31-85



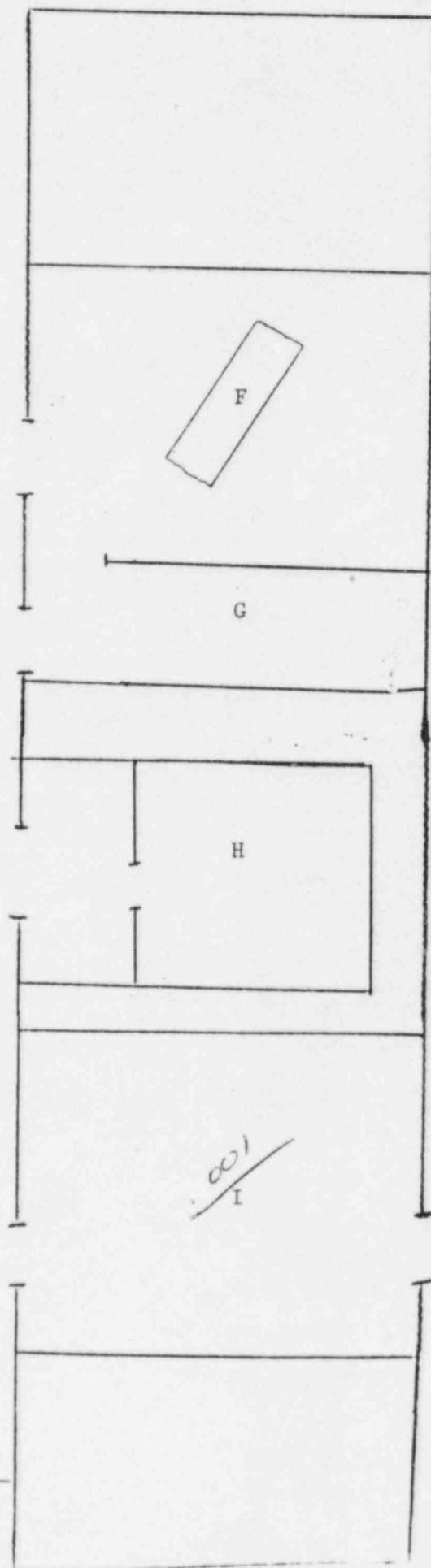
BKG. = _____

GM Meter check source: _____ mR/hr.

Date : 11-30-84



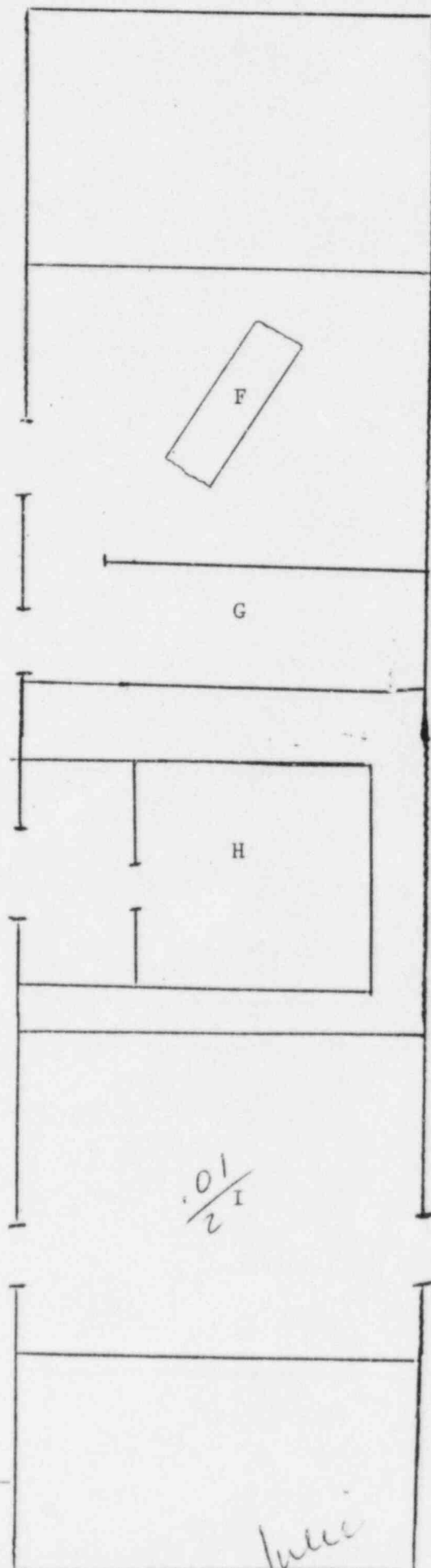
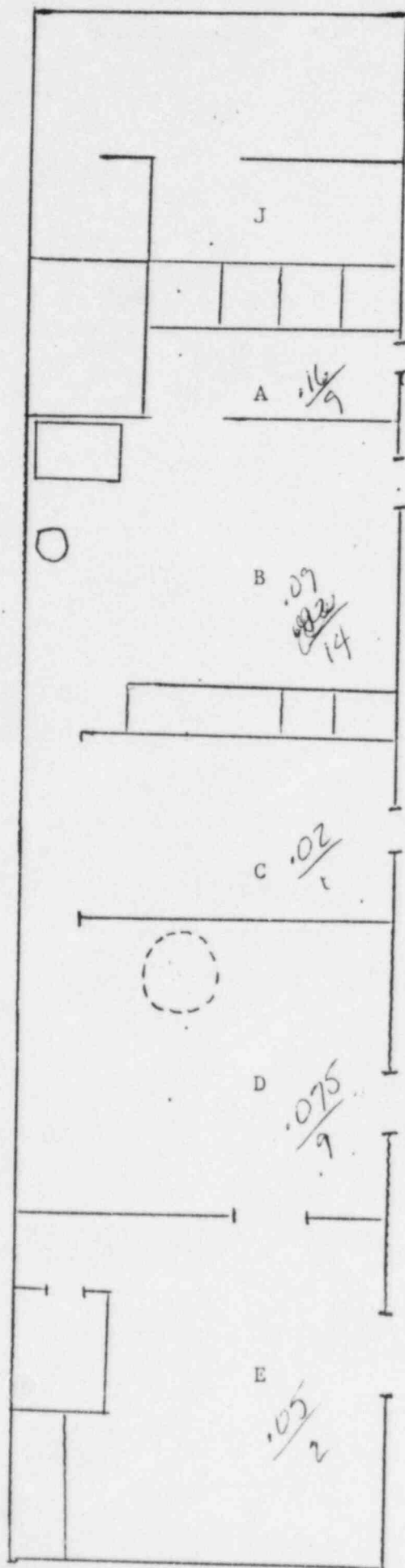
.001



BKG. = _____

GM Meter check source: .33 mR/hr.

Date: 11-23-81

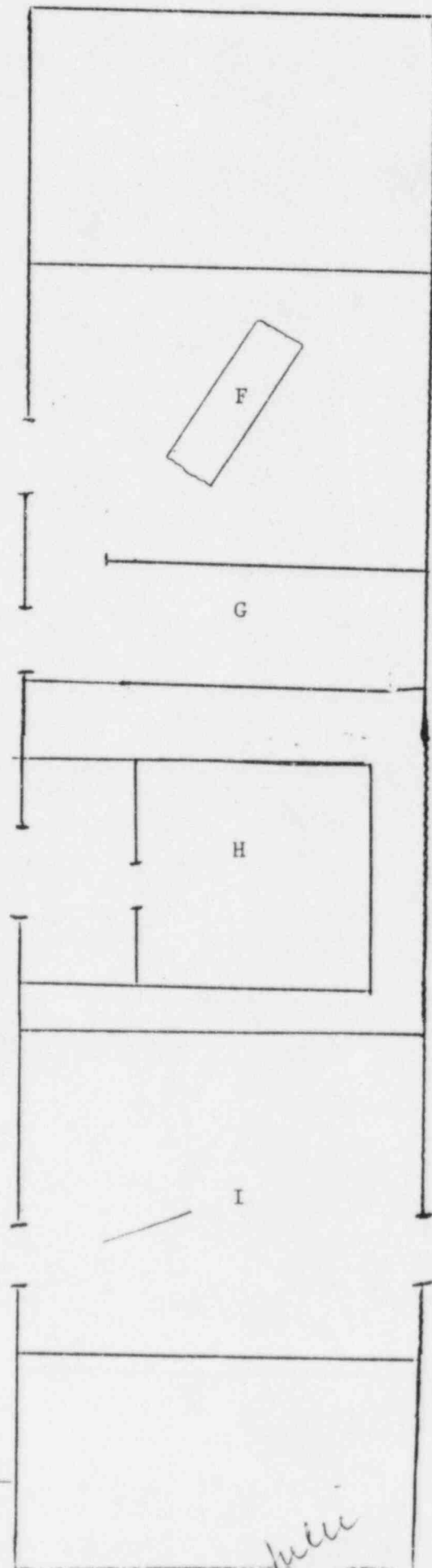
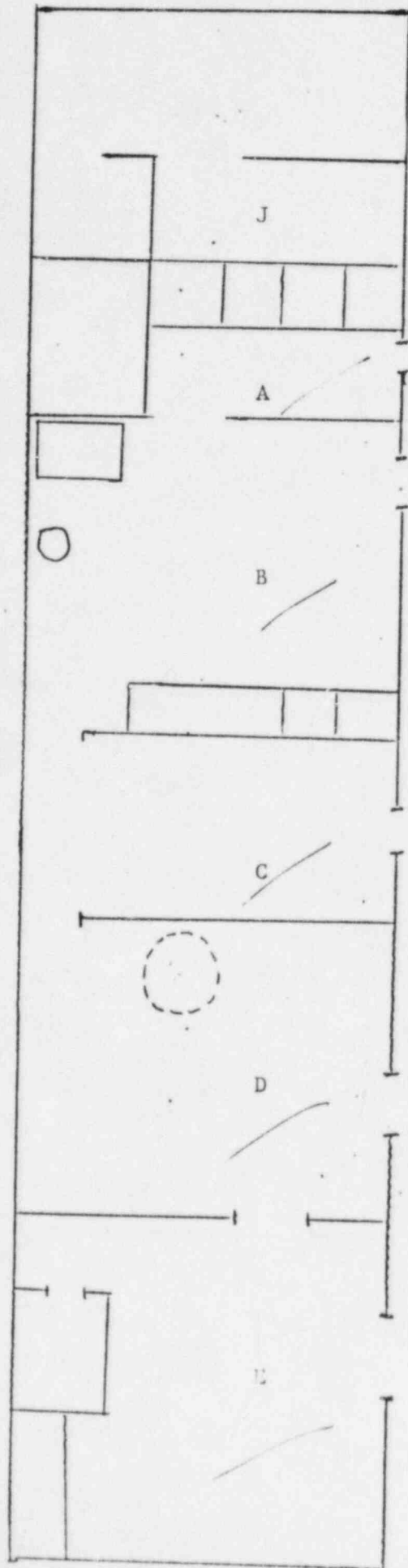


BKG. = _____

June

GM Meter check source: 31 mR/hr.

Date: 11-16-84

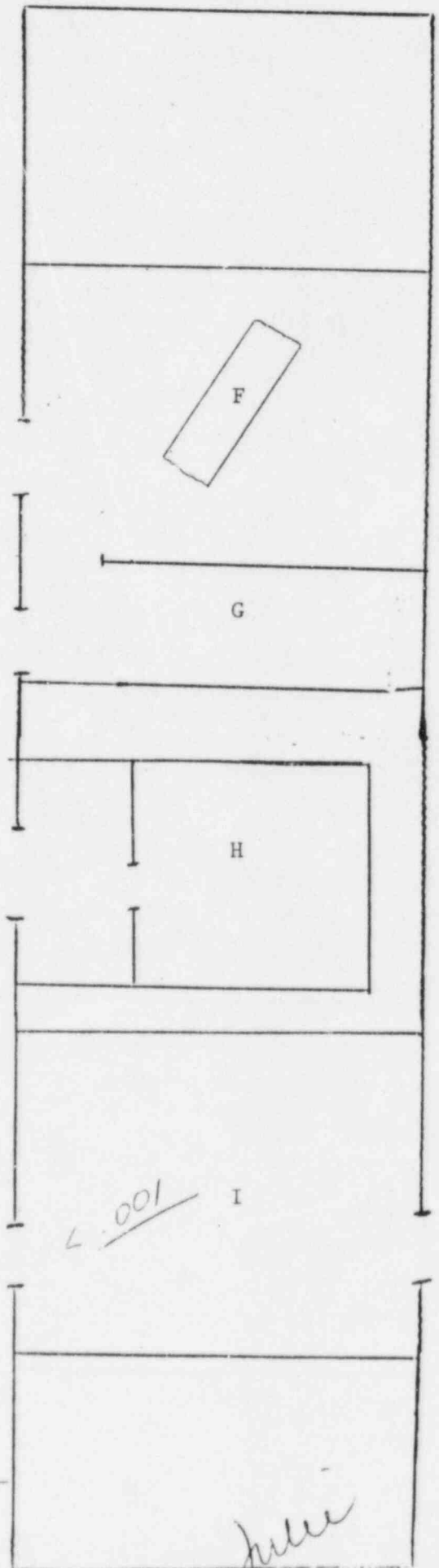
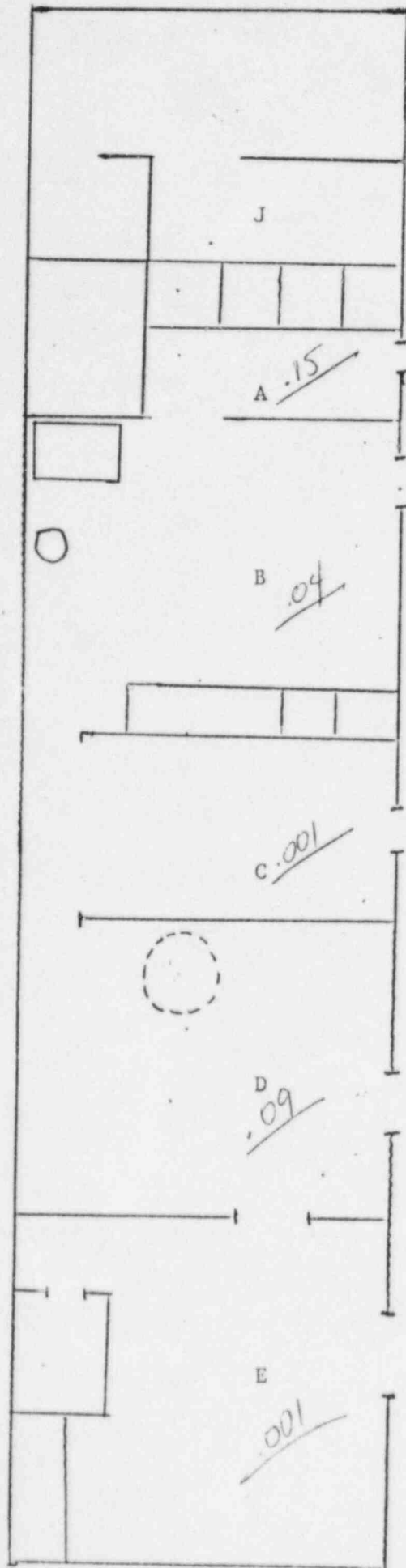


BKG. = _____

mini

GM Meter check source: .34 mR/hr.

Date: 11.9.84



BKG. = .01

RECEIVING

[illegible]

RECEIVING

[illegible]

RECEIVING

[illegible]

71-201
RADIOACTIVE SHIPMENT RECEIPT REPORT

1. P.O.# _____ SURVEY DATE 2-1-5 TIME 7:40
SURVEYOR LG
2. CONDITION OF PACKAGE:
✓ O.K. _____ PUNCTURED _____ STATUS _____ WET
_____ CRUSHED _____ OTHER _____
3. RADIATION OF UNITS OF LABEL: _____ UNITS (mR/hr)
4. RADIATION LEVEL READINGS: a. Package surface 0.35 mR/hr
b. 3' from surface 0.1 mR/hr
5. DO PACKING SLIP AND VIAL CONTENTS AGREE?
a. Radionuclide ✓ yes _____ no _____
b. Amount ✓ yes _____ no _____
c. Chem Form ✓ yes _____ no _____
6. WIPE RESULTS FROM: a. Outer _____ CPM = _____ DPM
eff = ()
b. Final source container _____ CPM = _____ DPM
eff = ()
8. SURVEY RESULTS OF PACKING MATERIAL AND CARTONS _____ mR/hr, CPM
9. DISPOSITION OF PACKAGE AFTER INSPECTION _____
10. IF NRC/CARRIER NOTIFICATION REQUIRED, GIVE TIME, DATE AND PERSONS
NOTIFIED.
11. COMMENTS:

Mö
Cenerdor

RADIOACTIVE SHIPMENT RECEIPT REPORT

1. P.O.# 5787238 SURVEY DATE 8-5-85 TIME Am
SURVEYOR _____
2. CONDITION OF PACKAGE:
✓ O.K. _____ PUNCTURED _____ STATUS _____ WET
_____ CRUSHED _____ OTHER _____
3. RADIATION OF UNITS OF LABEL: 0.1 UNITS (mR/hr)
4. RADIATION LEVEL READINGS: a. Package surface 0.9 mR/hr
b. 3' from surface 0.9 mR/hr
5. DO PACKING SLIP AND VIAL CONTENTS AGREE?
a. Radionuclide ✓ yes _____ no _____
b. Amount ✓ yes _____ no _____
c. Chem Form ✓ yes _____ no _____
6. WIPE RESULTS FROM: a. Outer ✓ CPM = _____ DPM
eff = ()
b. Final source container _____ CPM = _____ DPM
eff = ()
8. SURVEY RESULTS OF PACKING MATERIAL AND CARTONS > 27 mR/hr, CPM
9. DISPOSITION OF PACKAGE AFTER INSPECTION _____
10. IF NRC/CARRIER NOTIFICATION REQUIRED, GIVE TIME, DATE AND PERSONS NOTIFIED.
11. COMMENTS:

RADIOACTIVE SHIPMENT RECEIPT REPORT

- 133
Xe
1. P.O.# 40831 SURVEY DATE 8-5-85 TIME Am
SURVEYOR JC
 2. CONDITION OF PACKAGE:
✓ O.K. _____ PUNCTURED _____ STATUS _____ WET
_____ CRUSHED _____ OTHER _____
 3. RADIATION OF UNITS OF LABEL: 0.155 UNITS (mR/hr)
 4. RADIATION LEVEL READINGS: a. Package surface .26 mR/hr
b. 3' from surface 7.05 mR/hr
 5. DO PACKING SLIP AND VIAL CONTENTS AGREE?
a. Radionuclide ✓ yes _____ no _____
b. Amount ✓ yes _____ no _____
c. Chem Form ✓ yes _____ no _____
 6. WIPE RESULTS FROM: a. Outer ✓ CPM = _____ DPM
eff = ()
b. Final source container _____ CPM = _____ DPM
eff = ()
 8. SURVEY RESULTS OF PACKING MATERIAL AND CARTONS 7.25 mR/hr, CPM
 9. DISPOSITION OF PACKAGE AFTER INSPECTION to waste
 10. IF NRC/CARRIER NOTIFICATION REQUIRED, GIVE TIME, DATE AND PERSONS NOTIFIED.
 11. COMMENTS:

131
Ora

RADIOACTIVE SHIPMENT RECEIPT REPORT

1. P.O.# 42693 SURVEY DATE 8-5-85 TIME Am
SURVEYOR GC
2. CONDITION OF PACKAGE:
✓ O.K. _____ PUNCTURED _____ STATUS _____ WET
_____ CRUSHED _____ OTHER _____
3. RADIATION OF UNITS OF LABEL: 3 UNITS (mR/hr)
4. RADIATION LEVEL READINGS: a. Package surface 3.0 mR/hr
b. 3' from surface >.05 mR/hr
5. DO PACKING SLIP AND VIAL CONTENTS AGREE?
a. Radionuclide ✓ yes _____ no _____
b. Amount ✓ yes _____ no _____
c. Chem Form ✓ yes _____ no _____
6. WIPE RESULTS FROM: a. Outer _____ CPM = _____ DPM
eff = ()
b. Final source container _____ CPM = _____ DPM
eff = ()
8. SURVEY RESULTS OF PACKING MATERIAL AND CARTONS >.05 mR/hr, CPM
9. DISPOSITION OF PACKAGE AFTER INSPECTION to waste
10. IF NRC/CARRIER NOTIFICATION REQUIRED, GIVE TIME, DATE AND PERSONS NOTIFIED.
11. COMMENTS:

102
Total Act. (^{99}Mo)
37 GBq (1.0 Ci)
As of 8:00 PM
CENTRAL TIME

1 MAR 85

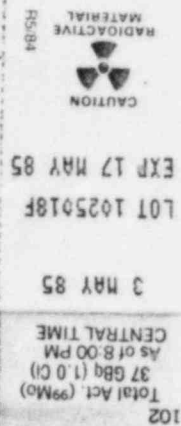
CAUTION
RADIOACTIVE
MATERIAL

[illegible]

DOCTORS' OSTEOPATHIC HOSPITAL
NUCLEAR MEDICINE

Tc-99m ELUTION RECORD
(GENERATOR)

ATTACH LABEL HERE



SUPPLIER _____
DATE RECEIVED _____
TOTAL ACT. RECEIVED _____ (Mci MO-99)
DATE ASSAYED _____
TOTAL ACT. ASSAYED _____ (Mci MO-99)
DISPOSAL METHOD _____
DATE OF DISPOSAL _____
CALIBRATION _____

DATE	TIME	TOTAL ACTIVITY Tc-99-m (Mci)	TOTAL VOL. (cc)	CONCENT. (Mci/cc)	TOTAL ACT. MO-99	CONCENT. OF MO-99	TECH.
3-6-85	7:45	410	5.0	82.0	.011	4.001	Jc
3-7-85	8:00	296	5.0	59.2			
3-9-85	7:30	198	5	39.6	.01	<.001	LG
3-10	7:45	145	5	29	.01	<.001	LG

Doctors Osteopathic Hospital - X-Ray Department

DATE March 25-1961

X-RAY No.	NAME	ADDRESS	AGE	HP.	Q.P.	Rm. No.	NEXT OF KIN	PARTS X-RAYED	No. of Film	DOCTOR	FEE
3186	James, William	2024 Goshard St.	57	-	-	18		Bone Scan		GRS	255
	Smith, Andrew	4100 Birch Hill Lake City	57	-	-	18		Liver flow		VLT	281
	Jensen, Herman		50	-	-	18		T-3-4		JFR	84
	Johnson, David		41	-	-	18		T-3-4		PLY	84
	Wilkinson, Anna	913 E. 28th St.	73	-	-	2003		T-3-4		PA	84
2485	Sullivan, Mary	2815 H. Alameda	54	-	-	200A		T-3-4		CEL	84
	Johnson, David	3004 Zander Ave	74	-	-	200A		T-3-4		GP	84
	Johnson, Shirley	605 West 16th St.	20	-	-	18		T-3-4		GP	84
	Johnson, Shirley		41	-	-	18		T-3-4		KWS	194
	Johnson, Shirley		43	-	-	18		T-3-4		JFR	84
3585	Williamson, Shirley	R.D. #2 Box B, Coakville, NY	45	-	-	2006		Pop Scan		TRM	185
	Hung, Richard	947 Walbridge Rd.	74	-	-	2002		Ballium Scan		JCK	320
	Daubert, Tim	21033 Waver Ave.	15	-	-	18		Thyroid Scan & Uptake		KWS	300
	Bianco, Irene	153 E. 16th St. Box 136	103	-	-	200B		T-3-4		TRM	84
	Kaisen, Elizabeth	2702 West 31st St.	-	-	-	2003B		T-3-4		EEJ	84
2685	Fell, David	4 West 2nd St. Watertown	104	-	-	200A		Bone Scan		SAU	255
	Gramp, Dorothy	2915 Plum St.	42	-	-	202B		Bone Scan		GP	255
	Kurt, Henry	2918 E. 28th St.	49	-	-	200A		MIDA Scan		ROL	255
2700	Fell, David	4 West 2nd St.	104	-	-	200A		Liver flow		SAU	255
	Jensen, Herman	5102 W. 31st St.	54	-	-	202B		Liver flow		EEJ	281
	Johnson, Shirley	R.D. #2 Box B, Coakville, NY	45	-	-	2006		T-3-4		TRM	204
	Johnson, Shirley	610 E. 28th St.	70	-	-	200A		T-3-4		SAU	84
	Johnson, Shirley	610 E. 28th St.	70	-	-	200A		Thyroid Scan & Uptake		SAU	300
3985	Johnson, Shirley	610 E. 28th St.	28	-	-	202B		MIDA		PA	255
	Johnson, Shirley	610 E. 28th St.	40	-	-	202B		Bone Scan		GRS	255
	Johnson, Shirley	10705 W. 11th St. Watertown	56	-	-	2007A		Thyroid Test		CEL	304
	Johnson, Shirley	4 West 2nd St.	104	-	-	200A		Liver flow & Renal		SAU	510
	Johnson, Shirley	610 E. 28th St.	44	-	-	202B		T-3-4		ROL	84
	Johnson, Shirley	610 E. 28th St.	36	-	-	2005		T-3-4		PA	84
	Johnson, Shirley	610 E. 28th St.	31	-	-	18		T-3-4		VLT	84

Doctors Osteopathic Hospital - X-Ray Department

DATE _____

April '85

[illegible]