PART 30 INSPECTION

DEPARTMENT OF THE NAVY
U. S. Naval Hospital
Radioisotope Laboratory
St. Albans, New York

Dates of Inspection: December 29, 1965, January 28, 1966, Announced

Persons Accompanying Inspector:

None

Persons Contacted:

Dr. Walter F. Hansen, Captain, USN, Chief of Radiology (12/29/65, 1/28/66)
Dr. Mario Rosa-Garcia, RSO (12/29/65, 1/28/66)
David Shaw, Chief HMC (12/29/65 only)
James Gatewood, HM-3 (12/29/65 only)
Captain Ralph Fawcett, Executive Officer of the Naval Hospital (12/29/65 only)
William Penman, HM-2 (1/28/66 only)
Norman Olsen, HM-3 (1/28/66 only)

DETAILS

Background

9. An inspection of this license on 12/24/63 resulted in a 417. None of the items of noncompliance resulting from that inspection were found to be recurring or uncorrected in the current inspection, except for the citation for failure to leak test sealed sources at intervals of 6 months or less which was found to be recurring (See paragraph 27). In regard to items 1a and 2a of the enforcement letter resulting from the last inspection, the licensee currently performs surveys of radioactive material before releasing to the sanitary sewerage system, and maintains records of these disposals. All of the other items in this letter (viz. 1b, 1c, 2b, 3a, and 3b) refer to a spill of Strontium-90-Yttrium-90 which occurred prior to the last inspection. The licensee has repeatedly cleaned the area where the spill occurred, has performed periodic direct reading surveys of the area, and maintains records of the results of these surveys. (See paragraph 16) (The licensee no longer possesses any Strontium-90-Yttrium-90; the contaminated waste accumulated from this area has been transferred to Radiological Services, Inc.).

10. In addition to the items of noncompliance for which the licensee was cited, the enforcement letter criticized the film badge program at this hospital and requested clarifying information on this

C/10

program. In particular, the letter questioned whether film badges and calibration films were always of the same emulsion lot, and whether the same procedures were used in developing the film worn by personnel and calibration films. The licensee's response stated that calibration curves are made from the same type film and emulsion lot number, but the inspector's examination of the film badge program on 1/28/66 did not indicate that new calibration curves actually have been provided for each new emulsion lot of film. (The most recent calibration curves available on 1/28/66 were dated July 1965, and the emulsion lot number was not specified on these curves.) For more details on the U. S. Navy film badge program, see the "Personnel Monitoring" and "Inspector's Evaluation" sections of the report details.

11. At the time of the last inspection, the RSO was Commander Pischnotte, but he was replaced less than 6 months prior to the current inspection, by Dr. Rosa-Garcia. Also, most of the other individuals involved in the use of isotopes at the time of the last inspection had been replaced prior to the current inspection. However, an exception to this is Captain Walter F. Hansen, Chief of Radiology, and head of the Radioisotope Laboratory who was transferred to St. Albans Hospital a few months prior to the last inspection, and is still at St. Albans at the present time. The chain of command for the current staff of personnel involved with isotopes is as follows: Technicians report to David Shaw, Chief HMC. Chief Shaw, as well as doctors at the hospital are responsible to Dr. Rosa-Garcia, as far as the use of isotopes goes. Rosa-Garcia reports to Captain Hansen, who in turn is responsible to the head of the Hospital, Captain John Albrittin, and his executive officer, Captain Ralph Faucett. In addition to being responsible for radiation safety, Dr. Rosa-Garcia actively participates in the use of isotopes. Captain Hansen stated that he had no longer directly participated in the use of isotopes since Rosa-Garcia arrived at the hospital.

Facilities and Uses

12. The rather extensive and completely equipped laboratory facilities for the use of isotopes are the same as those described in previous reports.

13. In general, the extent to which isotopes are currently being used at St. Albans Naval Hospital is appreciably less than at the time of the previous inspection. One reason for this diminished use of isotopes, according to Rosa-Garcia, is the current tendency at this hospital to discourage the choice of an isotope technique for a given application, whenever an acceptable alternative method is available which does not involve the use of isotopes. For example, Rosa-Garcia stated that the written request for authorization to use isotopes therapy, which he is required to submit to the radioisotope committee, must include an explanation of why alternative techniques would not be satisfactory for this particular patient. Also the isotopes may be used only by or under the supervision of individuals designated by the radioisotope committee, as required,

by Licensee Condition 12.

14. From review of use records by the inspector and statements by Shaw, Rosa-Garcia, and Hansen, the scope of the current isotope program is indicated by the following. Since Rosa Garcia arrived in 8/65, I-131 has been used in the treatment of carcinoma twice, for cardiac condition once, and only five times for the treatment of hyperthyroid conditions, even though the frequency of hyperthyroid treatments have previously been on the order of several per month. Similarly, Rosa-Garcia stated that he has had no request for therapy using colloidal gold, colledial P-32, or soluble P-32 (or any other therapy), even though each of these had been performed on one or more occasions in the year 1964 prior to his arrival. The current frequency of uses other than therapeutic is indicated by the list below for the month of November 1965, from the licensee's records.

Radiomedicine	Application	Total number of Patients in November of 1965
T-3	Thyroid diagnosis (in vitro)	59
I-131 as NaI	Thyroid diagnosis (in vivo)*	
"	2 hour uptake	52
"	4 hour uptake	50
"	24 hour uptake	52
"	Scinti & Photo scans **	102
"	Polaroid Scans**	51
"	Conversion Ratio	48
"	Saliva PBI	47
I-131 as IHSA	Blood Volume	13
I-131 as Hipputope	Renograms	4
Hg-203	Renoscans	5
Au-198	Liver Scans	14
Hg-203	Brain Scans	16
I-131	Lung Scans	2
Co-60 as Vit. B-12	Schilling Test	4
I-131 as Triolein	Fat Studies	3
I-131 as Oleic Acid	Fat Studies	2

* All the invivo thyroid tests are run following a single administration of 50 uc I-131 as NaI, according to Rosa-Garcia.
**"Photo Scans" and "Polaroid Scans" do not represent actual additional scans run on the patient, but instead merely photographic records of the scan on X-ray film and polaroid film respectively.

15. As indicated above, there are several technicians who handle isotopes under the supervision of Chief Shaw. James Gatewood, HM-3 has been at the St. Albans Naval Hospital since June 6, 1965. The handling of isotopes by Gatewood consists primarily of the performance of blood volume determinations and renograms. He is also responsible for the routine duties connected with radiological safety, such as carrying out direct reading surveys, and the processing of film badges. Joseph Carney specializes in thyroid work, which includes thyroid scanning and assisting Dr. Rosa-Garcia in thyroid therapy. Norman Olsen does the routine work connected with all scanning, except for thyroid scanning. William Penman, who

recently arrived at this hospital, carries out special diagnostic tests, such as fat absorption studies, etc. Chief Shaw and all the technicians under him had completed the six month training in isotopes given by the Navy at Bethesda, except for Olsen who took the course at San Diego, which is patterned after the one at Bethesda, according to Gatewood.

Radiological Safety Precautions and Procedures

16. A "Radiation Safety Guide" was drawn up by Captain Hansen and M. C. Posipanka, HMC in April 1964. (Posipanka, who is no longer stationed at this Naval Hospital, had been the counterpart of Chief Shaw; she was also directly responsible to the RSO.) A copy of this "Radiation Safety Guide" is included in the license folder. Inspector review of this guide and license application dated 5/5/64 indicated that byproduct material is possessed and used in accordance with these documents, as required by License Condition 18.

17. Separate written instructions have also been drawn up for each treatment involving the administration of Au-198, P-32, I-131, and so on. These include instructions regarding the hazard from radiation levels near the patient, precautions necessary in handling excretions, and so on. Copies of these instructions have been attached to the inspection notes. Some of the general precautions taken were stated by Rosa-Garcia to be as follows: No one is allowed in the patient's room, except personnel necessary for care of the patient. Linen is monitored, and held for decay if necessary. The 2 mr/hr line is marked on the floor of the patient's room with tape, as determined by direct reading surveys using a GM survey meter. (Records of such surveys were reviewed by the inspector.) Personnel required to be in the patient's room, such as nurses, wear self-reading pocket dosimeters. Specific instructions pertaining to an individual case are written on the patient's chart.

18. Rosa-Garcia stated that he follows a rule requiring that each patient to whom 30 mc or more have been administered will remain hospitalized until only 10 mc or less remain in the patient, even though the official requirements, according to the Radiation Safety Committee and according to License Condition 16, is that the patient remain hospitalized until 30 mc or less remain. License Condition 15 states that patients containing Co-60 and/or Ir-192 shall remain hospitalized until the implants are removed. Captain Hansen stated that neither Co-60 or Ir-192 implants have been used since before the last inspection, and he knows of no case when Co-60 implants have ever been used. License Condition 17 requires that sealed sources containing byproduct material shall not be opened. Hansen and Rosa-Garcia stated that sealed calibration sources are never tampered with in any way, and sealed Co-60 sources for therapy are not used at all.

19. Rosa-Garcia stated that the policy at St. Albans Hospital is to keep the activity of doses administered to patients as low as

practicable. He stated that the dose for treatment of hyperthyroid conditions has usually been 4 - 6 mc, with a maximum of 8 mc. The dose of I-131 administered to each of the two patients treated by Rosa-Garcia for carcinoma of the thyroid was 100 mc. In the case of Au-198, a dose of 100 mc was administered to a patient on 3/17/64 and 80 mc was given to another patient on 4/13/64. In a case where P-32 as sodium phospate was used in the treatment of bone metastases, 1.5 mc was administered intravenously each day for six consecutive days. In a case where P-32 as colloidal chromic phospate was introduced into the pleural cavity of a patient, the dose was 10 mc. The largest dose of by-product material noted by the inspector to be used for diagnostic purposes was 700 mc Hg-203 for brain scans. (For renal scans, 100 - 150 mc Hg-203 is used.) According to Rosa-Garcia, Hg-197 will henceforth be used instead of Hg-203 for brain and renal scans.

20. Rosa-Garcia stated that Hg-203 is injected into the patient using a disposable syringe. He stated that the process requires only 10 seconds or less, and no exposure has been noted on a self-reading dosimeter (or film badges) worn on the chest pocket following this procedure. Rosa-Garcia stated that this technique is in line with the instructions give to him at the Bethesda Naval Training School, and since leaving this school he has not given any further consideration to an estimation of the dose to which the hand might be exposed in such an administration. The evaluation of the Naval Training School of this technique as being permissible is supported by the inspector's approximate calculation of the exposure to the hands, at least to the extent that it indicates the exposure per calendar quarter should be much less than the limit for the hands in part 20. (This calculation was made using assumptions for time and frequency which are more conservative than the figures for these two parameters obtained from the licensee's records and statements by Rosa-Garcia, as follows: Assuming more than twice the number of injections per quarter than would be derived from the table in paragraph 18, where 16 injections are listed for November 1965; at 30 seconds per injection, compared to Rosa-Garcia's estimate of 10 seconds or less (v.s.); and source-to-hand distance of ½ cm, the total exposure for a calendar quarter would be approximately 3 R.) After discussing this question of exposure to the hand from injecting Hg-203 with the inspector, Rosa-Garcia stated that he would give serious consideration to the use of a wrist badge to estimate the exposure in a future administration such as this.

21. Rosa-Garcia stated that colloidal P-32 and colloidal gold are introduced into cavities of patients by the standard technique whereby a saline solution forces the colloidal isotope by a gravitational feed through a tubing connected to a syringe which had previously been placed properly into the patient. Therapeutic doses of I-131 in the liquid form are administered orally by means of a straw placed in the original bottle in which the radiomedicine was shipped to the licensee.

Instrumentation and Surveys

22. According to Gatewood, a GM survey meter with the Navy designation

ANPDR-27 is used for direct reading surveys. The licensee also possesses many other instruments for surveying and laboratory counting. These are listed on sheets no. 1 and 2 attached to the license application dated 5/5/64. Rosa-Garcia stated that most of these counting instruments are not used; often an instrument would be procured by some predecessor, and then never used after that individual left the hospital. Several calibration sources are available for checking these instruments.

23. Gatewood, Isotope Technician, conducts direct reading surveys, around areas where isotopes are stored and used on a weekly basis. These surveys include readings taken at many specified points, and the results of these readings are recorded on data sheets with diagrams on which these points are designated by numbers. The inspector reviewed records of the results of some of these surveys. For the survey dated 12/27/65, for example, the inspector noted that for most of the readings other than those taken near stored radioactive material or waste were between 0.02 and 0.06 mr/hr, including all readings in unrestricted areas. An exception to this was the hood where a spill of Sr-90-Y-90 had occurred prior to the last inspection, for which 3 - 5 mr/hr beta was recorded. These reports of routine surveys also include results of swipes taken at some of the points where direct reading surveys are made. In the case of the report of one of the surveys conducted in October 1965, the order of magnitude of all swipe results recorded was 10^{-4} or 10^{-5} uc; the areas swiped included the hood where the readings of 3 - 5 mr/hr beta was obtained.

24. The inspector conducted a direct reading survey of the isotope lab and the area where waste is stored. According to Rosa-Garcia, these areas are restricted to personnel authorized to handle isotopes, and are kept locked at night. In most areas no significant reading above background (i.e. less than 0.05 mr/hr) was obtained with AEC No. 5573 GM survey meter, with the following exceptions: (All readings obtained with this AEC #5573 GM meter (end window) with shield off unless otherwise noted) -

Approximately 1 mr/hr maximum at the surface of lead bricks behind which byproduct material is stored in a refrigerator.

Approximately 0.7 mr/hr maximum at the closed door of the refrigerator.

0.2 - 0.3 mr/hr at the table next to the refrigerator.

Approximately 20 mr/hr near a large plastic bottle containing urine being held for decay.

Less than 0.5 mr/hr at the top of the garbage can containing solid waste, with the top removed, and approximately 1 mr/hr at the open top of another such can.

Approximately 0.3 mr/hr at the surface of the lead brick wall in front of these cans (this lead brick wall was approximately 7 bricks high.)

0.2 - 0.3 mr/hr maximum at surface at floor in front of hood where Strontium-90-Ytterium-90 spill had occurred prior to the last inspection.

More than 20 mr/hr at one spot on bottom surface of this hood. (Reading taken with shield off.) Using AEC #5655 June survey meter, the radiation level at this spot was found to be approximately 14 mr/hr beta reading, and 1 mr/hr gamma reading.

Waste Disposal

25. Liquid waste is poured into sinks in the hot lab, which are connected to a large metal hold-up tank. Since the licensee was cited following the last inspection for failure to conduct surveys before releasing liquid from this tank to the sanitary sewer, the licensee has been following a practice of counting 1 ml samples from this liquid waste to determine the value of concentrations in uc/ml and maintaining a written record of the results along with the date the determination was made. Rosa-Garcia stated that the value of concentrations for I-131 listed in Table I, Appendix B, of Part 20 (6×10^{-5} uc/ml) has been used as the criterion for release, since this figure is lower than the values of concentrations listed in Table I for all other isotopes that are ever disposed into the sinks at this hospital. Gatewood stated that he measures these concentrations by counting a representative 1 ml sample in a laboratory counter with a GM tube detector. He briefly explained the calculations involved in this determination. The inspector reviewed written records of these results. These records showed, for example, the most recent release from this tank, on October 25, 1965, when it contained 450 gallons of liquid at a concentration of 2.75×10^{-5} uc/ml.

26. Solid waste is stored for decay in two large covered metal trash cans in a room at one end of the isotope lab complex. The stored waste is labeled with kind, quantity, and date. According to Rosa-Garcia and Hansen, direct reading surveys are conducted periodically on this waste held for decay until it is finally disposed along with other hospital trash after the radiation level had decreased to what they consider an acceptable value. (v.t. and paragraph 34) Written records of these surveys include the date of survey, the isotopes included in the waste, the instruments used for surveying, the maximum radiation level found at the surface, and the average radiation level found at the surface. The most recent transfer of solid waste to general hospital trash was on November 30, 1965. The inspector's review of the survey records indicated that the maximum radiation level at the surface of this waste was 3.0 mr/hr, and the average radiation level at the surface was 1.62 mr/hr, using a GM survey meter with the U. S. Navy designation ANPDR-27F.

Leak Tests

27. License Condition 13C states that each sealed source containing

byproduct material, other than tritium, with a half-life greater than 30 days, in any form other than gas, shall be tested for leakage at intervals not to exceed six months. Following the last inspection, the licensee was cited for failure to leak test either the Strontium-90 eye applicator or the two sealed Co-60 sources at intervals of six months or less. At the time of the current inspection, the licensee still possessed the same Sr-90 eye applicator, and the same two sealed Co-60 sources, which are in the form of wires. (Rosa-Garcia stated that the Sr-90 eye applicator is used at a frequency much lower than once a month. He and Captain Hansen concurred in a statement that the sealed Co-60 sources have not been used since the last inspection, and Captain Hansen further stated that he had no knowledge of them ever being used.) Both the Sr-90 source and the Co-60 sources were tested for leakage on the date of the last inspection (12/24/63). Since the last inspection, the Sr-90 source has been leak tested at approximately 6 month intervals except that the most recent test was 6/9/65. In the case of the Co-60 sources, the first leak test subsequent to the last inspection was dated 2/17/64; and the next one more than nine months later on 11/30/64; and finally the most recent test was conducted less than six months later on 5/21/65. Before the inspector left the hospital on the date of inspection, he was shown paper work on which had just been drawn up by Chief Davis for leak tests to be conducted on both the Co-60 sources and the Sr-90 sources. Leak tests have been performed by the Radium Chemical Company, except for leak tests of the Sr-90 sources by Tracerlab. The inspector's review of records of leak tests showed that all results were background ± less than 2 sigma.

Posting and Labeling

28. Rosa-Garcia stated that he knew of no additional signs posted since the last inspection. Signs noted by the inspector to be posted in the Isotope Lab area were noted to include "Caution - Radioactive Material", "Caution - Radiation Area", and "Caution - High Radiation Area" signs. Stored byproduct material was noted to be labeled with "Caution - Radioactive Material" and the kind, quantity, and date of assay. All signs had the standard symbol and colors. A Form AEC-3 is posted near the entrance to the radioisotope section of the hospital.

Procurement

29. Rosa-Garcia stated that byproduct material is procured from Squibb and Abbott, as per License Condition 14. Orders for byproduct material must be signed by Rosa-Garcia and then counter-signed by Captain Hansen; they are the only two individuals authorized to order radioactive material. When isotopes are received, they are delivered to the receiving station first; they are monitored outside, and then brought directly to the refrigerator in the Isotope Lab where they are stored behind lead bricks. The inspector reviewed records of receipt. These records included notations of the dates when residual quantities were transferred to the "cave" where waste is held for decay.

Personnel Monitoring

30. Film badges are processed at this hospital for the use of all personnel at the hospital who are considered likely to be exposed to radiation, as well as for personnel of many other military facilities. The processing of these film badges, including maintaining records of results, is one of the responsibilities of James Gateweed, Isotope Technician. Exposure results are recorded on forms equivalent to Form NRC-5. Exposures are reported on a monthly basis. The inspector reviewed exposure records for the period subsequent to the last inspection. No quarterly exposures greater than 300 mrem were noted for any personnel using isotopes. The highest exposure for any one month noted by the inspector was 110 mrem for Captain Emmons.

31. Bendix direct readings pocket dosimeters are available for use. Rosa-Gereia stated that these are worn by the personnel likely to receive an exposure in the course of the therapeutic use of isotopes.

32. On 1/28/66, the inspector returned to the St. Albans Naval Hospital to obtain additional information regarding the film monitoring program carried on there in conjunction with Bu Med. Shortly after the inspector's original visit there, James Gateweed was transferred and William Penman, HM-2, was selected to replace him. (See paragraph 13)

33. Penman stated that he attempts to run this film badge program according to instructions given by Bu Med in NAVMED P-5055, as supplemented by "Instructions for the Interpretation of Calibrated Curves", which is attached as Exhibit A. According to Penman, he knows of no deviation from these instructions other than the fact that film developing is not done at the specified temperature of 68°F. Instead, an attempt is made to cool the processing solutions to as near 68°F as possible by running tap water in the sink in which the processing tanks are used. He stated that processing is usually carried out at a temperature in the range of 70° - 75°F, and to compensate for this higher temperature, the developing time is decreased below the specified 5 minutes (Item 6, Exhibit A) by an amount indicated by a correction chart furnished by one of his predecessors. (The arrangement for cooling is such that the level of the cooling water in the sink is permitted to rise to a level only 5 inches above the bottom of the processing tanks, whereas the walls of the tanks are approximately 21" high and they are filled with solutions to within less than 1 inch from the top.) Penman stated his intention of taking several measures to increase efficiency of cooling, after discussing this problem with inspector.

34. Penman stated that fresh solutions are made up for the batch of films processed each month. Approximately 100 films are processed each month (over the course of a week), of which a little more than half are films from badges worn by hospital personnel. Penman stated that a control film of the same type and emulsion number

is processed on each rack along with 7 films from film badges. Continuous gentle agitation is provided using [illegible] paddles during development. An average of 5 density readings under the shielded portion of the film and 5 readings under the open area are taken relative to the control developed on the same rack. One Weston Model 273 densitometer is used, re-zeroing the instrument immediately before reading each film. The densitometer is checked using density wedges supplied by Bu Med. Penman stated that the agreement is "very good". The exposures corresponding to the density readings obtained are estimated as per instructions on Exhibit A, using calibration curves attached as Exhibits B, C, D, & E. These curves are dated July 1963, and Penman stated that they are the most recent ones supplied to him. As indicated on these curves, Type 556 film is now being used.

35. According to both Penman and Hansen, Bu Med has never provided any exposed calibration films to be developed along with films worn by personnel as a check on the validity of the results obtained when density readings from personnel films are applied to the calibration curves supplied by Bu Med. (Although Penman concurred with the desirability of such checks, Captain Hansen could not understand, at first, why the density wedges supplied by Bu Med did not serve the same purpose.)

36. Penman stated that he was not aware of any check by Bu Med on the manner in which the film badge program was being conducted at the St. Albans Naval Hospital. Neither Penman nor Hansen would give any information on possible improvements in the Navy's procedures for storage and distribution of film designed to ensure that the film delivered to field installations is of the correct emulsion number and fresh. At St. Albans, the "Oak Ridge type" film badges, with one filter, (1 gm cadmium) is still being used.

37. In regard to the reporting of exposures, Hansen stated that the current procedure is to notify the Commission, as well as Bu Med, of film badge exposures exceeding limits specified in Part 20. Also according to Penman, the current procedure for distribution of records of routine film badge exposures is as follows: Annual reports are transmitted to Bu Med, with a copy kept on file at the field installation. In addition, when an individual is transferred to a new duty station, a completed copy of DD-1141 (Exhibit F) is sent to the new duty station with the individual.

Management Discussion

38. The items of noncompliance were discussed with Captain Hansen and Captain Ralph Faucett, Executive Officer. (Captain Faucett is second in Command in the U. S. Naval Hospital under Captain J. Albrittin, who was not available.) Both Hansen and Faucett indicated willingness to comply with the regulations and to take appropriate corrective action.

39. As stated above in the section on leak tests, paper work for the overdue leak tests on Sr-90 and Co-60 sources had already been

drawn up before the end of the inspection, and both Hansen and Fawcett stated their intention to ensure that leak tests be conducted henceforth at intervals of not more than six months.

40. In regard to the unauthorized transfers of waste to hospital trash after a direct reading survey revealed a radiation level of many times background near the surface of the waste, Captain Hansen stated that he had considered the radiation levels that had been measured to be low enough to warrant disposal to trash, especially since it was suspected that radium stored in another part of the same room might have contributed to the survey meter readings. However, he stated that no attempt was made to confirm this by taking another reading on the waste after moving it away from the radium before disposing of it. (Actually, the inspector's interpretation of readings by both Hansen and Rosa-Garcia during the inspection was that both of them judged a reading of 2 mr/hr or so to be low enough to justify the disposal to general trash.) Hansen stated during the management discussion that henceforth waste shall either be held until a survey meter gives essentially a background reading, or else transfer it to an authorized waste disposal service.

REGION I, DIVISION OF COMPLIANCE
NEWARK, NEW JERSEY

SPECIAL LIMITED INSPECTION

1. Name and address of licensee:
Department of the Navy
U.S. Naval Hospital
Linden Blvd., St. Albans
New York 11431

2. Date of Inspection: 1/15/69

3. Type of Inspection: announced Routine

4. License number(s), docket number(s), number and date of last amendment for each license. Category and Priority of each license:
31-00076-06 Amendment #4 issued 12/31/68 Cat G, Pri IV

5. Date of previous inspection: 9/30/68

6. Is "Company Confidential," or proprietory, or classified information contained in report?
Yes _____ No ✓

(Specify paragraphs)

7. Scope of inspection:
Special Limited

8. F. Brandlecamp
Inspector

1/23/69
Date of Report

Reviewer

4/16/73
Date of Review

Licensee: _____

Summary

Moderately busy hospital isotope program. Well controlled, no problems anticipated

Noncompliance and Safety Items

none

Unusual Occurrences

none reported

Status of Previously Reported Noncompliance or Safety Items

(a) Leak testing of Sr 90 eye applicator -
(b) Disposal of wastes containing lic. mat. as ordinary trash -

Management Interview

Clear 591 form issued to commanding officer; no significant discussion

Licensee: ______________________________

DETAILS

A. **Participants**

R. S. [illegible] COI
Cdr. [illegible] - Rad Physicist & RSO
Capt. W. F. Hansen, Radiologist
Capt. R.E Faucett, Commanding Officer

B. **Scope of Licensee Program**

See "Uses of Material"

C. **Organization**

app. 8/8/68

Cdr. [illegible] RSO - ~~[illegible]~~ - ~~[illegible] for the staff~~.
MS - Physics, Rad [illegible] Med, [illegible] 4 years - 1 year Residency,
Rad Physics, San Diego. Committee [illegible]
attending [illegible] in full force & effect. Certified Board Radiology
[illegible]

D. **Administrative Control**

E. **Use of Material**

See next page

Uses of Material

License Item	Purpose	How Administered	Dosage Range	Cases per month
A	uptake	liquid	20 μc	120
	scan	"	50	[illegible]
	hyperthyroid	caps	5-10 mc	~2
	cancer	caps	100 mc	~1
B	Bl vol	IV	5 μc	20
	Placentogram	IV	5 μc	2
C	Liver [illegible]	IV	20 μCi to 100 μCi	1 in last 4 years
D	Renogram	IV	40 μCi	20
E	Fat absorption	IV	~25 μCi	~3 previous year none in last year
F	Lung scan	IV	150 μCi	30
G		none		
H	T_3	IV	5 μCi	~152/mo
I, J, K	none			
L	Pleural Effusions	intracav.	10 mCi	2 in 2 years
M	Liver Scan	IV	200 μCi	40
N	Spleen Scan P^{32} [illegible]	IV	150-250 μCi 50 μc	~1 4
O, P	not used	58 in cover	60 not used either	
Q	Kidney Scan	IV	10 μc/kg	10
R	none			
S	none			
T		IV Brain Sc	8 mCi	60

U — Fe turnover — IV — [illegible] — ~1/mo

V — ~~Eye treatment~~ holders eye — ~500-1000 Rep — ~1/year

W — never used

X — not used since '68

See Dr Hanson
also R/C 13, 14, 16

Co60 — 20 mc in 1965 - 2 sources Last [illegible]

5/13/52 2 25 mc Sr90 — 28.2 equivalent [illegible] after '68
Kinlin Chem Co. Background

7/21/67 2. 9/14/67 — same Co. [illegible]
Jan 11 " " " "

Licensee: _____

F. **Facilities**

as per sketches Exhibit A attached; 3 separate suites.
CRM posting on both doors of storage room

Ref. Load. 2 mm/hr.
4.400 mCi I 131 (as iodide) in storage in hood at time of inspection

G. **Equipment**

Extensive diagnostic + scanning equipment; see attachments to most recent license renewal application.

H. **Radiological Safety Procedures**

as per license renewal application attachments.

Purch Dept must see RSO signature + Dr. L. + Dr. H. before honoring requisitions. Pkgs recd by this office.

I. **Personnel Monitoring and Exposure to External Radiation**

Bethesda

Beaver — Rappaport
Wessel — Hansen
Geyer — Farley.
Mueller
Hearst
Kohler
Leary
Fitzgerald

Monthly changes
Reviewed by - Wessel Technician
20mr is action point.

mostly below detectable -

Dr. Hansen high: ~100 mr/yr

The names above are those of all the individuals reported to have any involvement with the licensed program. Their p.m. records reviewed, no significant exposures. Films processed at VA Medical Center, Md.

Licensee: _____

J. **Exposure of Employees to Concentrations of Radioactive Materials**

none

entire waste

K. **Effluents to Unrestricted Areas**

none

L. **Disposals**

Transfers to Radiological Services, Inc, Westwood, N.J. - no incineration, of solid wastes.
Sewer flow reported at ~ 10^5 gal/day, or ~ 4×10^8 ml/day. Liquid wastes limited to therapy patient urine + water from injection needles, held in tank + concentrations measured + recorded before discharge to sewer. Concentrations of I-131 found to be recorded at ~ 10^{-5} μc/cc. Actual volume of liquid discharged is not recorded but discharge is once at about monthly intervals and tank volume is only 550 gal, therefore a maximum monthly discharge of ~ 20 mCi

M. **Miscellaneous Surveys, Evaluations and Records**

1/14/69 - 3 - 30 gal drums, 2, 55 gal drums - 200 mCi I-131 per act.
5/15/67 - 2 " " " 1 mc Ra-226

Dose rates measured weekly 24 locations in upper lab,
ANPDR-27C 28 " lower lab
17 " total therapy unit

Dose rates mostly .04 mr/hr. -
"hot" spots - 34 mr at radium storage location
32 " at cont hood
145 at refrig used for storage

Wipes all in range of 10^{-5} μc

Licensee: _____

N. Special License Conditions

License Conditions 1 thru 20 are routinely [illegible]; one discrepancy reported or observed.

2 Co-60 sealed sources, 10 mCi each as of 1965, and 1 Sr-90, sealed source, 25 mCi as of 5/13/52, reported to be in storage since last leak-tested on April 68. Records on hand indicate no removable activity on any of the 3 sealed sources when leak tested at times the intervals since last inspection through April '68.

O. Posting and Labeling

CRM & CRA posting noted at entrances to restricted areas and at radioactive storage locations. CHRA posting noted in one storage location despite dose rates ranging from background levels, ~.04 mr/hr to 2 mr/hr at 3' from radium storage container. Dr. Hansen said he had posted high radiation area signs because he considered this area to be one in which high radiation levels could ~~exist from~~ exist at times.

P. Independent Measurements

All use areas monitored by inspector using Nuclear Measurements gm survey meter. The levels at the entrances to restricted areas did not exceed background rates, ~.05 mr/hr; the highest dose rate noted was the 2 mr/hr found at 3' from the radium storage container.

Q. Operations Observed

none

R. Incidents, Overexposures, Theft or Loss, Equipment Malfunction

none

PAGE

U. S. NAVAL HOSPITAL
ST. ALBANS L. I., N. Y. 11425

ADDRESS REPLY TO
COMMANDING OFFICER
AND REFER TO:

22/mp
6470/1
Ser: 22-6
MAR 3 1964

Mr. Eber R. Price
Assistant Director
Division of Licensing and Regulation
U. S. Atomic Energy Commission
Washington 25, D.C.

Dear Sir:

In reference to your letter dated 24 February 1964 relative to non-compliance with AEC's "Standards for Protection Against Radiation", Part 20, Title 10, Code of Federal Regulations, the following corrective procedures have been done. The below statements refer to sub-headings 1, 2, 3 and 4 of your letter.

a. Radioassay of contents in the liquid storage tank was performed on 31 January 1964 using both a Nuclear-Chicago gas flow counter and a scintillation well counter. The samples were removed from the tank after an opening, provided with a closing valve, was installed into the top of the tank which allowed for adequate mixing of all contents. Sample counts with gas flow counter were 0.0004 microcuries/ml. and those from the scintillation counter were less than 0.0004 microcuries/ml. No radioactive material has been dispensed into this tank since the inspection of 24 December 1963.

b. An extensive radiation safety program has been instituted and carried out since inspection of 24 December 1963, utilizing the following corrective measures and procedures.

(1) All areas and floor spaces in the radiation controlled area where contamination was found were decontaminated by Radiacwash solution conducted 2-3 times weekly for the past 2 months with all swipe tests and survey monitoring of areas recorded and logged. Present counts received for these areas are now within the normal background range.

(2) Appropriate storage of radioactive waste for non-disposal until at least 10 half-lives have elapsed.

(3) Daily radioassay and logging of liquid contents in storage tank since 31 January 1964. This now to be conducted at weekly intervals with records maintained.

(4) Maintenance of records on all survey areas, radiation monitoring and disposal of any radioactive material when done.

ACKNOWLEDGED

PDR 3-5-64

22/mp
6470/1
Ser:/32·64

MAR 3 1964

c. No definite information can be found or available to present personnel as to why the Radiological Safety Officer at the time of the alleged spill in 1962 did not inform the Radioisotope Committee of this incident, or as to why the decontamination of the affected areas was not carried out according to Section VII "Operating Procedure and General Instructions for the Radioisotope Laboratory". At present the limited areas where contamination was found have been decontaminated under present Radiation Safety Officer supervision as stated in para. b(1) above. In the future, if any such incident should occur, the Radioisotope Committee and all pertinent personnel shall be so informed and records maintained of all procedures and surveys conducted thereon.

d. In regards to Item 4 of your letter concerning sealed sources containing byproduct material, calibration and leak test on the Cobalt-60 wires were performed by the Radium Chemical Company on 17 February 1964, Test No. WA-109-64. These sources were compared to a radium standard and found to have a gamma equivalent of 11 millicuries each. The leak test showed that Wire #1 counted 0.0036 microcuries and Wire #2 counted 0.0008 microcuries. Calibration and leak test of the Strontium-90 Medical Applicator is currently being conducted by the Tracerlab Corporation. These tests will be conducted at least twice a year with records and certification that the tests have been made maintained in units of microcuries as required by license condition No. 28(D). None of the above sealed sources have been in use for the past year.

The personnel monitoring program conducted at St. Albans involves the wearing of film badges, processed every 4 weeks or less and pocket dosimeters read daily, of all personnel who are working with ionizing radiation or engaged in the handling of radioactive materials and by those entering a radioactive area.

Films for our program are obtained from the U. S. Navy Supply Depot and are of the Dupont SX-222, SN6665-531-2763 type which contain component films No. 508 and 510 for X-ray, beta and gamma radiations. Calibration curves are made from the same type film and emulsion lot number and are provided by the Bureau of Medicine and Surgery. These curves are used in conjunction with a densitometer, Weston Photographic Analyzer in the measurement of the film densities. A minimum of three pairs of unexposed control films are processed simultaneously with each batch of exposed film. The average density of the control film is subtracted from the observed density of each of the processed personnel films. The resulting net densities are then read from the calibration curve and the exposure data in rep or roentgens is obtained.

22/mp
6470/1
Ser:132 64
MAR 3 1964

A photodosimetry log is maintained of all exposures received. In addition, a permanent and continuous record of exposure is made by entries on Form DD-1141, Record of Exposure to Ionizing Radiation, on each individual. An annual photodosimetry report, NAVMED 1432, Personnel Exposure to Ionizing Radiation, on all personnel exposures is submitted to the Bureau of Medicine and Surgery at the end of each calendar year. In the event of an overexposure to ionizing radiation, NAVMED 1433, Personnel Overexposure to Ionizing Radiation, is forwarded to the Bureau of Medicine and Surgery as soon as possible after overexposure.

It is believed that these series of actions will bring this activity into full compliance with AEC regulations.

Sincerely yours,

J. L. YON
CAPT MC USN
Commanding Officer

Copy to:
Chief, BUMED (Code 74)

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separates

documents.

20545

LR:GWK
31-76-6

FEB 24 1964

Commanding Officer
U. S. Naval Hospital
St. Albans 25, New York

Dear Sir:

This refers to the inspection conducted on December 24, 1963, of your activities authorized under AEC Byproduct Material License No. 31-76-6.

It appears that certain of your activities were not conducted in full compliance with license conditions and the requirements of the AEC's "Standards for Protection Against Radiation," Part 20, Title 10, Code of Federal Regulations, in that:

1. Contrary to 10 CFR 20.201(b), "Surveys," surveys were inadequate to determine:

   a. the quantities and concentrations of radioactive materials disposed of by release into the sanitary sewerage system;

   b. the radiation hazards incident to a spill of strontium 90-yttrium 90 in the "Hot" laboratory which reportedly occurred during 1962; and

   c. the quantity and airborne concentrations of strontium 90-yttrium 90 released from the exhaust hood into unrestricted areas as a result of the spill of strontium 90-yttrium 90 during 1962.

2. Contrary to 10 CFR 20.401(b), "Records of surveys, radiation monitoring and disposal":

   a. records were not maintained showing the materials disposed of via the sanitary sewerage system; and

OFFICE ▶	REGISTERED MAIL RETURN RECEIPT REQUESTED					
SURNAME ▶						
DATE ▶						

Form AEC-318 (Rev. 9-53) U. S. GOVERNMENT PRINTING OFFICE 16—87761-3

FEB 24 1964

2. continued

b. records were not maintained of surveys made pursuant to 10 CFR 20.201(b) in connection with the possession and use of strontium 90-yttrium 90.

3. Contrary to License Condition No. 43, which incorporates your license application dated March 22, 1962:

a. the radiological safety officer did not assess the extent of the strontium 90-yttrium 90 contamination following the spill which reportedly occurred during 1962, and did not supervise the decontamination of the [illegible] as specified in Section VII of your "Operating Procedure and General Instructions for the Radioisotope Laboratory;" and

b. the radiological safety officer did not inform the Radioisotope Committee of the spill of strontium 90-yttrium 90 referred to above as specified in paragraphs 3(f) and 3(g) of [illegible] 6470.2.

4. Several sealed sources containing byproduct material had not been leak tested at intervals of six months or less as required by License Condition No. 28(C). Also, records of these tests conducted were not maintained in units of microcuries as required by License Condition No. 28(D).

This notice is sent to you pursuant to the provisions of Section 2.201 of the AEC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of which is enclosed. Section 2.201 requires you to submit to this office, within twenty (20) days of your receipt of this notice, a written statement or explanation in reply including (1) corrective steps which have been taken by you, and the results achieved; (2) corrective steps which will be taken; and (3) the date when full compliance will be achieved.

OFFICE ▶						
SURNAME ▶						
DATE ▶						

Form AEC-518 (Rev. 9-53)

FEB 24 1964

We understand that your method of evaluating film badges, developed at St. Albans Naval Hospital, involves a comparison of exposed film with film standards furnished by the National Naval Medical Center at Bethesda, Maryland. Your radiological safety officer reportedly did not know whether the film badges and film standards were of the same emulsion and whether the same development procedures were employed in developing the film badges and film standards. We believe that your film badge monitoring program should be re-evaluated to establish that there are no unnecessary errors being introduced in the evaluation of radiation doses received by individuals. We would appreciate clarifying information concerning the adequacy of your film badge monitoring program with your reply to this letter.

We have received a copy of a receipt letter from Captain W. F. Benson to the AEC Regional Compliance office in New York City, which requested [illegible] of the items mentioned above. You may wish to refer to or expand upon the information in this letter in your reply.

Very truly yours,

Eber R. Price
Assistant Director
Division of Licensing
and Regulation

Enclosures:
1. 10 CFR 20
2. 10 CFR 2

cc: Department of the Navy
Chief, Bureau of Medicine and Surgery
Washington 25, D. C.
Attention: Cmdr. John H. Schulte, MC
Code: 74 (Cmdr. Bell)

Capt. W. F. Benson
LCDR. W. G. Pinchnotte

bcc: Compliance Div., HQ
Compliance Div., I
Public Document Room

OFFICE ▶	LR:EB	LR				
SURNAME ▶	CMR:WGPinchnotte	ERPrice				
DATE ▶	2/19/64					

Form AEC-318 (Rev. 9-63) U. S. GOVERNMENT PRINTING OFFICE 16—62761-3

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FORM NY-59
REV. 8-1-59

UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE

HEALTH AND SAFETY LABORATORY
376 HUDSON STREET
NEW YORK 14, N. Y.

SAMPLE REQ. D 3713

DATE SENT
DATE RECEIVED 12/27/63
DATE REPORTED 12/31/63

Exhibit "A"

PLANT: St. ALBANS Naval HOSPITAL
MAILING ADDRESS:

TYPE OF SAMPLE: Smear
METHOD OF DETERMINATION: Manual & Scintillation Counter

ROUTE RESULTS TO: Compliance
ANALYZE FOR: Sr^{90}-Y^{90} B

SAMPLE NO.	DATE	HOUR START	HOUR STOP	SAMPLE DESCRIPTION	SAMPLING RATE	SAMPLING TIME	Dpm		RESULTS
0 881	12/24			Ledge of hood (Y^{90} cow) 100 cm^2.			5852		
1 880				floor in front of Y^{90} hood.			148		
2 878				floor under sink.			314		
3 1				rut between rooms.			928		
4 2				sink tray (stainless)			713		
5 3				floor near Y^{90} cow.			185		
6 4				floor near rear storage room.			91		
7 5				top side floor drain grill			98		
8 6				underside floor drain grill			1203		
9 7				Inside floor drain			1072		

COLLECTED BY: E. Epstein
ANALYZED BY: J. W. Stebbins

SURVEYOR TO RETAIN LAST COPY—RETURN ALL OTHERS TO HEALTH AND SAFETY LABORATORY

GPO 999255

FORM NY-99
REV. 8-1-59

UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE

HEALTH AND SAFETY LABORATORY
376 HUDSON STREET
NEW YORK 14, N. Y.

SAMPLE REQ. D 3714
DATE SENT 12/27/63
DATE RECEIVED 12/27/63
DATE REPORTED 12/30/63

PLANT: St ALBANS Naval Hosp
MAILING ADDRESS:

Exhibit "A"

TYPE OF SAMPLE: Smears.
METHOD OF DETERMINATION: B Scintillation γ-Wall Counter
C Phosphor

ROUTE RESULTS TO: Compliance
ANALYZE FOR: $Sr^{90}-Y^{90}$ — B

SAMPLE NO.	DATE	HOUR START	HOUR STOP	SAMPLE DESCRIPTION	SAMPLING RATE	SAMPLING TIME	Dpm		RESULTS
0 8	12/24			floor around drain			49		
1 9				UNRESTRICTED Hall.			23		
2 879				floor near SINK			186		
3				IR^{192} γ.					
4 10				wipe IR^{192} container.			0.0		
5 11				wipe lead pig.			0.0		
6				~~Co^{60}~~ γ.					
7 12				wipe floor Storage Room.			0.0		
8 ~~13~~				Co^{60} γ.			~~0.0~~		
9 13				wipe pig containing Co^{60} WIRES.			0.0		

COLLECTED BY: E. EPSTEIN
ANALYZED BY:

SURVEYOR TO RETAIN LAST COPY—RETURN ALL OTHERS TO HEALTH AND SAFETY LABORATORY.

GPO 999259

MEMO ROUTE SLIP
Form AEC-93 (Rev. May 14, 1947)

See me about this.	For concurrence.	For action.
Note and return.	For signature.	For information.

TO (Name and unit)	INITIALS	DATE	REMARKS
R. G. Page, Chief Enforcement Branch DL&R,HQ			Attached is a copy of a letter dated 2/12/64 showing corrective action on items of noncompliance noted for the U. S. Naval Hospital, St. Albans, N. Y.
TO (Name and unit)	INITIALS	DATE	REMARKS
			License 31-76-6 on form AEC-417 transmitted 1/24/64. Enclosure: cy ltr dtd 2/12/64
TO (Name and unit)	INITIALS	DATE	REMARKS

FROM (Name and unit)	REMARKS
R. S. Cleveland, Radiation Specialist (Review) CO:I	

PHONE NO.	DATE
X-382	2/14/64

USE OTHER SIDE FOR ADDITIONAL REMARKS

GPO 683 16 - 77649 - 1

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U. S. NAVAL HOSPITAL
ST. ALBANS L. I., 25, N. Y.

ADDRESS REPLY TO
COMMANDING OFFICER
AND REFER TO:

12 February 1964.

U. S. Atomic Energy Commission
Region I, Division of Compliance
376 Hudson Street
New York, New York

Lic-31-76-6

Attention: Mr. Eugene Epstein

Dear Sir:

Radioassay of contents in the liquid storage tank in our laboratory was performed on 31 January 1964 using both a Nuclear-Chicago Gas-Flow Counter and a Scintillation Well-type Counter. Counts received from the gas-flow counter were 0.0004 microcuries and those from the scintillation counter were less than 0.0004 microcuries. The samples were removed from the storage tank after an opening (provided with a closing valve) was installed into the top of the tank which allowed for adequate mixing of all contents. No radioactivity has been dispensed into this tank since 24 December 1963.

An extensive radiation safety program has been established since your inspection of 24 December 1963. Some of the procedures being conducted are listed below.

1. Daily radioassay of liquid contents in storage tank.
2. Swipe tests of all areas twice weekly.
3. Storage of radioactive wastes and non-disposal until at least ten half-lives have elapsed.
4. Maintenance of records on all of the above procedures.

In addition to the above, calibration and leak tests on the Cobalt-60 wires and the Strontium-90 Medical Applicator are currently being performed by the Radium Chemical Company and Tracerlab Corporation. Report of these tests will be forwarded to you as soon as the results are received by this laboratory.

Decontamination of the floor spaces in the Radiation Controlled Area using Radiacwash solution have been conducted 2-3 times weekly for the last 2 months. Results of swipe tests show that counts received are now within normal background range.

We hope the above data is the information you requested.

Sincerely yours,

W. F. HANSEN
CAPT MC USN
Chief of Radiology

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documents.

License No. 21-7[illegible]

During an inspection on December 24, 1963, the question of contamination limits came up. The limits for removable contamination submitted by the licensee are non-specific and therefore cannot be used as a basis for enforcement action. The inspection report and transmittal memo dated January 24, 1964 should be reviewed at the time of license renewal.

J. W. Kerr

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GWK

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA GEN. REG. NO. 27

UNITED STATES GOVERNMENT

Memorandum

TO : E. R. Price, Assistant Director
Division of Licensing and Regulation, HQ

DATE: JAN 24 1964

FROM : R. S. Cleveland, Radiation Specialist (Review)
Region I, Division of Compliance

RSC

SUBJECT: TRANSMITTAL OF LICENSE COMPLIANCE INSPECTION REPORT - 10 CFR 30

CC:I:EE

Transmitted herewith is a license inspection report involving noncompliance:

DEPARTMENT OF THE NAVY
U. S. Naval Hospital
Radioisotope Laboratory
St. Albans 25, New York

License No. 31-76-6

The items of noncompliance were discussed at a conference on December 24, 1963 with Captain Walter F. Hansen, USN, Chief of Radiology and Acting Base Commander in the absence of Captain J. Yown USN, Base Commandant. Hansen indicated his willingness to comply with the regulations and to take appropriate corrective action.

It was pointed out to Hansen that failure to maintain records of sewerage disposals and failure to perform tests for leakage at intervals not to exceed six months were recurrent deficiencies which had been noted at our inspection of License No. 31-76-4 on 9/14/59. Hansen and Pischnotte, the RSO, who also attended the conference, both stated they never saw the results of the previous inspection or the letters from DL&R dated 12/30/59 listing the items of noncompliance and the licensee's corrective action in the letter of 1/8/60. Hansen stated that this is partly due to the fact that supervisory control suffers from transfer of personnel without arrival of replacements for considerable time. He stated he would search for all the correspondence and stated prompt corrective action would be taken.

The items of noncompliance listed for failure to make an adequate evaluation of a spill of Sr-90-Y-90 and of the concentrations of Sr-90-Y-90 and I-131 disposed to the sanitary sewerage system were also discussed. It was pointed out to Hansen that, although the Sr-90-Y-90 spill occurred approximately two years ago, the floor drain through which floor washings are disposed still shows signs of removable beta contamination and it was evident that a large quantity of Sr-90-Y-90 had been disposed of without any record or evaluation of concentration.

Hansen stated they will no longer use the present hold-up tank. He stated that all operations will cease until the laboratory is thoroughly decontaminated with all washings collected and contaminated items disposed of by burial or transfer. He stated a new hold-up tank would be installed and that a full evaluation of concentrations and activity involved would be made of the hold-up tank's contents before release to the sanitary sewerage system.

Management control of the radioisotope program was also discussed with Hansen. The inspector pointed out that there appeared to be a breakdown in management control when they are not informed of spills of radioactive material, where decontamination efforts are made by subordinates without management knowledge and where it appears for periods of time there is no management control due to transfer of naval personnel. It was also pointed out that a subordinate assumed the duties of RSO without any supervision from the actual RSO. Hansen stated he would institute strict control and it was evident to him that there was a breakdown in management of the radioisotope program.

The licensee's administrative instructions were also reviewed with Hansen. It was pointed out that on page 4 of the instructions emergency dose of 10R and 25R are permitted. It was pointed out that these radiation doses exceed the limits

Touchy Subject

as expressed in 10 CFR 20.101(b). Item V on page 4 of the instructions refers to general surface contamination as being maintained below tolerance levels in 10 CFR 20. It was pointed out that 10 CFR 20 does not list specific limits of surface contamination. It is recommended that these procedures be further considered by L&R as to whether or not they should still be approved and required to be followed by License Condition 43.

It is felt that the licensee's method of evaluating personnel film badges is very inappropriate and subject to gross errors. Since the density on a developed film is affected by the strength of developer, temperature of developer, time in developer, and character of specific emulsion used in a given batch of film, it is most difficult to validly evaluate a given film without comparing it with other films of the same emulsion batch which have been given known exposures and developed under the same conditions (preferably along side) the film being analyzed. It is felt that this matter raises a question as to whether the licensee's film badges can be considered as "appropriate personnel monitoring equipment" meeting the requirement of 10 CFR 20.202 and that this may need to be discussed by L&R with the licensee.

It is believed that the items of noncompliance do not currently involve a substantial hazard. However, a reinspection will be scheduled to be performed in about six months.

Form AEC-592 was not issued to the licensee because two of the items of noncompliance noted during this inspection were deficiencies which remained uncorrected after the last inspection and because of the other control deficiencies discussed above.

License No. 31-76-7 was also inspected at the same time. Form AEC-591 was issued to the licensee invclving one item of noncompliance, a record keeping deficiency.

Enclosure:
1 cy of Rpt.

cc: CO:HQ
w/orig. of Rpt.

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OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA GEN. REG. NO. 27

5010-106

UNITED STATES GOVERNMENT

Memorandum

TO : E. Epstein, Region I - Division of Compliance DATE: January 20, 1964

FROM : N. Y. Chu, Chemist
Radiochemistry Division - HASL

SUBJECT: ST. ALBANS NAVAL HOSPITAL SMEAR SAMPLE #881 -- REQUISTION D-3713.

HSC:NYC

A beta absorption curve was run on Smear Sample #881 and the contamination was found to be purely Sr^{90}-Y^{90}. A Sr^{90} standard was used to check the sample. Copies of the curves obtained are attached.

Enclosures - 2

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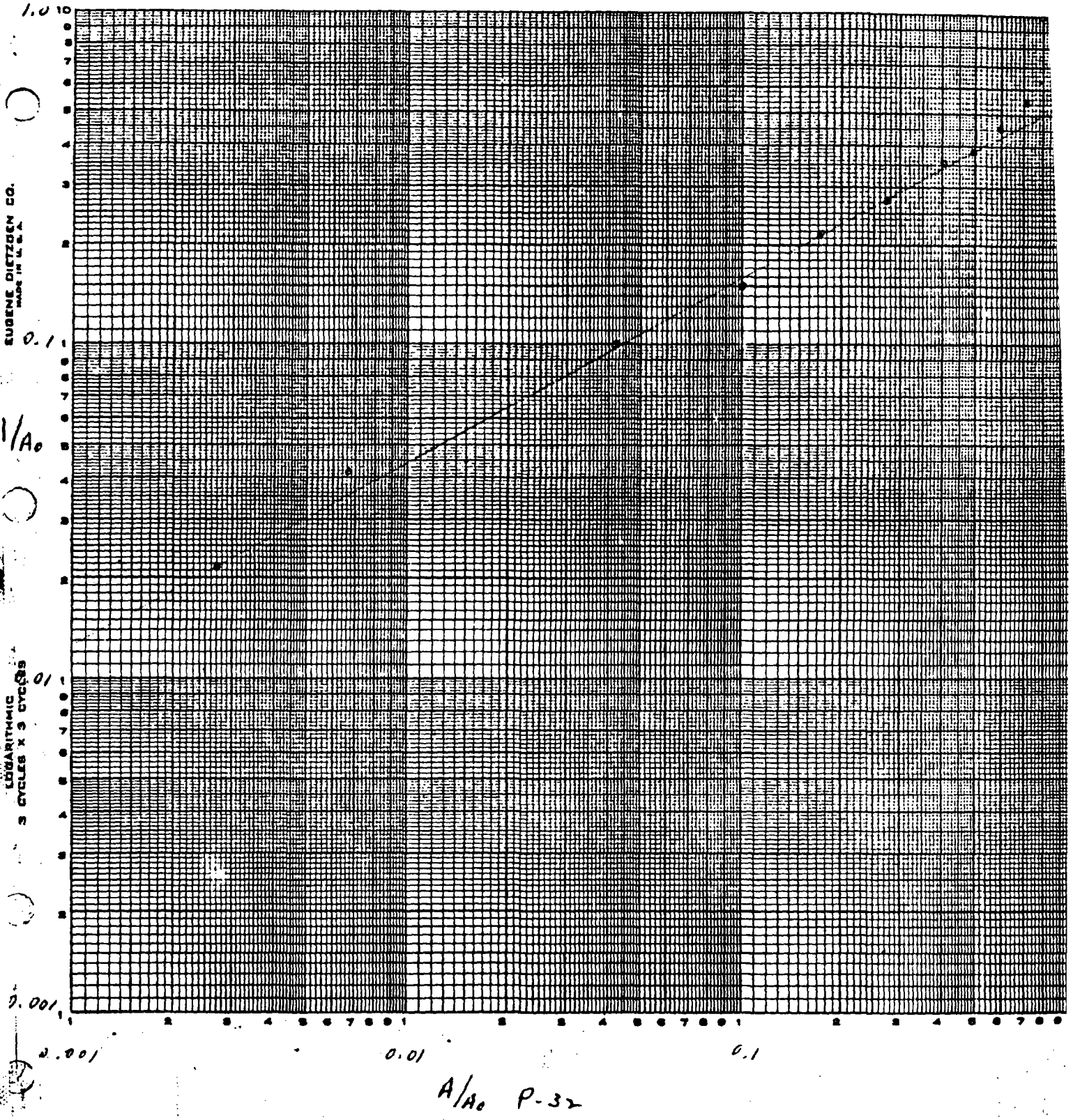
JAN 20, 1

D-3713-881



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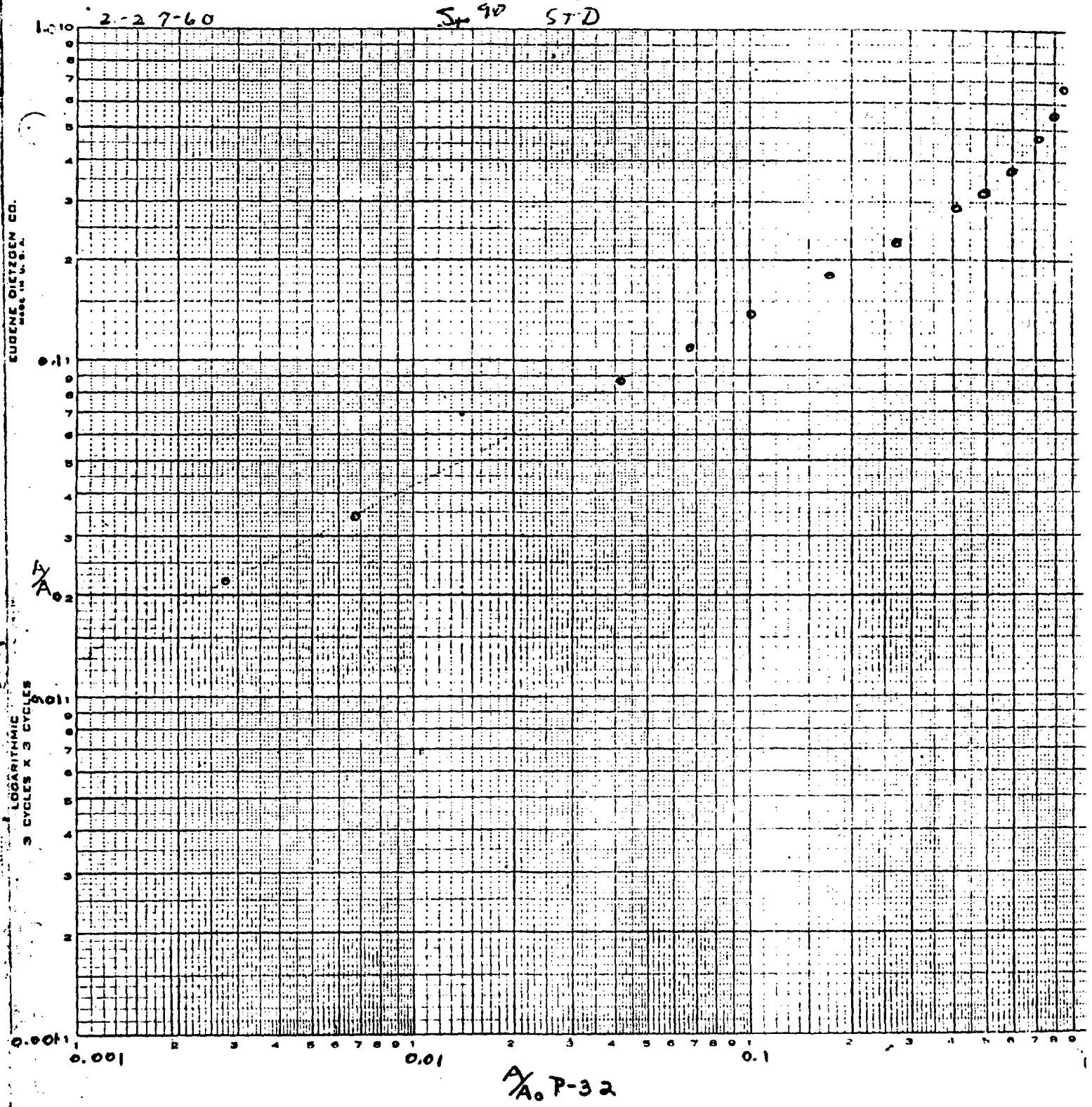
2-27-60
Sp 90 STD
EUGENE DIETZGEN CO.
MADE IN U.S.A.
LOGARITHMIC
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3ND-NH59-5216-1

U. S. NAVAL HOSPITAL
ST. ALBANS L. I., 25, N. Y.

ADDRESS REPLY TO
COMMANDING OFFICER
AND REFER TO:
E.E. Epstein

13 January 1964

U. S. Atomic Energy Commission
Region I, Division of Compliance
376 Hudson Street
New York, New York

Attention: Mr. Eugene Epstein

Dear Sir:

This is to acknowledge receipt of the Inspection Findings and Licensee Acknowledgement on License Number 31-76-7 dated December 24, 1963.

The Dresser Industries, Inc. Model No. A-6804 accelerator and Model No. A-6800 neutron generator used for research on fast neutron activation analysis as stated in the above license were on loan from the Picker X-ray Corporation. This equipment was returned to Mr. Walter L. Seibyl, Picker X-ray Corporation on April 12, 1963 because of the discontinuance of the research project.

Please advise us if there is anything further to be done at this time.

Sincerely yours,

W. F. HANSEN
CAPT MC USN
Chief of Radiology

WFH:mp

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I-G

Form AEC-591
(11-62)

UNITED STATES ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE

INSPECTION FINDINGS AND LICENSEE ACKNOWLEDGMENT

DEC 27, 1963

1. LICENSEE	2. REGIONAL OFFICE
Department of the Navy U. S. Naval Hospital Radioisotope Laboratory St. Albans 25, New York	U. S. Atomic Energy Commission Region I, Division of Compliance 376 Hudson Street New York, New York 10014
3. LICENSE NUMBER(S) 31-76-7	**4. DATE OF INSPECTION** December 24, 1963 (Initial)

5. INSPECTION FINDINGS

- ☐ A. No Item of noncompliance was found.
- ☐ B. Rooms or areas were not properly posted to indicate the presence of a RADIATION AREA. 10 CFR 20.203(b) or 31.302
- ☐ C. Rooms or areas were not properly posted to indicate the presence of a HIGH RADIATION AREA. 10 CFR 20.203(c)(1) or 31.302
- ☐ D. Rooms or areas were not properly posted to indicate the presence of an AIRBORNE RADIOACTIVITY AREA. 10 CFR 20.203(d)
- ☐ E. Rooms or areas were not properly posted to indicate the presence of RADIOACTIVE MATERIAL. 10 CFR 20.203(e)
- ☐ F. Containers were not properly labeled to indicate the presence of RADIOACTIVE MATERIAL. 10 CFR 20.203(f)(1) or (f)(2)
- ☐ G. Storage containers were not properly labeled to show the quantity, date of measurement, or kind of radioactive material in the containers. 10 CFR 20.203(f)(4)
- ☐ H. A current copy of 10 CFR 20, a copy of the license, or a copy of the operating procedures was not properly posted or made available. 10 CFR 20.206(b)
- ☐ I. Form AEC-3 was not properly posted. 10 CFR 20.206(c)
- ☐ J. Records of the radiation exposure of individuals were not properly maintained. 10 CFR 20.401(a) or 31.203(b)
- ☒ K. Records of surveys or disposals were not properly maintained. 10 CFR 20.401(b) or 31.303(d)
- ☐ L. Records of receipt, transfer, disposal, export or inventory of licensed material were not properly maintained. 10 CFR 30.41, 40.61 or 70.51
- ☐ M. Records of leak tests were not maintained as prescribed in your license, or 10 CFR 31.105(c).
- ☐ N. Records of inventories were not maintained. 10 CFR 31.106
- ☐ O. Utilization logs were not maintained. 10 CFR 31.107

Eugene Epstein
(AEC Compliance Inspector)

6. LICENSEE'S ACKNOWLEDGMENT

The AEC Compliance Inspector has explained and I understand the items of noncompliance listed above. The items of noncompliance will be corrected within the next 30 days.

WALTER F HANSEN, CAPT. MC. USN

1/1/64
(Date)

(Licensee Representative — Title or Position)

COPIES: ☐ LICENSEE; ☒ COMPLIANCE REGION; ☐ DIV. OF LIC. & REG.; ☐ DIV. OF COMPLIANCE

INSPECTION NOTES

Backup for 591
Item of Noncompliance

Inspector E. EPSTEIN

Approved by

DEPARTMENT OF THE NAVY
U. S. Naval Hospital
Radioisotope Laboratory

LICENSEE: St. Albans 25, New York Lic. No. 31-76-7

Type Inspection: (I) (RI) (Announced) (Unannounced) Date December 24, 1963

I. GENERAL INFORMATION

A. Inspection on : 10 CFR (20) (30) (31) (40) (70)

B. Persons Accompanying:

Name	Position/Organization
1. None	
2.	

C. Persons Contacted: (inc. name, title, rad duties, reports to)

1. Walter F. Hanson, Capt. USN, Chief of Radiology
Experience:

2. William O. Pischnotte, LCDR USN, Radiologist and RSO
Experience: Pischnotte has had courses in radiation safety given by the Bethesda Naval Medical Center.

3.
Experience:

For person(s) acting as RSO summarize authority: Reports to Capt. W. F. Hanson who reports to Capt. Joseph Yown, USN Hospital Commandant.

D. Radiation Safety Comm. (Yes) (No). Meetings Yes Minutes Yes

Members, Position & Who report to.
1. Capt. Haskill Wertheimer, Chief of Surgery
2. Capt. I. Errion, Chief of Medicine
3. Commdr. G. Szakacus, Chief of Pathology

E. Organization and Administration:

1. ~~Summary of O&A and Program~~ (as pertains to lic. materials)

Neutron Generator used briefly for a ~~six~~ one month period between Sept. 1963 and April 1963x by Dr. James R. Brown, M. D., Radiologist and Dr. L. Zimser, M. D. of Columbia University for activation analysis of rare earths. Generator was on loan from Picker for six months but used only one month.

2. Affiliations: None

F. Facilities & Uses of Byproduct/Source /Special Nuclear Material

1. Isotopes:

Material/Form	Lic. Limit	Qty on Hand	Qty/Assay	Supplier	Use/rate/quanti
A. H-3 Titanium Tritide foil in a Picker-Dresser Industries Model A-6800 neutron generator	5 c	none		Picker	Used 1 afternoon each week for 2 hours ~~between~~ during one month Sept. 27, 1962 and April 1, 196 Returned to Picker 4/1/63

2. Persons using Material(s): (inc.: name, title, duties, training, experience)

(a) Lt. James R. Brown USN, M. D., Director Depat. of Nuclear Medicine trained at Bethesda.

(b) Dr. L. Zimser, M. D., Columbia Medical Center

(c) Generator using reaction $_1T^3 + _1D^2 \rightarrow {}_2He^4 + {}_0N^1 + Q$ was used to irradiate aluminum and Silicon oxides and produced nuclides in generally licensed quantitiesx less of .01 uc of each produced. The generator had a flux of 10^8 n/sec with energies of 14.3 MEV.

F. 3. Facilities:
Licensee uses: (X) Lab ( ) Counting room ( ) Fume hood ( ) Dry box
( ) Table/bench (X) remote hand. equip. ( ) protective clothing
( ) other A subbasement room is described in licensee's

Describe checked items: application. Entrance door was interlocked with control console, a red warning light on the outside flashed when the generator was on. Opening of the door would automatically cut off the electrical supply and de-energize the generator

4. Restricted Area Established _____ Describe Yes - The neutron generator room.

5. Summary of Handling Procedures/Operations:

Operation was from without the room by a remote controlled console.

6. Instrumentation & Calibration Procedures:

TWO Picker fast neutron monitors calibrated by Picker prior to installation.

7. Other Notes: for radiographer occupancy factors, exposure times, time spent in high radiation area

G. Radiation Safety Precautions & Procedures (Summary of Scope)

1. Instructions, oral & written: None - only Brown and Zimser under Brown's supervision were allowed to handle unit. A copy of the license together with copies of 10 CFR 20 - 30 were in one folder. Pischnotte stated the file was available to all personnel upon request.

Licensee not complying with written procedures as follows:

N/A

2. Surveys (working areas, storage facilities, etc.) (records & dates)

(a) Direct reading - restricted areas Pischnotte stated no survey records are available. He stated that Picker representatives shortly after installation of the Generator made surveys using neutron survey meters as well as gamma survey meters. He stated that they could detect no neutrons outside of the shielded facility and no gamma levels above background during irradiation. He stated Picker did not leave the results of their surveys with the naval facility.

unrestricted areas as above

(b) Smear samples: (rest. & unrest. areas) NO

(c) Air samples: (rest. & unrest. areas) No

3. Locking/securing of areas: Yes - room completely interlocked and locked when not in use.

H. Procurement Procedures & Control

1. Person ordering/responsible & method: Browne

2. Person insuring limits not exceeded: Brown

3. Supplier: Picker

4. Summary of procurement & receipt method: (records) record maintained showing receipt and transfer

5. ( ) Preassayed:
   ( ) Sterilized:
   ( ) Leak Tested:

I. Storage & Security of Material

(Un)restricted Area (Un)locked space Summary: In locked neutron generator room.

J. Waste Disposal (method & quantities involved, records & dates)

1. Sanitary sewer

2. Burial

3. Transfer Yes - to Picker 4/1/63 of generator solid waste generally licensed quantities of Al and Si retained in storage area of "Hot" lab.

4. Incineration

K. (X) Posting of Areas CRA CHRA CRM CARA

( ) Labeling Containers ( ) Tagging Sources

(X) AEC-3 posted & where: at entrance to neutron generator room so that all persons entering could see the notice.

Summary:

L. Personnel Monitoring Program (Yes) (No) - ( ) AEC-4 ( ) AEC-5

1. Film Badge: supplier Picker - Neutron badges and U. S. Navy tape

Frequency Dupont double packet baxdges

review of records: (persons & readings)

Picker neutron badges were possessed monthly and showed no neutron tracks. Many film badges were processed monthly at St. Albans and show no more than 150 mrem whole body exppsure for Brown in any calendar quarter yearx who also was involved at that time in the isotope program. Zinser reported monthly exposure as less than 10 mrem.

2. Wrist badge: supplier No Frequency

Records:

3. Dosimeters: Supplier: No Read by:

Records (persons & readings)

4. Surveys: ( ) Bioassay ( ) Breath Anal. ( ) other

Describe: No

5. Further information on AEC-4, -5, other related to personnel program:

No

AEC CONTRACTS ( ):

M. For Radiographers:

1. Leak tests: (31.105)

(a) performed by:

(b) persons lic. to perform:

(c) description of method:

2. Instrument & Calibration Procedures (31.104)

3. Quarterly Inventory (31.106)

4. Utilization Logs: description - identity - site (31.107)

5. Securing of sources & container_records (31.303)

6. Dosimeter & film badge records (31.203)

7. License Conditions:

8. Per 31.102, 103 - Devices/containers properly locked & stored.

9. Status & compliance with operating & emergency procedures (31.202)

10. Per 31.201 Limitations on radiographers & assistant rad. followed.

11. Security and surveillance during rad. operations (31.301)

12. Radiation levels on devices & containers (31.101) - (inspectors survey readings)

Note: Describe noncompliance items on back & reference applicable section of Part I.

II. Compliance with 10 CFR

A. 10 CFR 20:

N/C	OK	NA	Paragraph	Topic
—	X	—	101(a)	Exposure limits in Rest. Area
—	—	X	101(b)	Exposure exceptions - AEC-4
—	—	X	102(b)	Determ. Acc. Dose & AEC-4
—	—	X	102(c)	Records & Prep. of AEC-4
—	—	X	103	Exp. to Conc. in Restr. Area
—	—	X	104(a)(b)	Exposure of Minors - Material/Airborne
—	X	—	105(a)(b)	Levels in Unrestricted Areas - Except 2 mr/hr, 100 mr
—	—	X	106	Effluents in Unrestricted Areas
—	—	X	108	Orders Requiring Bioassays
—	X	—	201(b)	Surveys - 201(a) describes
—	X	—	202(a)	Personnel Monitoring Requirements
—	—	X	203(b)	Posting Rad. Areas w/CRA
—	X	—	203(c)	" High Rad. Areas w/CHRA
—	—	X	203(d)	" Airborne " w/CARA
—	X	—	203(e)	" Require. Rooms/Areas w/CRM
—	X	—	203(f)	Labeling Containers (ref. Append C) CRM
—	—	X	204	Lists posting exceptions - sealed/hospitals/ 8 hour limit
—	—	X	205	Exceptions for RM shipments
—	X	—	206(a)	Instruction of Personnel in Restr. Area
—	X	—	206(b)	Procedures, Regulations, License Available
—	X	—	206(c)	AEC-3 posted in/near Restr. Area
—	—	X	207	Storage Security of Licensed Material
—	—	X	301	Gen. Waste Disposal Requirements
—	—	X	302	Methods of obtaining approval for waste disposals
—	—	X	303(b)	Disposal to Sanit. Sewer - daily limits
—	—	X	303(c)(d)	" " " " - monthly/yearly limit
—	—	X	304	" by burial - limits in (a)(b)(c)
—	—	X	305	" " incineration - must be licensed
—	—	X	401(a)	Records - AEC-5 for persons req. per 202
X	—	—	401(b)	Survey records per 20.201(b)
—	—	X	401(b)	Disposal records per 302, 303, or 304
—	—	X	402	Reports of theft or loss
—	—	X	403(a)(b)	Notification of incidents (a) (b)
—	—	X	404	Report to former employees of exposure
—	—	X	405	Report of overexposure/excessive levels
—	—	X	406	Employees request for annual exposure

ITEM of NONCOMPLIANCE

20.401b - in that the licensee ~~did~~ did not maintain records showing the results of surveys required under 20.201b. (See paragraph G-2).

B. 10 CFR 30

N/C	OK	NA	Paragraph	Topic
—	X	—	3	License requirements - use as lic. stipulates
—	—	—	9	Exempt Concentrations per 30.73
—	X	—	23	Reg. for issuance of specific lic. - general
—	—	—	24	Reg. " " " " " - specific i.e., human use by inst. & phys, radiographers
—	X	—	41(a)	Records - receipt, transfer, export, disposal

C. License Conditions: (refer by no.)

10.	—	X	—	use at location listed in item 2 of the license.
12.	—	X	—	byproduct material was used under the supervision of James R. Brown.
13.	—	—	—	use in accordance with license and application of July 11, 1962
	—	—	—	
	—	—	—	

D. Previous N/C, status, & discussed with:

—	—	—	
—	—	—	
—	—	—	
—	—	—	
—	—	—	

E. 10 CFR 31 - Radiographic operations

—	—	—	101	Limit of rad. level for devices & containers
—	—	—	102	Locking requirements for " " "
—	—	—	103	Storage precautions
—	—	—	104	Instruments, calibration & calib. record
—	—	—	105(a)	Auth. personnel handle etc. sealed source
—	—	—	105(b)	Leak test - 6 mo. interval
—	—	—	105(c)	Detectable level .005 uc - record of tests
—	—	—	105(d)	Level greater than .005 uc - withdraw & report
—	—	—	105(e)	Tag for loose sealed source (i.e. not in/fastene
—	—	—	106	Quarterly Inventory
—	—	—	107	Utilization Logs (description/person/site)
—	—	—	201(a)	Qualifications for radiographer
—	—	—	201(b)	" " asst. radiographer
—	—	—	202	Licensees operating & emergency procedures
—	—	—	203(a)	Film badge & dosimeter requirements for rad.
—	—	—	203(b)	Badge & dosimeter records
—	—	—	301	Security of high rad. areas
—	—	—	302	Posting radiographic areas
—	—	—	303(a)	Calibrated & Operable instr. at exposure site
—	—	—	303(b)	Survey of device after each exposure
—	—	—	303(c)	Survey when securing device & also contain
—	—	—	303(d)	Records of surveys conducted per 303(c

Note: Explain L&R's meaning of an adequate instrument calibration procedure. Check sources not adequate.

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documents.

FORM NY-99
REV. 8-1-59

UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE

HEALTH AND SAFETY LABORATORY

376 HUDSON STREET
NEW YORK 14, N. Y.

SAMPLE REQ. D 3714
DATE SENT 12/27/63
DATE RECEIVED 12/27/63
DATE REPORTED 12/30/63

PLANT: St ALBANS Naval Hosp
MAILING ADDRESS:

Exhibit "A"

TYPE OF SAMPLE: Smears.
METHOD OF DETERMINATION: B Scintillation γ-Well Counter
C B phosphor

ROUTE RESULTS TO: Compliance
ANALYZE FOR: Sr^{90} – Y^{90} – B

SAMPLE NO.	DATE	HOUR START	HOUR STOP	SAMPLE DESCRIPTION	SAMPLING RATE	SAMPLING TIME	dpm		RESULTS
0 8	12/24			floor around drain			49		
1 9				UNRESTRICTED Hall			23		
2 879				floor near Sink			186		
3				IR^{192} γ					
4 10				wipe IR^{192} container			0.0		
5 11				wipe lead pig			0.0		
6				~~Co^{60}~~ γ					
7 12				wipe floor Storage Room			0.0		
8 ~~13~~				Co^{60} γ			~~0.0~~		
9 13				wipe pig containing Co^{60} wires			0.0		

COLLECTED BY: E. EPSTEIN
ANALYZED BY:

SURVEYOR TO RETAIN LAST COPY—RETURN ALL OTHERS TO HEALTH AND SAFETY LABORATORY

GPO 959255

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documents.

FORM NY-99
REV. 8-1-59

UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE
HEALTH AND SAFETY LABORATORY
376 HUDSON STREET
NEW YORK 14, N. Y.

SAMPLE REQ. D 3713

DATE SENT
DATE RECEIVED 12/27/63
DATE REPORTED 12/31/63

Exhibit "A"

PLANT: St. ALBANS Naval Hospital
MAILING ADDRESS:

TYPE OF SAMPLE: Smear
METHOD OF DETERMINATION: Manual & Scintillation Counter

ROUTE RESULTS TO: Compliance
ANALYZE FOR: Sr^{90}-Y^{90} B

SAMPLE NO.	DATE	HOUR START	HOUR STOP	SAMPLE DESCRIPTION	SAMPLING RATE	SAMPLING TIME	dpm		RESULTS
0 881	12/24			ledge of hood (Y^{90} cow) 100 cm²			5352		
1 880				floor in front of Y^{90} hood			148		
2 878				floor under sink			314		
3 1				rut between rooms			928		
4 2				sink tray (stainless)			713		
5 3				floor near Y^{90} cow			185		
6 4				floor near rear storage room			91		
7 5				top side floor drain grill			98		
8 6				underside floor drain grill			1203		
9 7				inside floor drain			1072		

COLLECTED BY: E. Epstein
ANALYZED BY: J. W. Hawkins

SURVEYOR TO RETAIN LAST COPY—RETURN ALL OTHERS TO HEALTH AND SAFETY LABORATORY

GPO 959255

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Form AEC-313 (2-57)

ATOMIC ENERGY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE

INSTRUCTIONS.—Complete items 1 through 16 if this is an initial application. If application is for renewal of a license, complete only items 1 through 7 and indicate new information or changes in the program as requested in items 8 through 15. Use supplemental sheets where necessary. Item 16 must be completed on all applications. Mail two copies to: U. S. Atomic Energy Commission, P. O. Box E, Oak Ridge, Tenn. Attention: Isotopes Extension, Division of Civilian Application. Upon approval of this application, the applicant will receive an AEC Byproduct Material License. An AEC Byproduct Material License is issued in accordance with the general requirements contained in Title 10, Code of Federal Regulations, Part 30 and the licensee is subject to Title 10, Code of Federal Regulations, Part 20.

1. (a) NAME AND STREET ADDRESS OF APPLICANT. *(Institution, firm, hospital, person, etc.)*

U. S. Naval Hospital
St. Albans, New York

(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED. *(If different from 1 (a).)*

U. S. Naval Hospital
St. Albans, New York

2. DEPARTMENT TO USE BYPRODUCT MATERIAL.

Radioisotope Laboratory

3. PREVIOUS LICENSE NUMBER(S). *(If this is an application for renewal of a license, please indicate and give number.)*

31-76-4 (Amendment thereto)

4. INDIVIDUAL USER(S). *(Name and title of individual(s) who will use or directly supervise use of byproduct material. Give training and experience in items 8 and 9.)*

H. C. Dudley, CAPT MSC USN

5. RADIATION PROTECTION OFFICER *(Name of person designated as radiation protection officer if other than individual user. Attach resume of his training and experience as in items 8 and 9.)*

H. C. Dudley, CAPT MSC USN

6. (a) BYPRODUCT MATERIAL. *(Elements and mass number of each.)*

Sr^{90}

(b) CHEMICAL AND/OR PHYSICAL FORM AND MAXIMUM NUMBER OF MILLICURIES OF EACH CHEMICAL AND/OR PHYSICAL FORM THAT YOU WILL POSSESS AT ANY ONE TIME. *(If sealed source(s), also state name of manufacturer, model number, number of sources and maximum activity per source.)*

500 millicuries Sr^{90} as the chloride. To be divided equally into 250 millicurie units and used to produce two $Sr^{90} \rightarrow Y^{90}$ generators. The Sr^{90} once adsorbed on a resin column will remain in situ.

7. DESCRIBE PURPOSE FOR WHICH BYPRODUCT MATERIAL WILL BE USED. *(If byproduct material is for "human use," supplement A (Form AEC-313a) must be completed in lieu of this item. If byproduct material is in the form of a sealed source, include the make and model number of the storage container and/or device in which the source will be stored and/or used.)*

The Y^{90} will be selectively leached off the units leaving the Sr^{90} in situ. The apparatus, process, and quality control will be that utilized by the Abbott Laboratories, Oak Ridge, Tennessee. Their entire procedure, and apparatus will be duplicated. The experience of this company has been made available since they are ceasing production of Y90. (See attached sheet)

DUPLICATED

23936

(Continued on reverse side)

FOR DIV OF INSP.

Encl. (2)

Form AEC-313 (2/57)

TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 (Use supplemental sheets if necessary.)

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a. Principles and practices of radiation protection			Yes No	Yes No
b. Radioactivity measurement standardization and monitoring techniques and instruments	See previous application dated 2 October, 1956.		Yes No	Yes No
c. Mathematics and calculations basic to the use and measurement of radioactivity			Yes No	Yes No
d. Biological effects of radiation			Yes No	Yes No

9. EXPERIENCE WITH RADIATION. *(Actual use of radioisotopes or equivalent experience.)*

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
		See previous application for full details.		

10. RADIATION DETECTION INSTRUMENTS. *(Use supplemental sheets if necessary.)*

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm²)	USE (Monitoring, surveying, measuring)
See previous application.					

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE.

See previous application

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED. *(For film badges, specify method of calibrating and processing, or name of supplier.)*

See previous application

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) Yes No — No change since 1956.

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.

No change since 1956.

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved. See attached sheet

CERTIFICATE (This item must be completed by applicant)

16. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PART 30, AND THAT ALL INFORMATION CONTAINED HEREIN, INCLUDING ANY SUPPLEMENTS ATTACHED HERETO, IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

RECEIVED FEB 5 - 1960 U.S. Isotopes Branch Div. of L & R

U.S. Naval Hospital, St. Albans, N.Y.
Applicant named in item 1

Date 18 December 1959 By [signature]

CAPT MSC USN
Title of certifying official

Head, Radioisotope Laboratory

WARNING.—18 U. S. C., Section 1001; Act of June 25, 1948; 62 Stat. 749; makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

U. S. GOVERNMENT PRINTING OFFICE : 1957 O-F—426008

31-76-4
Amend 8

7. Resume of extraction procedure

a. Sr^{90} as the chloride is adsorbed on a Dow-X resin column.

b. By elutriation with sodium citrate solution of pH about 3.2; the daughter Y^{90} is selectively removed, leaving the Sr^{90} in situ.

c. The citrate solution is slightly acidified, carrier Y^{89} added, and readsorbed on a smaller resin column, washed carefully, and then removed by control of the acidity of the eluting solution.

d. The final product is a colorless, slightly acid solution, of Y^{90}, containing some carrier Y^{89}. The content of Sr^{90} is determined by precipitating added carrier as Sr sulfate, and then counting. The ratio found is one (1) part of Sr^{90} to 10^6 parts of Y^{90} or less. When the final product reaches 5 parts Sr^{90} per 10^6 parts Y^{90}, the material is rejected and the Y^{90} generator either discarded in toto, or the Sr^{90} recovered and a new resin column formed.

The clinical use of the Y^{90} to be generated is in no way altered or changed, either in dosage or method of administration, as shown in License No. 31-76-4, Amendment 1, dated June 10, 1957 and License No. 31-76-4, Amendment 3, dated July 18, 1957. Since Amendment 7, date, December 17, 1958, now allows 900 millicuries of Y^{90} to be on hand, there is no need to increase this upper limit, since the yield of the

two Sr^{90} - Y^{90} units will be no greater than 600 millicuries at a single run.

15. Waste Disposal

Any Y^{90} waste is set aside and allowed to decay thirty (30) days or more before disposal to sewer. (half life - 61 hours).

Any Sr^{90} waste will be collected and held for transmittal to some AEC agency or Brookhaven National Laboratories for approved disposal.

No animal studies using Sr^{90} are contemplated or nor any chemical procedures, in millicurie quantities, except the first forming of the resin column.

DEPARTMENT OF THE NAVY
BUREAU OF MEDICINE AND SURGERY
WASHINGTON 25, D. C.

IN REPLY REFER TO

BUMED-742:GCB:ces
6470/1St Albans
Serial: 5051
21 March 1960

From: Chief, Bureau of Medicine and Surgery
To: Commanding Officer, U. S. Naval Hospital, St. Albans, LI, 25, New York

Subj: Applications for license to possess byproduct material; comment concerning

Ref: (a) USNH St. Albans ltr 3-mls 6470/15041 Ser: 30 to USAEC with copy to BUMED of 8 Jan. 1960
(b) USAEC ltr LAR:IB:MB (23935/23936) of Mar 2, 1960
(c) USNH St Albans ltr 22:mls 6401 Ser 290 to USAEC via BUMED of 26 Feb 1960

1. An application to generate Yttrium 90 in an apparatus developed by Abbott Laboratories, Oak Ridge, Tenn., was forwarded to U. S. Atomic Energy Commission, Division of Licensing and Regulation, requesting approval. By reference (a), the Commanding Officer, U. S. Naval Hospital, St. Albans, forwarded a letter to the U. S. Atomic Energy Commission, answering some questions on the operation of the [redacted]

2. Reference (b) requests additional information on the operation of the apparatus, as the end product, Yttrium 90, is to be administered to patients. It is requested that the following information be submitted:

a. How the Naval Hospital, St. Albans, will determine the ratio of Strontium 90 to Yttrium 90 in the final product.
b. How the Naval Hospital, St. Albans, will calibrate and sterilize the Yttrium 90 for administration to patients.

3. The Commanding Officer, U. S. Naval Hospital, St. Albans, has also submitted an application on behalf of Dr. Ronald H. Pund, who desires to use Iridium 192. It is requested that the following information be submitted:

a. The maximum amount of Iridium 192 which the Hospital desires to obtain from E. R. Squibb & Sons, and from Dr. Ulrich Henschke of Memorial Hospital, New York City.

4. A third application, reference (c), has been received by the Bureau of Medicine and Surgery. The use of tritium in thymidine has been questioned by a medical research group at Brookhaven National Laboratory, since it is believed the tritium is incorporated into the DNA of cells, including germinal cells, and transmitted through cell division; thus, the tritium does not undergo a biological half life as might be expected but continues to cause radiation damage to the cell nucleus throughout an unspecified time. The Division of Licensing and Regulation, U. S. Atomic Energy Commission, has approved other requests for the use of tritium in thymidine, but has informally requested that the use in patients be carefully controlled. In light of present knowledge, we believe tritiated thymidine should not be used in individuals who are still capable of reproduction. Reference (c) has been forwarded to the U. S. Atomic Energy Commission, Division of Licensing and Regulation recommending approval.

P. F. DICKENS, JR.
By direction

Copy to:
U.S. AEC Div. LAR

74

U. S. NAVAL HOSPITAL

ST. ALBANS L. I., 25, N. Y.

IN REPLY REFER TO

3-mls
6470 - Y 742
Serial:
15 January 1960

From: Commanding Officer, U.S. Naval Hospital, St. Albans, NY
To: Chief, Bureau of Medicine and Surgery (Code 742)

Subj: Radioisotopes, procurement of

Ref: (a) BuMed ltr BUMED 742:GCB:dfp, 6470/1-St. Albans, Serial: 5008 dtd 11 Jan 1960
(b) USNH St. Albans ltr to AEC, Serial: 30 dtd 8 Jan 1960 (copy to BuMed Code 74)

Encl: (1) USNH St. Albans ltr Serial: 1844 dtd 18 Dec 1959
(2) AEC Forms 313 for Sr^{90}.

1. The requests contained in reference (a) have previously been complied with by reference (b).

2. All requirements of Atomic Energy Commission safety regulations have been complied with.

3. Enclosures (1) and (2) are herewith re-submitted.

H. J. CAHILLY

23936

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separates

documents.

31-76-4 Amend

DEPARTMENT OF THE NAVY
BUREAU OF MEDICINE AND SURGERY
WASHINGTON 25, D.C.

BUMED 742:GCB:dfp
6470/1-ST ALBANS
Serial: 5008
11 JAN 1960

RGP

From: Chief, Bureau of Medicine and Surgery
To Commanding Officer, U. S. Naval Hospital, St. Albans, Long Island 25, New York

Subj: Radioisotopes; procurement of

Ref: (a) SECNAVINST 4220.2 of 27 AUG 1959 - "Procurement, Control and Disposal of By-product Material (Radioisotopes)"
(b) AEC's ltr, DLR:RGF of 30 DEC 1959 to CO, USNH, St. Albans regarding violations of License No. 31-76-4

Encl: (1) CO's ltr, USNH, St. Albans, 22-drs over 6401, serial 1544 of 18 DEC 1959 to AEC via BUMED

1. Enclosure (1) requesting authorization for construction of a $Sr^{90} \rightarrow Y^{90}$ "cow" is herewith returned pending your corrective action in regard to violations of License 31-76-4 reported by the Division of Licensing and Regulation, U. S. Atomic Energy Commission by reference (b). Reference (a) promulgates policies and procedures concerning procurement and control of radioisotopes within the Naval Establishment.

2. With regard to items 1-7 of reference (b), you are requested to forward your answers to the conditions of [illegible] to reach the Division of Licensing and Regulation within 30 days of your receipt of reference (b).

3. Your request (enclosure (1)) may be resubmitted at such time as you have complied with conditions of License 31-76-4 and admendments thereto and with applicable AEC requirements as set forth in reference (b).

C. B. GALLOWAY
Assistant Chief for Research and Military Medical Specialties

Copy to:
DLR/AEC w/o encl(1)

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3ND-M459-169

U. S. NAVAL HOSPITAL
ST. ALBANS L. I., 25, N. Y.

31-76-4

IN REPLY REFER TO 0176

3-mls
6470/5041
Serial:
8 January 1960

U. S. Atomic Energy Commission
Washington 25, D. C.

Re: License 31-76-4

Gentlemen:

In reference to your letter dated 30 December 1959 relative to non-compliance with AEC standards for protection against radiation, the following statements are made. The numbers refer to approximate paragraphs of your letter:

1. Y-90 as Y_2O_3, obtained from Brookhaven National Laboratory will now be standardized, using the method just completed to monitor a $Sr^{90} \rightarrow Y^{90}$ generator.

2. The application for the use of tritium gas was an oversight in preparing the application (Lic. 31-76-4). H^3 labeled compounds are what is needed. An amendment to existing license is being prepared. Note that 0.7 millicuries H^3 were on hand while 5.0 millicuries were authorized.

3. Sr^{90} medical applicator has been regularly leak-tested here, but not by the manufacturer. The unit has now been returned to TracerLab for calibration and testing.

4. Animal carcasses have been routinely held frozen until only microcuries of activity remained, and then incinerated. In the future, carcasses will be so held but delivered to a contractor or to Brookhaven Laboratory for disposal.

5. A few individual containers had no radiation label, but were dated and labeled as to content. All were stored in a cabinet or chest on which was an approved radiation label. All units are now labeled with approved labels.

6. The major radiation hazards of this command are due to diagnostic and therapeutic x-ray units, and 425 milligrams of radium. Radiation surveys carried out periodically over the past eight years show that radioisotopes contribute no significant amount of radiation. A monthly film badge service to all exposed personnel quickly shows any significant radiation exposure. Invariably, any over-exposure is due to x-rays. These records have been maintained for eight years. Entries are made monthly. Area survey records will be maintained in the future.

7. All radioactive materials are held in storage for several months, i.e., from six to ten half lives. Only microcurie quantities of any radioisotope has ever been disposed of by way of the sewer. Records of their dumping will be made in the future.

3-mls
6470/5041
Serial:
8 January 1960

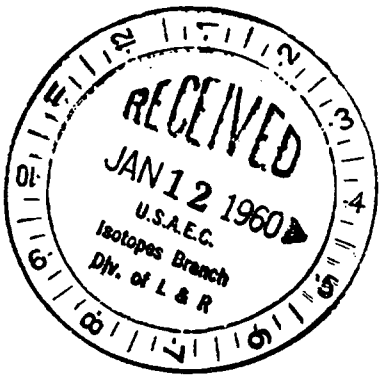
8. The Thulium 170 on hand on 2 April 1959 amounted to less than 200 millicuries. The original license for ten curies was issued to the Armed Forces Medical Development Laboratory, Fort Totten, New York. After use, the sealed Thulium-170 pellets were held here for safekeeping, awaiting disposition by the licensee, who has transferred them to Brookhaven National Laboratory.

It is believed that these series of actions will bring this activity into full compliance with AEC regulations.

Sincerely,

H. J. COKELY
Captain, MC USN
Commanding

Copy to:
BuMed Code 74



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U. S. NAVAL HOSPITAL
ST. ALBANS L. I. 25, N. Y.

IN REPLY REFER TO 0170

3-mls
6470/5041
Serial:
8 January 1960

U. S. Atomic Energy Commission
Washington 25, D. C.

Re: License 31-76-4

Gentlemen:

In reference to your letter dated 30 December 1959 relative to non-compliance with AEC standards for protection against radiation, the following statements are made. The numbers refer to approximate paragraphs of your letter:

1. Y-90 as Y_2O_3 obtained from Brookhaven National Laboratory will now be standardized, using the method just completed to monitor a $Sr^{90} \longrightarrow Y^{90}$ generator.

2. The application for the use of tritium gas was an oversight in preparing the application (Lic. 31-76-4). H^3 labeled compounds are what is needed. An amendment to existing license is being prepared. Note that 0.7 millicuries H^3 were on hand while 5.0 millicuries were authorized.

3. Sr^{90} medical applicator has been regularly leak-tested here, but not by the manufacturer. The unit has now been returned to Tracerlab for calibration and testing.

4. Animal carcasses have been routinely held frozen until only microcuries of activity remained, and then incinerated. In the future, carcasses will be so held but delivered to contractor or to Brookhaven Laboratory for disposal.

5. A few individual containers had no radiation label, but were dated and labeled as to content. All were stored in a cabinet or chest on which was an approved radiation label. All units are now labeled with approved labels.

6. The major radiation hazards of this command are due to diagnostic and therapeutic x-ray units, and 425 milligrams of radium. Radiation surveys carried out periodically over the past eight years show that radioisotopes contribute no significant amount of radiation. A monthly film badge service to all exposed personnel quickly shows any significant radiation exposure. Invariably, any over-exposure is due to x-rays. These records have been maintained for eight years. Entries are made monthly. Area survey records will be maintained in the future.

7. All radioactive materials are held in storage for several months, i.e., from six to ten half lives. Only microcuric quantities of any radioisotope has ever been disposed of by way of the sewer. Records of their dumping will be made in the future.

3-mls
6470/5041
Serial:
8 January 1960

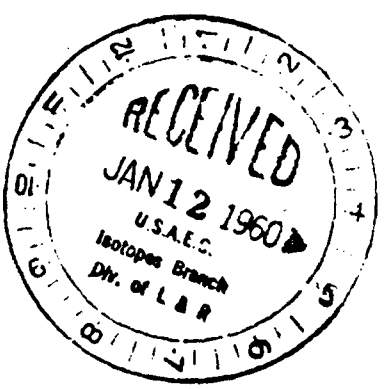
8. The Thulium 170 on hand on 2 April 1959 amounted to less than 200 millicuries. The original license for ten curies was issued to the Armed Forces Medical Development Laboratory, Fort Totten, New York. After use, the sealed Thulium-170 pellets were held here for safekeeping, awaiting disposition by the licensee, who has transferred them to Brookhaven National Laboratory.

It is believed that these series of actions will bring this activity into full compliance with AEC regulations.

Sincerely,

H. J. GORELY
Captain, MC USN
Commanding

Copy to:
BuMed Code 74



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U.S. NAVAL HOSPITAL
ST. ALBANS L.I. 25, N.Y.

22-lrc
Serial: 1844
18 December 1959

From: Commanding Officer, U.S. Naval Hospital, St. Albans, N.Y.
To: U.S. Atomic Energy Commission, Division of Licensing and Regulations, Isotope Branch, 1717 "H" Street, Washington 25, D. C.
Via: Chief, Bureau of Medicine and Surgery, Navy Dept., Att: Code 74

Subj: Radioisotopes, procurement of

Ref: (a) AEC Revised Licensing Procedures

Encl: AEC Form 313, original and two copies

1. In accordance with reference (a), enclosure (1) is forwarded herewith.

2. The request for authorization of the construction of a Sr-90 — Y90 "cow," is caused by the cessation of production of Y-90 by the Abbott Laboratories. Due to insufficient demand, pressure of other production schedules, and lack of space, Abbott will suspend their production of Y90 as of January 1960.

3. The procedures and apparatus developed by Abbott [illegible] been studied in detail by Captain H. C. Dudley, MSC, USN, [illegible] recently at Oak Ridge. By duplicating the apparatus, procedures of production, and quality control, the purity (freedom from Sr-90), sterility and non-pyrogenicity will yield a final product of Y-90, suitable for human use. (Less than five (5) parts Sr-90 per 1,000,000 parts Y-90). The Abbott procedures can be readily duplicated in the Radioisotope Laboratory of this command.

4. This request in no way modifies the Y-90 clinical procedures which have been authorized under License No. 31-76-4. Amendment Number Three, dated 18 July 1957.

5. Because of the time element and so that Y-90 will be available for clinical use by 1 February 1960, it is requested that this application be expedited.

H. J. COKELY

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STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Harold L. Price, Director, Division of Licensing and Regulation, Headquarters

DATE: NOV 3 0 1959

FROM : Robert W. Kirkman, Director
Inspection Division, NYOO

SUBJECT: TRANSMITTAL OF LICENSE COMPLIANCE INSPECTION REPORT - 10 CFR 30

SYMBOL: INS:RSC

Transmitted herewith is the following inspection report involving noncompliance:

UNITED STATES NAVY, DEPT. OF
United States Naval Hospital
St. Albans 25, New York

License No. 31-76-4 w/amend. 7

The following items of noncompliance were noted as a result of the inspection:

License Condition 13
- in that Y-90, procured from BNL for human use, was not independently assayed. (See Item 10 of report details.)

License Condition 15
- in that leak tests have not been performed and records of results maintained. (See Item 13 of report details.)

20.203 (f)(1) and (4)
- in that storage containers were not all labeled with radiation symbol, radioactive materials warning, and information as to type, amount, and date of assay of contents. (See Items 13 and 16 of report details.)

20.305
- in that carcasses of animals used for radioisotope experiments are routinely disposed by incineration without specific Commission approval. (See Item 15 of report details.)

20.401 (c)
- in that records of surveys and records of disposals by incineration and release to the sewers have not been maintained. (See Items 18 and 15 of report details.)

(continued)

NOV 3 0 1959

Harold L. Price

30.3
- in that the licensee possessed Tm-170 and H-3 as thymadine without holding a valid license authorizing such possession. (See Item 11 of report details.)

The above-mentioned items of noncompliance were brought to the attention of Captain Dudley, who expressed willingness to take such corrective action as required. It is not felt that a serious hazard exists in the items of noncompliance or that a follow-up inspection is needed. It is recommended that a letter be sent to the Commanding Officer of the Hospital for the attention of Dudley setting forth the items of noncompliance and requiring corrective action to the satisfaction of the Commission.

Enclosure:
1 cy Rpt.

cc: Div of Ins, Hq.
w/orig. of Rpt.

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NOV 30 1959

Harold L. Price, Director, Division of
Licensing and Regulation, Headquarters

Robert W. Kirkman, Director
Inspection Division, NYOO

TRANSMITTAL OF LICENSE COMPLIANCE INSPECTION REPORT - 10 CFR 30

SYMBOL: INSPRD

Transmitted herewith is the following inspection report involving noncompliance:

UNITED STATES NAVY, DEPT. OF
United States Naval Hospital
St. Albans 25, New York

License No. 31-76-4 w/amend. 7

The following items of noncompliance were noted as a result of the inspection:

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- in that leak tests have not been performed and records of results maintained. (See Item 13 of report details.)

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20.305
- in that carcasses of animals used for radioisotope experiments are routinely disposed by incineration without specific Commission approval. (See Item 15 of report details.)

20.401 (c)
- in that records of surveys and records of disposals by incineration and release to the sewers have not been maintained. (See Items 16 and 15 of report details.)

INSPECTION

CLEVELAND:eg KLEVIN KIRKMAN
11/23/59

NOV 3 0 1959

Harold L. Price

30.3
- in that the licensee possessed Tm-170 and H-3 as thymadine without holding a valid license authorizing such possession. (See Item 11 of report details.)

The above-mentioned items of noncompliance were brought to the attention of Captain Dudley, who expressed willingness to take such corrective action as required. It is not felt that a serious hazard exists in the items of noncompliance or that a follow-up inspection is needed. It is recommended that a letter be sent to the Commanding Officer of the Hospital for the attention of Dudley setting forth the items of noncompliance and requiring corrective action to the satisfaction of the Commission.

Enclosure:
1 cy Rpt.

cc: Div of Ins, Hq.
w/orig. of Rpt.

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COMPLIANCE INSPECTION REPORT

ITEM 5 (CONT'D)

License No.	Date	Exp. Date
31-76-4 amend. 7		

SCOPE: J. 35 mc of P-32 as colloidal chromic phosphate for intracavitary treatment of malignant pleural and peritoneal effusions and ascites. Interstitial treatment of tumor masses.

K. 900 mc of Y-90 as oxide and/or chloride for intracavitary treatment of malignant serous effusions. Treatment of carcinoma of the bladder. Preparation of soluble filaments and implantation of the filaments in tumors. Tissue distribution and excretion studies in terminal cancer patients. Treatment of polycythemia vera and leukemia.

L. 100 mc of K-42 as carbonate for determination of total exchangeable body potassium.

M. 10 mc of Na-24 as carbonate for determination of sodium space, circulation times, and cardiac output.

N. 10 mc of Cr-51 as chromate and/or chloride for determination of red cell mass and red cell survival times.

O. 100 mc of Ca-47 as oxide for tracer studies to determine chronic osteomyelitis, healing of fractures, and bone lesions.

P. 50 uc of Co-60 as Vitamin B-12 for diagnosis of pernicious anemia.

Q. 15 mc of As-74 as chloride for localization of brain tumors.

R. 5 mc of C-14 as carbonate for metabolism studies.

S. 5 mc of H-3 as gas for metabolism studies.

T. 5 mc of Fe-59 as chloride for diagnosis of hematologic disorders.

U. 5 mc of S-35 as sulfate for determination of body water.

V. 2 mc of Ca-45, any form, for laboratory studies in lower animals.

W. 3 mc of Hg-203 in any form for laboratory studies in lower animals.

X. 3 mc of Zn-65 in any form for laboratory studies in lower animals.

Y. 650 mc of Au-198 as colloidal for intracavitary treatment of pleural and peritoneal effusions and ascites. Liver blood flow studies.

Z. 40 mc of Sr-90 as Tracerlab Model R[illegible]A sealed medical applicator for treatment of tumors of the eyelids, conjunctive, corneal vascularization, vernal catarrh, and chronic infection of the lids and conjunctive.

CONDITIONS: #11-Compliance with Part 20. #12-The use of byproduct material in humans shall be by, or under the direct supervision of, Commander J. S. Burkle, MC, USN, or Captain C. Cartenlaub, MC, USN. Byproduct material may also be used, not in humans, by or under the direct supervision of, Captain H. C. Dudley, MSC, USN. #13-Byproduct material acquired from an Atomic Energy Commission facility shall not be used in humans until its pharmacological quality and safety have been independently established. #14-Byproduct material as sealed source shall not be opened. #15-The sealed source containing Strontium 90 shall be tested for leakage and contamination at intervals of not more than six (6) months and records of test results shall be maintained by the licensee. The leak test shall be performed by Captain H. C. Dudley. #16-Total amount of Hydrogen 3 (tritium) acquired under this license shall not exceed 100 mc.

ITEM 6 (CONT'D)

License Condition 15
- in that leak tests have not been performed and records of results maintained. (See Item 13 of report details.)

20.203 (f)(3) and (4)
- in that storage containers were not all labeled with radiation symbol, radioactive materials warning, and information as to type, amount, and date of assay of contents. (See Items 14 and 16 of report details.)

20.305
- in that carcasses of animals used for radioisotope experiments are routinely disposed by incineration without specific Commission approval. (See Item 15 of report details.)

20.401 (c)
- in that records of surveys and records of disposal by incineration and release to the sewers have not been maintained. (See Items 18 and 15 of report details.)

30.3
- in that the licensee possessed Tm-170 and H-3 as thymidine without holding a valid license authorizing such possession. (See Item 11 of report details.)

PART 30 INSPECTION

UNITED STATES NAVY, DEPT. OF
United States Naval Hospital
St. Albans 25, New York

Dates of Inspection: April 2, 1959 (L.R. Adams) and September 14, 1959 (R.C. Cleveland) Both announced.

Persons Accompanying Inspector:

None.

Persons Contacted (April 2, 1959):

Captain J. S. Dudley, PhD, MSC, USN

Persons Contacted (September 14, 1959):

Captain J. S. Dudley, PhD, MSC, USN
Commander J. S. Burkle, Clinical Head, Radioisotope Lab.
Charles L. Bransford, Hospitalman First Class, USN, Senior Technician

DETAILS

9. Organization and Administration:

The St. Albans Naval Hospital uses byproduct materials in a number of diagnostic and therapeutic medical applications and in research studies. Materials are used in the Hospital's Radioisotope Laboratory. Commander J. S. Burkle, M.D. is the Clinical Head of this Laboratory, while Captain Dudley is the Technical Director of the Laboratory. These two officers are the principal users of byproduct materials at the Hospital. They are assisted in this work by six enlisted Navy personnel. C. L. Bransford is the laboratory's Senior Technician, and he acts in a direct supervisory capacity over the actual handling of the radioactive materials in preparing doses. Captain C. Gartenlaub, MD, MC, USN, the Hospital's Chief of Radiology, occasionally uses byproduct material for patient treatment under the direction of Commander Burkle. Captain George Stocker, Assistant Chief of Radiology, also occasionally works with Gartenlaub in using byproduct materials.

Each use of byproduct material for therapy must first be thoroughly reviewed and approved by either the Hospital's Tumor Board or the Head and Neck Board. After this, the therapy treatment must also be reviewed and approved by the Hospital's Radioisotope Committee. The Radioisotope Committee is composed of the Chiefs of Radiology, Surgery, and Laboratories, plus the Technical and Clinical Heads of the Radioisotope Laboratory. The personnel presently holding these positions are, respectively, Captain Gartenlaub, Captain Timmes, Captain Sarkisian, Commander Burkle, and Captain Dudley.

Work with X-ray units and radium sources is separate from that involving byproduct materials, and the two radiologists mentioned above who occasionally use byproduct materials are the only personnel reported to participate in both activities. Dudley acts as RSO for the work with licensed materials in the Radioisotope Laboratory and is responsible for placing orders and ensuring that license limits are not exceeded. Burkle and Dudley have had a number of years experience in working with radioactive materials and other radiation sources. Bransford has had about seven years full-time on-the-job experience in isotope work. He took courses and later taught at the Naval Hospital in Bethesda on uses of radioisotopes and radiation safety. All of the Radioisotope Laboratory technicians were reported to have taken an eight months training course at the Bethesda Naval Hospital.

10. Facilities and Uses of Byproduct Material

Facilities of the Radioisotope Laboratory at the St. Albans Hospital include several rooms used for administration of diagnostic doses and performance of up-take studies, plus a combined counting room and hot laboratory, which is equipped with isotope handling fume hoods and a shielded storage closet. Remote handling tongs, plastic shielding for strong beta emitters, lead shielding, absorbent paper, and spill-catch trays were noted to be available and reported to be routinely used in handling procedures in the hot laboratory.

Materials on hand at the time of the 9/14/59 inspection visit included 165 uc I-131 as triolein, 5 uc I-131 as diodrast, 5 mc I-131 as RISA, 8.3 mc Au-198, 250 uc Cr-51, 9.5 uc Co-60 as Vitamin B12, 720 uc H-3 as thymadine, 5 mc I-131 as iodide, and 40 mc Sr-90 in an eye applicator. In 1958, radioisotope diagnosis was reportedly performed on 3,192 patients, with 52 patients receiving therapeutic doses of byproduct materials. Current usage was described as involving about 250 diagnostic studies and one therapeutic application per month. Animal studies were also performed involving several dozen rabbits and dogs during the past year. The animal work has been performed by Commander Burkle and has mainly involved studies with I-90 and Au-198. Most of the animal work was conducted with a maximum of 10 uc I-90 or Au-198 given per animal. One experiment was reported to have involved application of 10 mc Au-198 per week for 14 weeks to a dog.

Iodine-131 as iodide has been routinely procured at a rate of 5 mc per week for the diagnostic studies. Therapy doses are procured individually as needed. IHSA is used less frequently. Iodine-131 as rose bengal has been used at a rate of about 5 mc per year, with none currently in use. Iodine-131 as triolein and/or oleic acid is procured and used at the rate of two shipments of 2 mc each per month. Iodine-131 as diodrast has been used occasionally, with only four shipments of one to two mc, each having been procured. Occasional use is also made of I-131 as miokon. P-32 as a soluble phosphate has been procured and used at the rate of five shipments of 10 mc each in the past two years. Y-90 is being procured and used at the rate of 100 mc per two weeks. Only one shipment of about 100 mc K-42 has been procured and used in 1959. Na-24 has been procured and used to the extent of three shipments of 3 to 7 mc each in

the past two years. Nine shipments of 2 to 5 mc each of Cr-51 have been procured and used in the past two years. Four shipments of 10 uc each of Co-60 as Vitamin B12 have been procured and used in the past two years. Two shipments of 250 uc each of H-3 as a gas have been procured and used in the past two years. Five shipments of 250 uc each of Fe-59 have been obtained and used in the past two years. Occasional shipments no more than a few hundred millicuries Au-198 have been obtained and used.

No uses are being made of I-131 as Urokon, I-131 as triiodothyronine, P-32 as colloidal chromic phosphate, Ga-72, As-74, [illegible]4, S-35, Ca-45, Hg-203, or Zn-65. All uses were confirmed to be as specified in Item 9 of amendment 7 of the license.

The major amounts handled were noted to be of Y-90, I-131, P-32, and Au-198. Patient therapy with I-131 was reported to amount to a maximum of 8 mc per patient; P-32, 5 mc per patient; and Au-198, 50 mc per patient. Considerable work is being done with Y-90 in several treatment applications. A maximum of 30 mc Y-90 per patient has been administered intraperitoneally as a substitute for similar use of Au-198. About four patients per year have been treated this way. A maximum of 20 mc per patient Y-90 has also been administered intravenously to treat blood conditions in place of P-32. Y-90 as an oxide has been obtained from BNL about six times per year in amounts of 100 mc each. This material has been made into tissue soluble filaments for tumor therapy. About 15 mc has been implanted per patient in these filaments. This is the only material which has not been obtained from Abbott or Squibb. Dudley reported that the yttrium oxide was checked by BNL for assay, but that no independent assays of the material had been performed. Dudley further reported that arrangements were being made to obtain this material from Squibb in the future in a pre-assayed form.

11. Thulium Radiography Sources

At the time of the 4/2/59 inspection visit, it was noted that some Tm-170 radiography sources were in storage at the Hospital in a room located behind the million-volt X-ray facility. The sources were stored in a heavy metal cask within a wooden shipping box. The only label on the shipping box was an AEC label which indicated the activity of the sources to be 10 curies. A shipping notice within the shipping box indicated that the sources were shipped from BNL to St. Albans Hospital, attention of Dr. Dudley, on [illegible]/21/55.

Dudley said that the cask contained six Tm-170 sources and that this material was being stored for the Army installation at Ft. Totten in Queens according to special arrangement between the Army and Dudley. Dudley stated during this visit that he was merely storing the material for the Army and that he expected the Army to attend to its disposal shortly. Dudley said that this material was procured under a license issued to the Army naming Dudley as responsible user, but that he thought that this license had since expired. It was noted that License 31-76-1 which was issued to St. Albans Hospital on 3/16/56 and which expired on 3/31/58, authorized the Hospital to receive, store and load six Tm-170 sources of 20 curies each into specially designed lead shields for use as portable field X-ray units for re-distribution to other AEC licensed Armed Forces installations".

Dudley stated during this first visit that he had recently checked the radiation level on the outside of the cask and found it to be about 20 mr/hr at the surface of the wooden shipping case. This radiation level was confirmed by the inspector during the first visit using a recently calibrated Nuclear Measurements Corporation Model GS-2 GM survey meter, NIOO #3582.

During the second inspection visit on 9/14/59, Dudley reported that he had arranged for transfer of these sources to BNL about 7/5/59. He stated that this transfer was made in cooperation with the U.S. Army Experimental Laboratory at Ft. Totten. St. Albans Hospital personnel and truck were used to make the transfer.

12. Instrumentation

The Naval Hospital is a disaster control center and as such, maintains an inventory of 50 survey instruments of all types. In addition, two Navy-type hand-and-foot laboratory monitors are available. All these instruments are maintained by the Navy and are calibrated and checked each six months. One or two instruments from this pool are kept on hand in the radioisotope facilities. The instruments used by the Radioisotope Laboratory personnel are equipped with end window GM probes and have ranges from 0 - .5 mr/hr up to 0 - 500 mr/hr.

13. Radiological Safety Precautions and Procedures

All technicians handling radioisotopes have received formal instruction in handling techniques and safety precautions. Additional instructions for specific operations have been issued as considered appropriate. No written general safety procedures have been drawn up.

Rubber gloves and lab coats are routinely worn during preparation and administration of doses. Meter surveys are performed for all handling operations with therapeutic doses. These surveys were described to be of an informal nature, and no records are maintained of the measurements. Isotope handling operations at the Hospital have been evaluated as involving little hazard, but no records have been maintained of these evaluations. Dudley was aware of the very high dose rates associated with unshielded millicurie amounts of Y-90. His described handling techniques indicated that he relied on an arm separation of only about one foot between his hands and the open-topped beaker in which up to 100 mc of Y-90 would be incorporated into filaments. Dudley stated that he had also monitored his hands occasionally with wrist film badges, but specific records of these evaluations were not available.

Dudley reported no major spills to have occurred and that minor spills were cleaned up with no difficulty. Sheets and other bed clothing of patients being treated with Au-198, and Y-90 are monitored before laundering. If contamination is found, the sheets are stored in the hot laboratory storage area for at least six half-lives before being sent to the laundry.

The 40 mc Sr-90 eye applicator was stored in a cabinet in one of the treatment rooms in the radioisotope laboratory. The applicator was obtained from Tracerlab in 1958. Neither the applicator's storage box nor the applicator itself had a label bearing a standard radiation symbol or information as to type, amount or date of assay. Both the applicator and its storage box bore labels saying "Caution - Radioactivity". Dudley stated that the eye applicator had not been leak tested for about three years and that it had not been used during 1958, although it was used on one or two occasions early in 1959. During the 4/2/59 inspection visit, the recess in the storage case which accepts the Sr-90 capsule was surveyed for contamination using an end-window GM survey meter, but no contamination was observed. During the 9/14/59 visit, Dudley reported no new leak tests to have been performed or uses made of the unit.

14. Storage and Security

Byproduct material was noted to be stored in a refrigerator in the administration room, on shelves in a closet off the administration room, and in the hot lab, with all these areas located within the Radioisotope Laboratory. Entrances to these storage areas were reported to be kept locked when the department personnel were not present and supervising the areas.

15. Waste Disposal

Radioactive wastes are routinely disposed of by storage for decay. Residual activities in original shipping containers are routinely stored for about six months. Low level solutions are eventually released in soluble form to the sanitary sewerage system. Drain disposals were reported by Dudley to have never exceeded a total of one mc in any one day. Carcasses of animals used in tracer experiments are disposed of by burning in the Hospital's incinerator. No more than a few microcuries are reportedly involved in such disposals. The carcass of a dog which had received 10 mc Au-198 per week for 14 weeks was disposed of by burial.

16. Posting and Labeling

As noted previously in Item 13 of report details, the Sr-90 eye applicator and its storage container were not labeled as required by Part 20. A bottle containing 300 uc Au-198 and stored in the refrigerator in the dose administration room was noted to lack a label reading "Caution - Radioactive Materials" and displaying a standard symbol, although information was included in the container's label as to type, amount and date of assay of the contents. Several other containers were also noted to lack labels which fully complied with the Regulations of Part 20, although most containers noted were observed to be properly labeled. Areas of use and storage were noted to be properly posted with radioactive materials caution signs.

17. Personnel Monitoring

Personnel monitoring is accomplished by use of film badges which the Naval Hospital supplies and processes itself. The Naval Hospital obtains dental-type film from Dupont and provides a personnel monitoring service for Naval facilities and fleet units operating in the Atlantic coastal area. The Hospital processes its own films and uses calibration charts supplied by the manufacturer. Films are developed under standardized conditions along with control badges. One chest badge and one wrist badge are supplied to each radioisotope worker. Exposure records showed a maximum of a few hundred mr/month to the badges for the past several years.

18. Records

Detailed records are maintained of procurements, inventories, and uses. Records are also maintained of film badge results. No records were available for surveys, leak test results, or any disposals other than for the burial of one experimental animal.

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documents.

Form AEC-417
(4-58)

UNITED STATES ATOMIC ENERGY COMMISSION

COMPLIANCE INSPECTION REPORT

1. Name and address of licensee	2. Date of inspection
UNITED STATES NAVY, DEPT. OF United States Naval Hospital St. Albans 25, New York	April 2, 1959 (L.R. Adams) and Sept. 14, 1959 (R.S. Cleveland)
	3. Type of inspection Initial
	4. 10 CFR Part(s) applicable 20 - 30

5. License number(s), issue and expiration dates, scope and conditions (including amendments)

License No.	Date	Exp. Date
31-76-4 amend. 7	12/17/58	12/31/60

30CFR: A. 315 mc of I-131 as iodide for diagnosis of thyroid function. Treatment of hyperthyroidism, cardiac conditions, and thyroid carcinoma.
B. 20 mc of I131 as iodinated human serum albumin for determination of blood volumes and plasma volumes. Circulation rate studies. Localization of brain tumors and liver tumors.
C. 5 mc of I-131 as rose bengal for liver function studies.
D. 2 mc of I-131 as triolein and/or oleic acid for fat-metabolism studies.
E. 2 mc of I-131 as urokon for kidney function studies.
F. 2 mc of I-131 as diodrast for kidney function studies.
G. 10 mc of I-131 as sodium for laboratory studies in lower animals.
H. 1 mc of I-131 as triiodothyronine for in vitro studies of thyroid function.
I. 350 mc of P-32 as soluble phosphate for treatment of polycythemia vera, leukemia, and carcinoma of the bladder. Localization of eye tumors.

(CONT'D)

6. Inspection findings (and items of noncompliance)

The Radioisotope Laboratory of this Hospital uses byproduct material in diagnostic and therapeutic medicine. Commander J. S. Burtle is the Clinical Head of the Radioisotope Laboratory, while Captain H. C. Dudley is the Technical Head. Dudley acts as RSO. All radioisotope therapies must be reviewed and approved by either the Hospital's Tumor Board or the Head and Neck Board, as well as by a five-member Radioisotope Committee. About ten personnel are associated with use of the licensed materials. Separate facilities are employed for handling and storage of radioisotopes. Numerous survey instruments are available. Safety instructions are given orally as appropriate; no written procedures have been formulated. Surveys of handling operations are conducted, but records have not been kept of measurements and evaluations. Film badges supplied and processed by the licensee are employed and results recorded. Procurements are controlled by Dudley. Wastes are disposed by storage for decay, release to the sewers, incineration, and burial. Areas were posted. Containers were labeled, though not all as required by Part 20. Records were also maintained of receipts and uses. Leak tests were not conducted. The only items of noncompliance observed or noted during the inspection are as set out below:

License Condition 13
- in that I-90, procured from NRL for human use, was not independently assayed. (See Item 10 of report details.)

(CONT'D)

7. Date of last previous inspection	8. Is "Company Confidential" information contained in this report? Yes ☐ No ☒ (Specify page(s) and paragraph(s))
None.	

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Richard S. Cleveland
(Inspector)

Approved by: Robert H. Kirkman
New York
(Operations office)

November 24, 1959
(Date report prepared)

If additional space is required for any numbered item above, the continuation may be extended to the reverse of this form using foot to head format, leaving sufficient margin at top for binding, identifying each item by number and noting "Continued" on the face of form under appropriate item.

16—78816-2 U. S. GOVERNMENT PRINTING OFFICE

RECOMMENDATIONS SHOULD BE SET FORTH IN A SEPARATE COVERING MEMORANDUM

ITEM 5 (CONT'D)

License No.	Date	Exp. Date

31-76-4
amend. 7

SCOPE: J. 35 mc of P-32 as colloidal chromic phosphate for intracavitary treatment of malignant pleural and peritoneal effusions and ascites. Interstitial treatment of tumor masses.

K. 900 mc of Y-90 as oxide and/or chloride for intracavitary treatment of malignant serous effusions. Treatment of carcinoma of the bladder. Preparation of soluble filaments and implantation of the filaments in tumors. Tissue distribution and excretion studies on terminal cancer patients. Treatment of polycythemia vera and leukemia.

L. 100 mc of K-42 as carbonate for determination of total exchangeable body potassium.

M. 10 mc of Na-24 as carbonate for determination of sodium space, circulation times, and cardiac output.

N. 10 mc of Cr-51 as chromate and/or chloride for determination of red cell mass and red cell survival times.

O. 100 mc of Ga-72 as oxide for tracer studies to determine chronic osteomyelitis, healing of fractures, and bone lesions.

P. 50 uc of Co-60 as Vitamin B-12 for diagnosis of pernicious anemia.

Q. 15 mc of As-74 as chloride for localization of brain tumors.

R. 5 mc of C-14 as carbonate for metabolism studies.

S. 5 mc of H-3 as gas for metabolism studies.

T. 5 mc of Fe-59 as chloride for diagnosis of hematologic disorders.

U. 5 mc of S-35 as sulfate for determination of body water.

V. 2 mc of Ca-45,any form, for laboratory studies in lower animals.

W. 3 mc of Hg-203 in any form for laboratory studies in lower animals.

X. 3 mc of Zn-65 in any form for laboratory studies in lower animals.

Y. 850 mc of Au-198 as colloidal for intracavitary treatment of pleural and peritoneal effusions and ascites. Liver blood flow studies.

Z. 40 mc of Sr-90 as Tracerlab Model RA-1A sealed medical applicator for treatment of tumors of the eyelids, conjunctive, corneal vascularization, vernal catarrh, and chronic infection of the lids and conjunctive.

CONDITIONS: #11-Compliance with Part 20. #12-The use of byproduct material in humans shall be by, or under the direct supervision of, Commander J. S. Burkle, MC, USN, or Captain C. Castenlaub, MC, USN. Byproduct material may also be used, not in humans, by or under the direct supervision of, Captain H. C. Dudley, MC, USN. #13-Byproduct material acquired from an Atomic Energy Commission facility shall not be used in humans until its pharmaceutical quality and assay have been independently established. #14-Byproduct material as sealed sources shall not be opened. #15-The sealed source containing Strontium 90 shall be tested for leakage and contamination at intervals of not more than six (6) months and records of test results shall be maintained by the licensee. The leak test shall be performed by Captain H. C. Dudley. #16-Total amount of Hydrogen 3 (tritium) acquired under this license shall not exceed 100 mc.

ITEM 6 (CONT'D)

License Condition 15
- in that leak tests have not been performed and records of results maintained. (See Item 13 of report details.)

20.203 (f)(1) and (4)
- in that storage containers were not all labeled with radiation symbol, radioactive materials warning, and information as to type, amount, and date of assay of contents. (See Items 13 and 16 of report details.)

20.305
- in that carcasses of animals used for radioisotope experiments are routinely disposed by incineration without specific Commission approval. (See Item 15 of report details.)

20.401 (c)
- in that records of surveys and records of disposals by incineration and release to the sewers have not been maintained. (See Items 18 and 15 of report details.)

30.3
- in that the licensee possessed Tm-170 and H-3 as thymadine without holding a valid license authorizing such possession. (See Item 11 of report details.)

PART 30 INSPECTION

UNITED STATES NAVY, DEPT. OF
United States Naval Hospital
St. Albans 25, New York

Dates of Inspection: April 2, 1959 (L.R. Adams) and September 14, 1959 (R.S. Cleveland) Both pre-announced.

Persons Accompanying Inspector:

None.

Persons Contacted (April 2, 1959):

Captain H. C. Dudley, PhD, MSC, USN

Persons Contacted (September 14, 1959):

Captain H. C. Dudley, PhD, MSC, USN
Commander J. S. Burkle, Clinical Head, Radioisotope Lab.
Charles L. Bransford, Hospitalman First Class, USN, Senior Technician

DETAILS

9. Organization and Administration

The St. Albans Naval Hospital uses byproduct materials in a number of diagnostic and therapeutic medical applications and in research studies. Materials are used in the Hospital's Radioisotope Laboratory. Commander J. S. Burkle, M.D. is the Clinical Head of this Laboratory, while Captain Dudley is the Technical Director of the Laboratory. These two officers are the principal users of byproduct materials at the Hospital. They are assisted in this work by six enlisted Navy personnel. C. L. Bransford is the laboratory's Senior Technician, and he acts in a direct supervisory capacity over the actual handling of the radioactive materials in preparing doses. Captain C. Gartenlaub, MD, MC, USN, the Hospital's Chief of Radiology, occasionally uses byproduct material for patient treatment under the direction of Commander Burkle. Captain George Stocker, Assistant Chief of Radiology, also occasionally works with Gartenlaub in using byproduct materials.

Each use of byproduct material for therapy must first be thoroughly reviewed and approved by either the Hospital's Tumor Board or the Head and Neck Board. After this, the therapy treatment must also be reviewed and approved by the Hospital's Radioisotope Committee. The Radioisotope Committee is composed of the Chiefs of Radiology, Surgery, and Laboratories, plus the Technical and Clinical Heads of the Radioisotope Laboratory. The personnel presently holding these positions are, respectively, Captain Gartenlaub, Captain Timmes, Captain Sarkisian, Commander Burkle, and Captain Dudley.

Work with X-ray units and radium sources is separate from that involving byproduct materials, and the two radiologists mentioned above who occasionally use byproduct materials are the only personnel reported to participate in both activities. Dudley acts as RSO for the work with licensed materials in the Radioisotope Laboratory and is responsible for placing orders and ensuring that license limits are not exceeded. Burkle and Dudley have had a number of years experience in working with radioactive materials and other radiation sources. Bransford has had about seven years full-time on-the-job experience in isotope work. He took courses and later taught at the Naval Hospital in Bethesda on uses of radioisotopes and radiation safety. All of the Radioisotope Laboratory technicians were reported to have taken an eight months training course at the Bethesda Naval Hospital.

10. Facilities and Uses of Byproduct Material

Facilities of the Radioisotope Laboratory at the St. Albans Hospital include several rooms used for administration of diagnostic doses and performance of up-take studies, plus a combined counting room and hot laboratory, which is equipped with isotope handling fume hoods and a shielded storage closet. Remote handling tongs, plastic shielding for strong beta emitters, lead shielding, absorbent paper, and spill-catch trays were noted to be available and reported to be routinely used in handling procedures in the hot laboratory.

Materials on hand at the time of the 9/14/59 inspection visit included 165 uc I-131 as triolein, 5 uc I-131 as diodrast, 5 mc I-131 as RISA, 8.3 mc Au-198, 250 uc Cr-51, 9.5 uc Co-60 as Vitamin B12, 720 uc H-3 as thymadine, 5 mc I-131 as iodide, and 40 mc Sr-90 in an eye applicator. In 1958, radioisotope diagnosis was reportedly performed on 3,192 patients, with 52 patients receiving therapeutic doses of byproduct materials. Current usage was described as involving about 250 diagnostic studies and one therapeutic application per month. Animal studies were also performed involving several dozen rabbits and dogs during the past year. The animal work has been performed by Commander Burkle and has mainly involved studies with Y-90 and Au-198. Most of the animal work was conducted with a maximum of 10 uc Y-90 or Au-198 given per animal. One experiment was reported to have involved application of 10 mc Au-198 per week for 14 weeks to a dog.

Iodine-131 as iodide has been routinely procured at a rate of 5 mc per week for the diagnostic studies. Therapy doses are procured individually as needed. IHSA is used less frequently. Iodine-131 as rose bengal has been used at a rate of about 5 mc per year, with none currently in use. Iodine-131 as triolein and/or oleic acid is procured and used at the rate of two shipments of 2 mc each per month. Iodine-131 as diodrast has been used occasionally, with only four shipments of one to two mc each having been procured. Occasional use is also made of I-131 as miokon. P-32 as a soluble phosphate has been procured and used at the rate of five shipments of 10 mc each in the past two years. Y-90 is being procured and used at the rate of 100 mc per two weeks. Only one shipment of about 100 mc K-42 has been procured and used in 1959. Na-24 has been procured and used to the extent of three shipments of 5 to 7 mc each in

the past two years. Nine shipments of 2 to 5 mc each of Cr-51 have been procured and used in the past two years. Four shipments of 10 uc each of Co-60 as Vitamin B_{12} have been procured and used in the past two years. Two shipments of 250 uc each of H-3 as a gas have been procured and used in the past two years. Five shipments of 250 uc each of Fe-59 have been obtained and used in the past two years. Occasional shipments no more than a few hundred millicuries Au-198 have been obtained and used.

No uses are being made of I-131 as Urokon, I-131 as triiodothyronine, P-32 as colloidal chromic phosphate, Ca-72, As-74, C-14, S-35, Ca-45, Hg-203, or Zn-65. All uses were confirmed to be as specified in Item 9 of amendment 7 of the license.

The major amounts handled were noted to be of Y-90, I-131, P-32, and Au-198. Patient therapy with I-131 was reported to amount to a maximum of 8 mc per patient; P-32, 5 mc per patient; and Au-198, 50 mc per patient. Considerable work is being done with Y-90 in several treatment applications. A maximum of 30 mc Y-90 per patient has been administered intraperitoneally as a substitute for similar use of Au-198. About four patients per year have been treated this way. A maximum of 20 mc per patient Y-90 has also been administered intravenously to treat blood conditions in place of P-32. Y-90 as an oxide has been obtained from BNL about six times per year in amounts of 100 mc each. This material has been made into tissue soluble filaments for tumor therapy. About 15 mc has been implanted per patient in these filaments. This is the only material which has not been obtained from Abbott or Squibb. Dudley reported that the yttrium oxide was checked by BNL for assay, but that no independent assays of the material had been performed. Dudley further reported that arrangements were being made to obtain this material from Squibb in the future in a pre-assayed form.

11. Thulium Radiography Sources

At the time of the 4/2/59 inspection visit, it was noted that some Tm-170 radiography sources were in storage at the Hospital in a room located behind the million-volt X-ray facility. The sources were stored in a heavy metal cask within a wooden shipping box. The only label on the shipping box was an NDC label which indicated the activity of the sources to be 10 curies. A shipping notice within the shipping box indicated that the sources were shipped from BNL to St. Albans Hospital, attention of Dr. Dudley, on 7/21/55.

Dudley said that the cask contained six Tm-170 sources and that this material was being stored for the Army installation at Ft. Totten in Queens according to special arrangement between the Army and Dudley. Dudley stated during this visit that he was merely storing the material for the Army and that he expected the Army to attend to its disposal shortly. Dudley said that this material was procured under a license issued to the Army naming Dudley as responsible user, but that he thought that this license had since expired. It was noted that License 31-76-1, which was issued to St. Albans Hospital on 3/16/56 and which expired on 3/31/58, authorized the Hospital to receive, store and load six Tm-170 sources of 20 curies each "into specially designed lead shields for use as portable field X-ray units for re-distribution to other AEC licensed Armed Forces installations".

Dudley stated during this first visit that he had recently checked the radiation level on the outside of the cask and found it to be about 20 mr/hr at the surface of the wooden shipping case. This radiation level was confirmed by the inspector during the first visit using a recently calibrated Nuclear Measurements Corporation Model GS-2 GM survey meter, NYOO #5588.

During the second inspection visit on 9/14/59, Dudley reported that he had arranged for transfer of these sources to BNL about 7/5/59. He stated that this transfer was made in cooperation with the U.S. Army Experimental Laboratory at Ft. Totten. St. Albans Hospital personnel and truck were used to make the transfer.

12. Instrumentation

The Naval Hospital is a disaster control center and, as such, maintains an inventory of 50 survey instruments of all types. In addition, two Navy-type hand-and-foot laboratory monitors are available. All these instruments are maintained by the Navy and are calibrated and checked each six months. One or two instruments from this pool are kept on hand in the radioisotope facilities. The instruments used by the Radioisotope Laboratory personnel are equipped with end window GM probes and have ranges from 0 - .5 mr/hr up to 0 - 500 mr/hr.

13. Radiological Safety Precautions and Procedures

All technicians handling radioisotopes have received formal instruction in handling techniques and safety precautions. Additional instructions for specific operations have been issued as considered appropriate. No written general safety procedures have been drawn up.

Rubber gloves and lab coats are routinely worn during preparation and administration of doses. Meter surveys are performed for all handling operations with therapeutic doses. These surveys were described to be of an informal nature, and no records are maintained of the measurements. Isotope handling operations at the Hospital have been evaluated as involving little hazard, but no records have been maintained of these evaluations. Dudley was aware of the very high dose rates associated with unshielded millicurie amounts of Y-90. His described handling techniques indicated that he relied on an air separation of only about one foot between his hands and the open-topped beaker in which up to 100 mc of Y-90 would be incorporated into filaments. Dudley stated that he had also monitored his hands occasionally with wrist film badges, but specific records of these evaluations were not available.

Dudley reported no major spills to have occurred and that minor spills were cleaned up with no difficulty. Sheets and other bed clothing of patients being treated with Au-198, and Y-90 are monitored before laundering. If contamination is found, the sheets are stored in the hot laboratory storage area for at least six half-lives before being sent to the laundry.

The 40 mc Sr-90 eye applicator was stored in a cabinet in one of the treatment rooms in the radioisotope laboratory. This applicator was obtained from Tracerlab in 1952. Neither the applicator's storage box nor the applicator itself had a label bearing a standard radiation symbol or information as to type, amount or date of assay. Both the applicator and its storage box bore labels saying "Caution - Radioactivity". Dudley stated that the eye applicator had not been leak tested for about three years and that it had not been used during 1958, although it was used on one or two occasions early in 1959. During the 4/2/59 inspection visit, the recess in the storage case which accepts the Sr-90 capsule was surveyed for contamination using an end-window GM survey meter, but no contamination was observed. During the 9/14/59 visit, Dudley reported no new leak tests to have been performed or uses made of the unit.

14. Storage and Security

Byproduct material was noted to be stored in a refrigerator in the administration room, on shelves in a closet off the administration room, and in the hot lab, with all these areas located within the Radioisotope Laboratory. Entrances to these storage areas were reported to be kept locked when the department personnel were not present and supervising the areas.

15. Waste Disposal

Radioactive wastes are routinely disposed of by storing for decay. Residual activities in original shipping containers are routinely stored for about six months. Low level solutions are eventually released in soluble form to the sanitary sewerage system. Drain disposals were reported by Dudley to have never exceeded a total of one mc in any one day. Carcasses of animals used in tracer experiments are disposed of by burning in the Hospital's incinerator. No more than a few microcuries are reportedly involved in such disposals. The carcass of a dog which had received 10 mc Au-198 per week for 14 weeks was disposed of by burial.

16. Posting and Labeling

As noted previously in Item 13 of report details, the Sr-90 eye applicator and its storage container were not labeled as required by Part 20. A bottle containing 900 uc Au-198 and stored in the refrigerator in the dose administration room was noted to lack a label saying "Caution - Radioactive Materials" and displaying a standard symbol, although information was included in the container's label as to type, amount and date of assay of the contents. Several other containers were also noted to lack labels which fully complied with the Regulations of Part 20, though most containers noted were observed to be properly labeled. Areas of use and storage were noted to be properly posted with radioactive materials caution signs.

17. Personnel Monitoring

Personnel monitoring is accomplished by use of film badges which the Naval Hospital supplies and processes itself. The Naval Hospital obtains dental-type film from Dupont and provides a personnel monitoring service for Naval facilities and fleet units operating in the Atlantic coastal area. The Hospital processes its own films and uses calibration charts supplied by the manufacturer. Films are developed under standardized conditions along with control badges. One chest badge and one wrist badge are supplied to each radioisotope worker. Exposure records showed a maximum of a few hundred mr/month to the badges for the past several years.

18. Records

Detailed records are maintained of procurements, inventories, and uses. Records are also maintained of film badge results. No records were available for surveys, leak test results, or any disposals other than for the burial of one experimental animal.

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UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

DLR:RGP

Commanding Officer
U. S. Naval Hospital
St. Albans, New York

Dear Sir:

This refers to the inspections conducted on April 2 and September 14, 1959, of your activities authorized under AEC Byproduct Material License No. 31-76-4.

It appears that certain of your activities were not conducted in full compliance with conditions of your license and the requirements of the AEC's "Standards for Protection Against Radiation," Part 20, and "Licensing of Byproduct Material," Part 30, Title 10, Code of Federal Regulations, in that:

1. The Yttrium 90 procured from Brookhaven National Laboratory was not independently assayed by the Naval Hospital prior to administering to humans. This constitutes a violation of Condition No. 13 of your license.

2. The Hospital's byproduct material inventory included approximately 720 microcuries of Hydrogen 3 as thymadine without a valid AEC license. This constitutes a violation of Section 30.3, "License requirements." Condition Nos. 78, 88 and 98 of License No. 31-76-4 authorize only the possession and use of 5 millicuries of Hydrogen 3 gas for metabolism studies.

3. The 40 millicurie Strontium 90 medical applicator was not leak tested as required by Condition No. 15 of your license.

4. Animal carcasses containing byproduct material were incinerated without specific Commission approval as required by Section 20.303, "Treatment or disposal

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by incineration." Also, no records showing the types and quantities of byproduct material disposed were kept as required by Section 20.41(a), "Records."

5. The box in which the Strontium 90 medical applicator was stored was not labeled as required by Section 20.203(f)(1) and (f)(4), "Caution signs, labels and signals." In addition, the applicator itself was not labeled as required by Section 20.203(f)(1). Also, several other containers of byproduct material stored in the radioisotope laboratory were not labeled as specified in Sections 20.203(f)(1) and (f)(4).

6. No survey records were maintained as required by Section 20.401(c), "Records of surveys, radiation monitoring and disposal."

7. No records showing the types and quantities of byproduct material released into the sanitary sewerage system were maintained as required by Section 20.401(c), "Records of surveys, radiation monitoring and disposal."

8. At the time of the inspection on April 2, 1959, the Hospital possessed approximately 10 curies of Thulium 170 without a valid AEC license, in violation of Section 30.3, "License requirements." This material was disposed of prior to the inspection on September 14, 1959.

With regard to Items 1 through 7, you are requested, pursuant to the provisions of Section 2.201(a), "Notice of violation," of the AEC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, to notify this office, within thirty days of your receipt of this notice, of the steps taken or to be instituted to achieve correction of the alleged violations and the date when such correction has been or will be achieved.

If you wish you may submit an application to amend License No. 31-76-4 authorizing you to possess and use Hydrogen 3 as thymadine and incinerate your byproduct material wastes. Forms AEC-313 are enclosed for this purpose. The information to be submitted with an application to incinerate is specified in our enclosure, "Information Required for Commission Approval of Treatment or Disposal by Incineration."

Very truly yours,

James R. Mason, Chief
Isotopes Branch
Division of Licensing
and Regulation

Enclosures:
1. 10 CFR 20
2. [illegible]
3. 10 CFR 2
4. Forms AEC-313
5. Incineration Outline

cc: Captain Paul F. Dickens, Jr. (MC)
Director, Special Weapons Defense Division
Code: 74

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documents.