APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 90-01

Docket No. 030-07517 License No. 53-00017-23

Priority 2 Code 1100

Licensee: University of Hawaii
Office of the President
Bachman Hall 202
Honolulu, Hawaii 96822

Facility Name: same

Inspection at: same

Inspection conducted: January 10 and 11, 1990

Inspectors: J. Frank Pang 2/12/90
J. Frank Pang Date Signed
Radiation Specialist

Approved by: 2/12/90
H. Dean Chaney, Acting Chief Date Signed
Nuclear Materials Safety Section

Summary:

Inspection of January 10 and 11, 1990 (Report No. 90-01)

Areas Inspected: This was a routine unannounced inspection which was conducted to examine and assess the overall effectiveness of the radiation safety program. The areas examined included: organization; internal audits; training and qualifications of personnel; radiation protection procedures; use of materials; storage of materials; facilities; instruments; receipt and transfer of materials; personnel protection, external and internal; effluent controls and waste disposal; required postings; and corrective actions to previous inspection findings. The period reviewed was from the date of the last inspection on March 16-18, 1988 to present.

Results:

Four apparent violations were identified during the inspection are summarized as follows:

A. Monthly surveys had not been conducted as required. (This is a repetitive violation) (item 8B).

B. Contaminated work surfaces had not been decontaminated as required. (This is a repetitive violation) (item 12).

C. An unauthorized individual used licensed material in a research laboratory (item 4).

D. Licensed material was not secured. (This is a repetitive violation) (item 5).

In view of the large number of principal investigators and laboratories, the radiation safety program for the University is basically a good one. However the program still has some weaknesses which must be strengthened, especially in the area of RSO oversight, to have a strong program and elimination of repetitive violations.

DETAILS

1. Persons Contacted

*Thomas J. Bauer, Radiation Safety Officer (RSO)
*Dr. Gregory Patterson, Chairman, Radiation Safety Committee (RSC)
*Roy Takekawa, Director, Environmental Health and Safety Office
*Irene Sakimoto, Radiation Safety Technician
Dr. Alan Lau, Cancer Center of Hawaii
Dr. Alton Boynton, Cancer Center of Hawaii
Mr. Joseph Szekerczes, Laboratory Research, Cancer Center of Hawaii
Dr. Larry Mondan, Radiation Safety Committee Member and Cancer Center of Hawaii
Dr. John Bertram, University of Hawaii Mansa Campus
Dr. Ian R. Gibbons, University of Hawaii Mansa Campus
Dr. Eric Rosenthal, University of Hawaii Mansa Campus

*Present at the exit conference.

2. Organization

The licensee has recently reorganized the University Radiation Safety Organization as a result of a recent NRC licensing visit. The RSO now reports directly to the RSC which in turn reports to the President of the University. Previously the RSO reported directly to the Director, Environmental Health and Safety Office (EHSO) who was also Chairman of the RSC prior to the reorganization. Administratively the RSO still works in the EHSO. Because of the reorganization, the RSC is assuming a more independent role than it had previously. The present Chairman of the RSC who is a faculty member, appears to becoming highly involved in the program. It was noted though that the RSC took a long period of time (over six months) to resolve a previous NRC inspector matter of security of licensed material. The RSC was not aware that matters involving violations must be resolved as expeditiously as possible. The Chairman of the RSC thought that the length of time was necessary for a satisfactory resolution. However the concern was voiced by the inspector that the time needed for resolution of matters relative to violations must be reasonable and not be unduly long as it appears to be in this case.

The minutes of the RSC meetings held since the last inspection in March 16-18, 1988 were reviewed. Quarterly RSC meetings were held as required.

Authorizations to use licensed material are required to be approved by the RSC and must be renewed every two years. A review of the authorizations indicated that each authorization had been made by the RSC and that the authorizations had been renewed in a timely manner.

No apparent violation was identified.

3. Audits

The RSO has been conducting semiannual audits as required. Only a few violations had been documented by the RSO in the semiannual audits conducted and documented since the last inspection. A review of the audit records and discussions with the RSO indicated that the records did not include documentation of all the deficiencies found by the RSO and of the immediate corrective actions taken. According to the RSO, the violations that he identifies during his audits are immediately corrected during the audit and are indicated as satisfactory on his audits. A question arises as to how effective are the RSO audits in view of the repetitive violations found by the inspector. This concern was voiced at the exit conference. A strong recommendation was also made that the RSO increase the frequency of audits. Several suggestions on how to achieve this were discussed.

No apparent violation was identified.

4. Training

The license requires that users have either on-the-job training or have attended a RSO training session prior to approval by the RSC for work in the program. A review of the radiological safety training records and of the training received by laboratory personnel of the laboratories visited during the inspection indicated that training was conducted in accordance with the license requirements. There is no course given to ancillary personnel in accordance with 10 CFR 19.12. According to the laboratory personnel, ancillary personnel are given a brief initial instruction prior to carrying out any tasks in the restricted areas. Compliance with 10 CFR 19.12 for ancillary personnel is delegated by the licensee to each principal investigator for his/her laboratory. While this is adequate for compliance if carried out, there are ample opportunities for non-compliance to occur.

During the inspection it was noted that a visiting researcher from Kapiolani Children's Hospital who had not been approved by the RSC, had conducted research in Biom T-709. The principle investigator who permitted the researcher to use the facilities, thought that the visiting researcher was one who had been previously approved by the RSC. The RSO, who was aware of the visiting researcher, thought that the visiting researcher was one of the approved users under the principal investigator. Since the visiting researcher had not been approved by the RSC as required by the licensee, this was identified as an apparent violation of licensee requirements.

One apparent violation was identified.

5. Storage of Materials

The licensee has a broad license which covers research activities on the Manoa campus and at various locations off campus. Kapiolani's Children Hospital, The Cancer Research Center, The Marine Research Laboratory at Kewalo Basin, and the research laboratory at the Shriner's hospital were the off campus locations visited during the inspection. It was observed

that the requirements for the security of licensed material at several laboratories were being met in part by the use of lock boxes, which are small metal boxes approximately the size of a large shoe box. Each lock box is strapped with a metal wire rope attached to a padlock. Although the boxes are locked, they are readily removable thereby defeating the purpose for which they were intended for. This is contrary to 10 CFR 20.207(a) which provides that licensed material stored in an unrestricted area must be secured from unauthorized removal from the place of storage. The use of these lock boxes was the solution arrived at by the RSC in an attempt to resolve the continuing problem of security of licensed material at the University in response to the violations issued during the last two inspections. The licensee was informed that the lock boxes must be non-removable if they were to satisfy the security requirements. The failure to properly secure licensed radioactive material is considered an apparent violation of 10 CFR 20.207(a). This is a repetitive violation from the inspections conducted on March 16-18, 1988; April 29-30, 1986; and May 23-24, 1984.

One apparent violation was identified.

6. Instruments

The licensee has a large inventory of survey instruments which are maintained and calibrated by the radiation safety group. Records of calibration were reviewed and survey instruments were observed in the laboratories visited during the inspection. The instruments appeared to have been calibrated in a timely manner. However one instrument was observed to have dead batteries and another was observed to have a loose knob. It was recommended to the licensee that the radiation safety technician check the instruments during periodic visits to each laboratory.

It was noted that the licensee uses a non-National Institute of Standards Technology (NIST) traceable chlorine 36 source to determine instrument efficiency during calibrations of count rate instruments. It was recommended to the licensee that only NIST traceable sources be used for instrument calibration.

No apparent violation was identified.

7. Receipt and Transfer of Radioactive Materials

Selected records of procurement authorizations, receipts and transfers were reviewed. The only transfer of radioactive material made was a low level waste transfer to a waste broker.

No apparent violation was identified.

8. Personnel Protection

A. Personnel Monitoring

Personnel monitoring records for the period of 1988 to present were reviewed. Both whole body and extremity doses appear to be low.

The maximum annual whole body exposure for this period is 70 millirems while the maximum annual extremity was 1940 millirems. Documentation of lost/missing film badge evaluations were marginal and the need for improvement was stressed to the licensee.

No apparent violation was identified.

B. Surveys

Monthly surveys of each laboratory were required to be performed by the license conditions prior to November, 1989. The licensee was cited during the last two inspections conducted on March 16-18, 1988 and April 29-30, 1986, for missing surveys at some laboratories. During this inspection three of the approximately 10 randomly selected laboratories visited had some missing surveys after the last inspection. However since the licensee's response to the NOV stated that the licensee would be in full compliance with regards to the surveys by September, 1988, two of the laboratories which had missing surveys during this period were not cited. The remaining laboratory at the Kewalo Marine Laboratory, KML307, did not have any records of having conducted the monthly surveys which consist of wipe surveys for removable contamination. This was identified as apparent violation of the license conditions. According to the Chairman, RSC, the laboratory had conducted the surveys as required, but had not documented the monthly wipe surveys.

One apparent violation was identified.

9. Bioassays

The use of Iodine 125 is currently the principal source of potential internal exposure under this license. Thyroid scans are conducted by the licensee to assess the degree of internal exposure. Records of thyroid scans conducted by the licensee were reviewed for the period of 1988 to present. No significant or abnormal results were noted.

No apparent violation was identified.

10. Radioactive Waste Disposal

Solid waste is held for decay and disposal or is packaged in 55 gallon drums and transferred to a waste broker for shipment to a radioactive waste burial facility such as at Richland, Washington. Only one such shipment of radioactive waste was made since the last inspection. Department of Transportation (DOT) specification 17C 55 gallon drums were purchased by the licensee for this purpose. The radioactive waste manifest for this shipment was reviewed for compliance to DOT radioactive materials shipping requirements.

Liquid wastes are disposed of into the sanitary sewer. According to the licensee's records, less than a total of 300 millicuries of liquid radioactive waste is disposed of in accordance with 10 CFR 20.303 by this route each year.

No apparent violation was identified.

11. Required Postings

Postings in accordance with 10 CFR 19.11 were found to be acceptable.

No apparent violations were identified.

12. Independent Measurements

Radiation and contamination surveys were conducted by the inspector in randomly selected laboratory areas. The non-radioactive trash containers in these areas were surveyed also. The instruments used for conducting these surveys were a Ludlum Model 3 survey instrument, NRC Serial Number 022879 calibrated on December 8, 1989; and a Xetex 305B, Serial No. 23519 calibrated on August 25, 1989. Small areas of contamination about 100 square centimeters (cm^2) each in size and approximating 260,000 disintegrations per minute (dpm) and 92,000 dpm respectively were found on the work surfaces in Room 101 Snyder Hall. A similar sized area of approximately 52,000 dpm was also found on the work surface in the hood of 204A Snyder Hall. The contamination found were on the plastic backed absorbent paper used to protect the counter/hood tops from becoming contaminated during research activities. Work involving Iodine 125 had been completed a few days earlier. The licensee's limit for removable contamination is 500 dpm/100 cm^2. The failure to decontaminate these areas is considered an apparent violation of the License Condition 21. This is a repetitive violation from the inspection of March 16-18, 1988.

One apparent violation was identified.

13. Exit Conference

The exit conference was held with the persons denoted in paragraph 1 at the conclusion of the site inspection on January 11, 1990. The inspector discussed and summarized the scope and findings of the inspection. Several of the recommendations made by the inspector for the improvement of the program as well as concerns regarding the effectiveness of RSO audits and RSC corrective actions were also discussed.