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MAY 21 1985

Madison General Hospital
ATTN: Larry G. Kleinsteiber
Vice President
202 South Park Street
Madison, WI 53715

Gentlemen:

Enclosed is Amendment No. 43 renewing your NRC License No. 48-000395-02 in accordance with your request.

Please note that 10 CFR Part 35 has been revised effective October 12, 1982. This revision requires a representative of the nursing staff to be on the Medical Isotopes Committee. In view of this new requirement, you should appoint a member of your nursing staff to your Medical Isotopes Committee immediately.

Please note that several new conditions have been added to your license to reflect current licensing criteria. A telephone discussion with Dr. Edwards, Dr. DeLuca and Mr. Mullauer was held on May 16, 1985 to explain these criteria. Dr. Edwards and Dr. DeLuca consented to incorporation these conditions into your license to expedite the licensing process.

Please review the enclosed document carefully and be sure that you understand all conditions. You must conduct your program involving radioactive materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, note that you must:

1. Operate in accordance with NRC regulations 10 CFR Part 19, "Notices, Instructions and Reports to Workers; Inspections," 10 CFR Part 20, "Standards for Protection Against Radiation," and other applicable regulations.
2. Possess radioactive material only in the quantity and form indicated in your license.
3. Use radioactive material only for the purpose(s) indicated in your license.
4. Notify NRC in writing of any change in mailing address.
5. Request and obtain appropriate amendment if you plan to change ownership of your organization, change locations of radioactive material, or make any other changes in your facility or program which are contrary to your license conditions or representations made in your license application and any supplemental correspondence with NRC. Any amendment request should be accompanied by the appropriate fee specified in 10 CFR Part 170.

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6. Submit a complete renewal application with proper fee or termination request at least 30 days before the expiration date on your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of radioactive material after your license expires is a violation of NRC regulations.
7. Request termination of your license if you plan to permanently discontinue activities involving radioactive material prior to your expiration date.

You will be periodically inspected by NRC. Failure to conduct your program in accordance with NRC regulations, license conditions and representations in your license application will result in enforcement action against you in accordance with the General Policy and Procedures for NRC Enforcement Actions, 10 CFR Part 2, Appendix C.

If you have any questions or require clarification of any of the above stated information, contact us at (312) 790-5625.

Sincerely,

Original Signed By
James Mullauer
Materials Licensing Section

Enclosure(s):

1. Amendment No. 43
2. Regulatory Guide 10.8

RIII

Mullauer/cm
05/17/85



DEPARTMENT OF MEDICAL PHYSICS

1530 Medical Sciences Center
1300 University Avenue
Madison, Wisconsin 53706
Phone: 608-262-2170

May 20, 1985

Karen Andrusco
Nuclear Medicine
Madison General Hospital
202 S. Park Street
Madison, WI 53715

Dear Karen:

This letter is to inform you of the procedure used to calibrate your survey instruments. The license for the University of Wisconsin J.L. Shepherd Model 782M Dual Cesium-137 Source (U.S. NRC License Number 48-00361-18) was amended in July, 1982 to allow commercial calibration of survey meters. The protocol to be used for calibration of such instruments was submitted at that time for review and approval by the U.S. Nuclear Regulatory Commission (copy of present protocol attached).

We are also accredited by Task Group 3 of the Radiation Therapy Committee of the American Association of Physicists in Medicine as an Accredited Dosimetry Calibration Laboratory. As such, our instruments are calibrated by the National Bureau of Standards and are calibrations are secondary to the National Bureau of Standards.

Since February, 1983 we have calibrated more than 50 instruments for U.S. NRC licensees in Wisconsin, Minnesota, Illinois and Michigan, and also for at least one licensee of the State of New York. Should you have any further questions regarding our certification for this activity, please do not hesitate to call me.

Sincerely,

Steven J. Goetsch

Steven J. Goetsch, Ph.D.

Chief Physicist

UW Accredited Dosimetry Calibration
Laboratory

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MAY 22 1985

REGION III

cc: Dr. William Adam, U.S. Nuclear Regulatory Commission
Dr. Paul M. DeLuca, Jr.

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ACCREDITED DOSIMETRY CALIBRATION LABORATORY

DEPARTMENT OF MEDICAL PHYSICS

UNIVERSITY OF WISCONSIN, MADISON

1530 Medical Sciences Center
1300 University Avenue
Madison, WI 53706
(608) 262-6320

SURVEY INSTRUMENT CALIBRATION PROTOCOL

PRECALIBRATION

Prior to calibration of a survey instrument, the following checks on the operation of the instrument will be performed :

1. The instrument will be surveyed with a thin windowed Geiger-Muller counter for any external contamination.
2. The instrument will be turned on and allowed a warm up period, as specified by the manufacturer.
3. The warmed-up instrument will be placed in a radiation free location and adjusted for zero reading, as specified by the manufacturer.
4. The battery or power supply voltages will be measured and verified to be within tolerances, as specified by manufacturer.
5. High voltage and other electronic adjustments will be positioned as applicable or as specified by manufacturer.
6. Sampling time bases in digital readout instruments will be checked and verified to be within tolerances, as specified by manufacturer.

If the instrument fails in any of the above categories, the user will be notified, and no further calibration procedures will be performed until any problems have been rectified.

PRIMARY CALIBRATION

If no problems are identified during the precalibration procedure, the following calibration steps will be performed :

1. Precision check:
 - 1a. Integrating instruments: The instrument will be placed in fixed geometry with respect to a radiation source and irradiated to the same exposure three or more times. No reading should deviate from the mean by more than 10 percent.
 - 1b. Rate instruments:
 - i) The instrument will be placed in fixed geometry with respect to a radiation source and irradiated to the same exposure rate three or more times. No reading should deviate from the mean by more than 10 percent.
 - ii) The instrument will be placed in fixed geometry with respect to a radiation source and irradiated to the same exposure rate for 10 minutes. The reading at the beginning and at the end of the 10 minutes exposure should not be different by more than 10 percent.
2. Calibration:
 - 2a. Linear readout instruments will be calibrated on all scales through 1 R/hr routinely, and scales 1R/hr through 100 R/hr upon request. If the instrument has adjustments for each scale, the calibration will be performed near the midpoint of each scale, or as specified by the manufacturer. If the instrument only has one control, it will be calibrated near the midpoint of the center scale, near the midpoint of a scale of users choice, or as specified by the manufacturer. After the calibration, the instrument will be checked on each scale at approximately 20 percent and 80 percent.

(On request from the user, the calibrations were made on two points separated by 1/3 full scale.) If the instrument is calibrated only on some scales, it will be labelled as such.
 - 2b. Logarithmic readout instruments will be calibrated at the midpoint of each decade, or as specified by the manufacturer. After the calibration, the instrument will be checked at at least one point near the midpoint of each scale.
 - 2c. Digital readout instruments with manual scaling will be calibrated as in 2a, and those with automatic scaling as in 2b.
3. Instruments will be calibrated routinely in a Cs-137 field. For higher range scales, calibration will be performed in a Co-60 beam. Upon request, calibration for orthovoltage, and/or diagnostic radiation energies will be performed.
4. The source will be calibrated at six months intervals using an ionization chamber and an electrometer, each with calibration traceable to NBS.
5. The survey instrument will be positioned in the exact same geometry as the ionization chamber in 4. This will be assured by using mechanical jigs and optical or electrical alignment instruments. The field across the sensitive volume of the survey instrument will be uniform in intensity to within + 5 percent.

7. The source function will be checked at least once every day, prior to the calibration of any survey instruments.
8. The exposure rate will be varied by changing the source and/or the distance between the source and the survey meter.
9. A record of the calibration will be maintained for at least 2 years containing the date, precalibration check data, calibration source, distance, exposure rate, exposure and exposure time for integrating instruments, instrument reading, and person performing the calibration.
9. For any instrument which fails to respond correctly to the calibration exposure to within ± 20 percent, the user will be contacted, and the instrument returned for repair. A report describing the instrument response, and explaining that calibration cannot be performed before repair, will be sent with the instrument.
10. The instrument will be labelled with date of calibration, initials of person performing the calibration, accuracy of response and correction factor if the accuracy of the instrument falls between ± 10 percent and ± 20 percent energy correction factors if required, response to an identified check source, special use conditions or limitations, and date primary calibration is again required.
1. The instrument will be returned to the user packed in the same box as received unless it would provide insufficient protection for the instrument. The box will be marked "FRAGILE", and it will be sent by Air Freight, by UPS, or as specified by the user. Sealed chambers will be marked "IF BY AIR, KEEP IN PRESSURIZED CABIN".
2. A preliminary report and a letter describing the proper use of the calibration data, will be returned with the instrument, and a final report will be sent within two weeks of calibration. The report will include user name and address, instrument manufacturer, type, model number, and serial number, calibrated scales, exposure rate, exposure and exposure duration for integrating instruments, instrument reading, instrument correction factors, energy correction factor (if applicable), response to an identified check source, calibration source type and activity, calibration accuracy, comments, name of person calibrating instruments, date of calibration and date primary calibration is again required. The appendix shows a copy of the calibration report form. The report may be modified in the future to add useful information.

UW DOSIMETRY CALIBRATION LABORATORYDEPARTMENT OF MEDICAL PHYSICSUNIVERSITY OF WISCONSIN

1530 Medical Sciences Center
1300 University Avenue
Madison, WI 53706
(608) 262-0378

CERTIFICATE OF INSTRUMENT CALIBRATION

for
EXPOSURE RATE METER

Customer: Instrument mfr. : Victoreen
Customer Name : Ion Chamber
Company Name : Model No. : 440
Company Address : Serial No. : _____
City, State Zip Code

Calibration source: Radiation Nuclide : Cs-137
Activity : 1.3/130 Ci
Calibration Accuracy : +/- 10%

Scale	Exposure rate (mR/hr)	Instrument reading (mR/hr)	Calibration factor	Exposure rate (mR/hr)	Instrument reading (mR/hr)	Calibration factor
0-300	150	150	1.00	60	60	1.00
0-300	240	245	0.98			
0-100	50	50	1.00	20	20	1.00
0-100	80	81	0.99			
0-30	15	15	1.00	5	4.8	1.04
0-30	25	25	1.00			
0-10	5.0	5.0	1.00	2.0	1.9	1.05
0-10	8.0	8.0	1.00			
0-3	1.5	1.55	0.97	2.5	2.5	1.00

Comments : The Calibration Factor is a multiplicative correction factor.

Data Book: UW ADCL 2

Pages: 49-50

Calibration Date: March 8, 1984

Report Date: March 8, 1984

Calibrated by : _____ S.J. Goetsch, Ph.D.