



North Kansas City Memorial Hospital

2800 Hospital Drive • North Kansas City, Mo. 64116 • (816) 221-1600

April 24, 1985

Mr. George M. McCann
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Dear Mr. McCann:

Please amend our NRC Materials License #24 18628 01 to include the use of Americium-241 sealed source for the use of motion correction tracking utilized during gated heart studies. Enclosed is the list of itemized information.

Your consideration in this matter will be greatly appreciated.

Sincerely,

D.L. Haymons
President

Fee waived

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REG LIC30
24-18628-01 PDR

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Date	5/6/85
Loc	May 9, 1985
By	[Signature]
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CONTROL NO. 78824



North Kansas City Memorial Hospital

2800 Hospital Drive, North Kansas City, Missouri 64116-3281 ■ (816) 221-1600

APPENDIX A

1. Source used and possession limit
241-Americium/15 millicuries
2. Type of unit
Sealed source will be used in conjunction with a Siemens portable LEM gamma camera.
3. Physicians as authorized users
Walter G. Dukstein, M.D.
William E. White, M.D.
4. Training
Training will be received by the applications specialist as to proper procedure for utilization by all personnel.
5. The sealed source will be stored in the Hot lab behind lead bricks and in a shielded container.
6. The source will be inventoried quarterly and wipe tested semi-annually. The wipe test will be counted in a Picker Spectroscaler 4 well counter. The documentation of its sensitivity shows capability of counting activities less than .005 microcuries.
7. Further information on attached page. (optional)

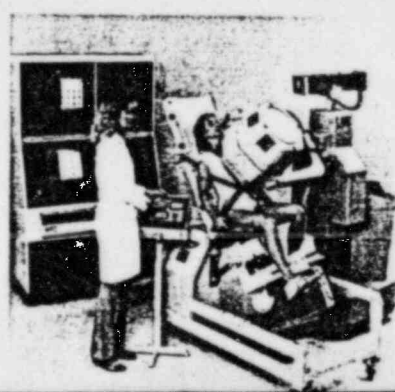
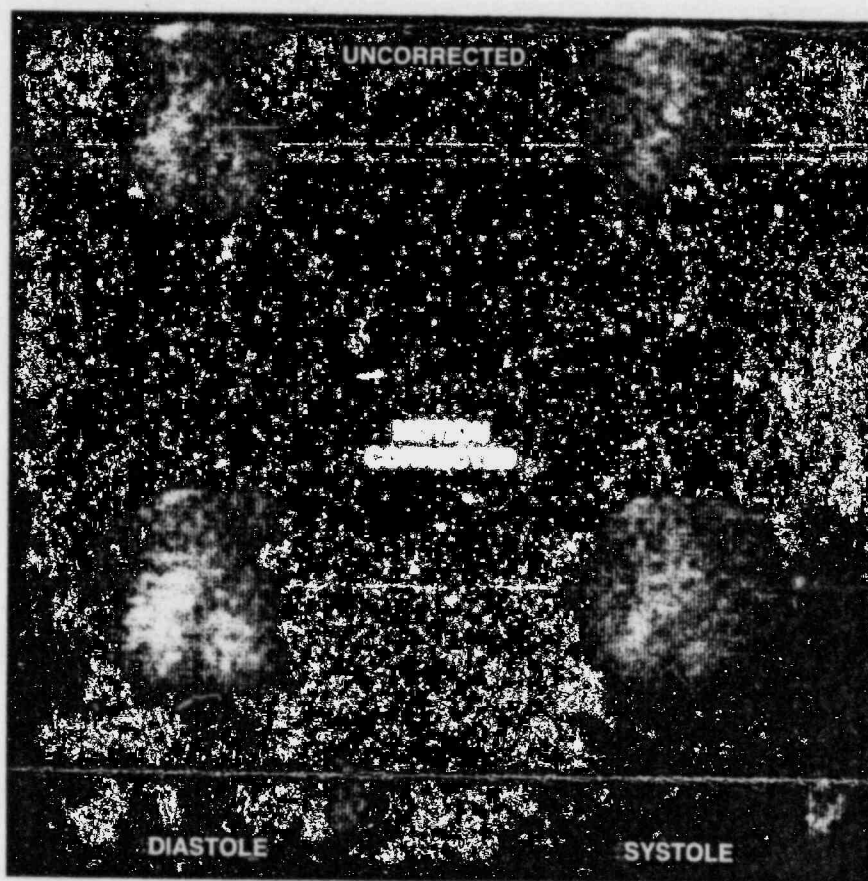
SIEMENS

Centroid Source Motion Corrector

The Centroid Source Motion Corrector maximizes nuclear image quality in cardiac stress studies. Available with Siemens ZLC gamma camera series and Low Energy Mobile (LEM) camera system, the Centroid Source Motion Corrector accessory eliminates the effects of patient motion on image quality. Blurring caused by vigorous patient exercise on stress tables, treadmills, or bicycles can be removed. Cardiac images will exhibit high resolution, enhancing the accuracy of the study.

Design and function

The technology behind Siemens Centroid Source Motion Corrector is unique. Patient motion is compensated for by using a ^{241}Am centroid source, available from Siemens, and correction circuitry. The centroid source, attached to the patient's chest in the field of view, acts as a reference point and is tracked along with all of the gamma ray events entering the detector crystal. Any movement occurring in the X and Y direction is corrected by the centroid tracking without distorting heart motion. Image integrity is therefore maintained without blur.



SPECIFICATIONS

Reference Source

Centroid Source	²⁴¹ Americium – 12 mci ($\pm 15\%$) in an encapsulated holder with a 2 mm exit aperture. ²⁴¹ Americium half-life of 458 years. ²⁴¹ Americium 60 keV energy.
Count Rate	10K – 18K per second.

Correction Circuitry

Maximum Correctable Motion*	Motion velocities ≤ 5 cm/sec.
Maximum Linear Excursion Correction	Dependent on field of view
Noise Equivalent Blur	Less than 0.5 mm.

*CAUTION: Use of this device when no motion is present will result in a slight loss of resolution. When this device is used in the presence of motion, 98% of the motion blur at rates under 2 cm/sec will be eliminated. This device will not correct for motion in the Z direction.

Collimator	This device will correct independently of the collimator as long as the centroid source rate is ≥ 10 K per sec in the detector field of view.
Dead Time Loss	The centroid source activity may increase the dead time dependent on total incident count rate. Refer to NEMA specifications on your camera mode.

Operation Requirements

1. Centroid source of ²⁴¹ Americium must be attached to patient with exit aperture in the field of view.
2. Count rate of centroid source must be 10K – 18K per sec.
3. Centroid source and organ must remain in field of view at all times.

Configurations

System	Model Number
ZLC 370/750 DOT	820-824381 – Dual Isotope Motion Correction Circuit 035-42300C – Centroid Source
ZLC 370 S/750 S	035-423007 – Dual Isotope Motion Correction Circuit 035-42300C – Centroid Source
LEM	035-423004 – Dual Isotope Motion Correction Circuit 035-42300C – Centroid Source