UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report No: 52-01946-08/89-03

Licensee: University of Puerto Rico
Medical Science Campus
San Juan, Puerto Rico

Docket No: 030-14810 License No: 52-01946-08

Inspection Conducted: November 7, 1989

Inspector: Robert A. Brown 1/30/90
R. A. Brown, Senior Radiation Specialist Date Signed

Approved by: C M Hosey 1/30/90
C. M. Hosey, Chief Date Signed
Nuclear Materials Safety Section
Nuclear Materials Safety and Safeguards Branch
Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This special, announced inspection of activities included a review of the circumstances surrounding a 1.820 rem exposure reported by the licensee to NRC on November 1, 1989.

Results:

The 1.820 rem exposure was recorded on a film badge for September 1989. The inspection disclosed no information which could conclusively determine the cause of the exposure in excess of NRC quarterly limits. Since the licensee does not have an NRC Form 4 for the employee in question, the exposure of 1.820 rem in the third quarter of 1989 is a violation of 10 CFR 20.101(a). Film badge readings for other Therapy Department staff were reviewed from the last NRC inspection through September 1989. No unusual readings were recorded. All badges had been turned in on time and processed promptly.

REPORT DETAILS

1. Persons Contacted

*H. Torres, Ph.D., Radiation Safety Officer (RSO)
C. Ramirez, Physicist
C. Gomez, Radiation Therapy Technologist

*Attended exit interview

2. Scope of Program

The licensee uses a Picker C8M teletherapy unit for the treatment of cancer. The Co-60 source was 7745 Ci on December 5, 1977, when it was installed. The current output is approximately 41 R/min at 80 cm SSD. Between 15 and 20 patients per day are treated on this unit, predominantly for head and neck conditions.

3. Personnel Radiation Protection

The licensee utilizes the services of a contract vendor for whole body film badges exchanged on a monthly basis. The exposure report for the period September 1, 1989 to September 30, 1989, was received by the licensee on November 1, 1989. The Radiation Safety Officer (RSO) reviewed the report upon receipt and noted that a Radiation Therapy Technologist had recorded a reading of 1820 millirem gamma exposure and 2720 millirem beta exposure. Film badge readings for other Therapy Department employees were normal.

The RSO interviewed the employee in question tc determine if any equipment malfunctions, missing film badge or other unusual events had occurred during September. No information was obtained indicating how a much higher-than-normal exposure could occur. The film badges are kept on a rack in a public hallway.

4. Notification

The licensee notified Region II of the high film badge readings within a few hours of receiving the report. The RSO stated he would follow-up with a written report within 30 days. He stated that the cobalt unit was checked, no unusual radiation levels were detected, and all systems were functioning properly. Also, the film badge vendor was contacted and requested to re-evaluate the badge.

5. On-site Evaluation

The Region II inspector arrived on-site on November 7, 1989. A review of the dosimetry report confirmed what had been telephonically reported by the RSO.

A routine inspection of this licensee was conducted by Region II in April 1989. At this time, radiation levels at various points around the head of the cobalt unit were measured and recorded. The inspector measured these points on November 7, 1989, and found the readings in close agreement to those of April 1989.

Several patient treatments were observed by the inspector. All indicator lights, door interlocks and the timer appeared to be functioning normally. Emergency procedures were posted at the console. A portable survey meter was available for use at the console.

The individual whose badge recorded the high reading was interviewed by the inspector. The only unusual event the individual could recall occurring in September was a radiation alarm light coming on while she was in the Cobalt Room. The licensee had installed many years ago a Gamma Alert radiation alarm on a table in a corner of the Cobalt Room. This was in addition to a Primalert monitor mounted as required by 10 CFR 35.615(d). The technologist stated that while she was changing the sheets on the treatment table and the patient just treated was putting his shirt on, the patient asked why the red light came on. At this point they exited the room. She stated the console was locked as it should be and immediately called the RSO. She was quite sure the light was not on when she entered the room. In discussing this event with the RSO, he stated that they had had a problem with the Gamma Alert alarming erroneously due to a loose socket. The RSO removed the Gamma Alert from service until repairs would be made. When he was initially notified of this event, he checked the source and found it to be in the shielded position. He felt the alarming of the monitor was strictly a problem with the Gamma Alert and not the Cobalt unit.

6. Maintenance

The 5-year maintenance was performed on the Cobalt unit on September 13, 1989, at which time the source drive belt was replaced and the return springs were cleaned and lubricated.

7. Conclusion

The inspector did not identify any reason not to assume that the film badge reading was the valid dose received by the worker.