

# SIEMENS

## Positively Clinical PET

All the testimony suggests that the positive clinical advantages offered by Positron Emission Tomography are second to none. When combined with Siemens experience servicing the world's largest installed PET base, the same positive clinical advantages can be yours.

Providing you with unequalled patient throughput, Siemens is your partner in PET from beginning to end. The positive clinical advantage is gained with:

- ◆ Complete and flexible product line able to meet any institution's research and clinical demands
- ◆ Retractable septa for 3-D acquisition and increased sensitivity
- ◆ High speed reconstruction processing with Advanced Computational System (ACS)
- ◆ SUN® SPARCstation with software tools for qualitative and quantitative analysis
- ◆ Superior image quality with less than 5 mm equal resolution in all 3 dimensions
- ◆ High patient throughput resulting from system's ease-of-use

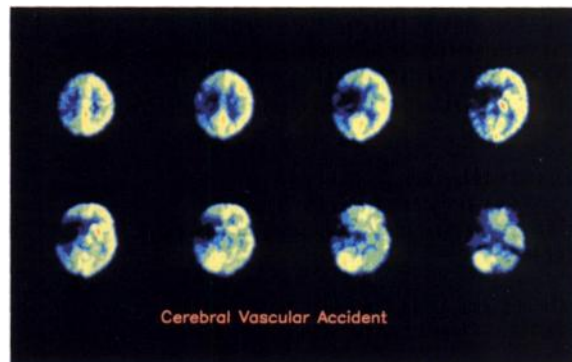
For positive clinical advantages in PET Neurology, Cardiology and Oncology — look for Siemens from beginning to end.



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**technology in caring hands**

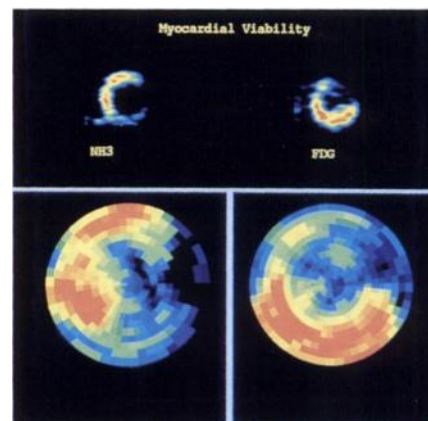
### NEUROLOGY



*"PET has the ability to measure biochemical responses to disease in the brain prior to gross changes in anatomy and, in some cases, prior to symptom onset resulting in early diagnosis and improved patient management!"*

**John C. Mazziotta, M.D., Ph.D.**  
President of Institute for Clinical PET (ICP)  
Vice-Chairman of Neurology  
Professor of Neurology and Radiology  
UCLA School of Medicine

### CARDIOLOGY

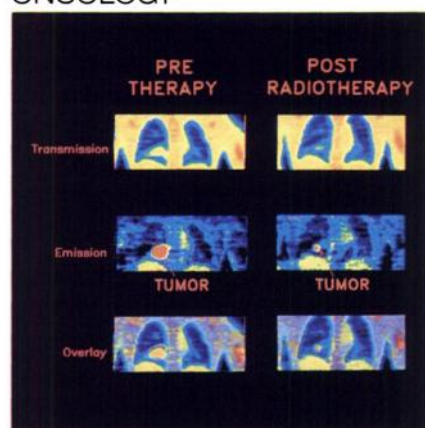


*"PET is the only reliable technique currently available to assess myocardial viability. This information is often invaluable in making therapeutic decisions."*

**Peter Alagona, Jr., M.D.**  
Associated Medical Director  
St. Joseph's Positron Center



## ONCOLOGY



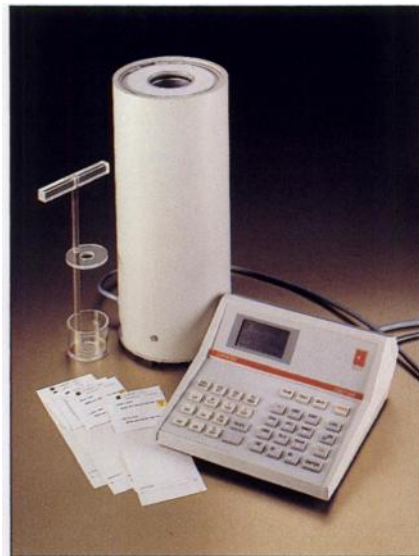
*"PET provides unique non-invasive information on behavior, treatment response, and recurrence rate of solid tumors. Clinical PET promises to greatly impact the practice of oncology."*

**Mathis P. Frick, M.D.**  
Professor and Chairman  
Department of Radiology  
Creighton University School of Medicine

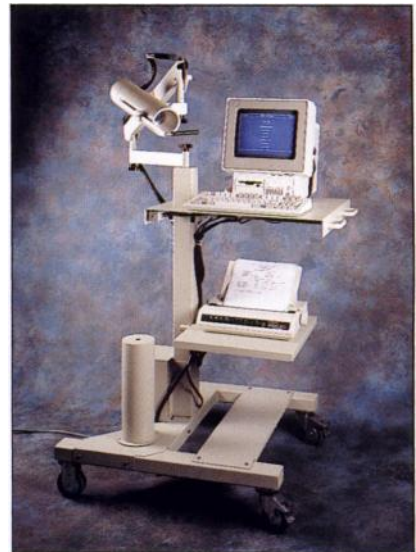
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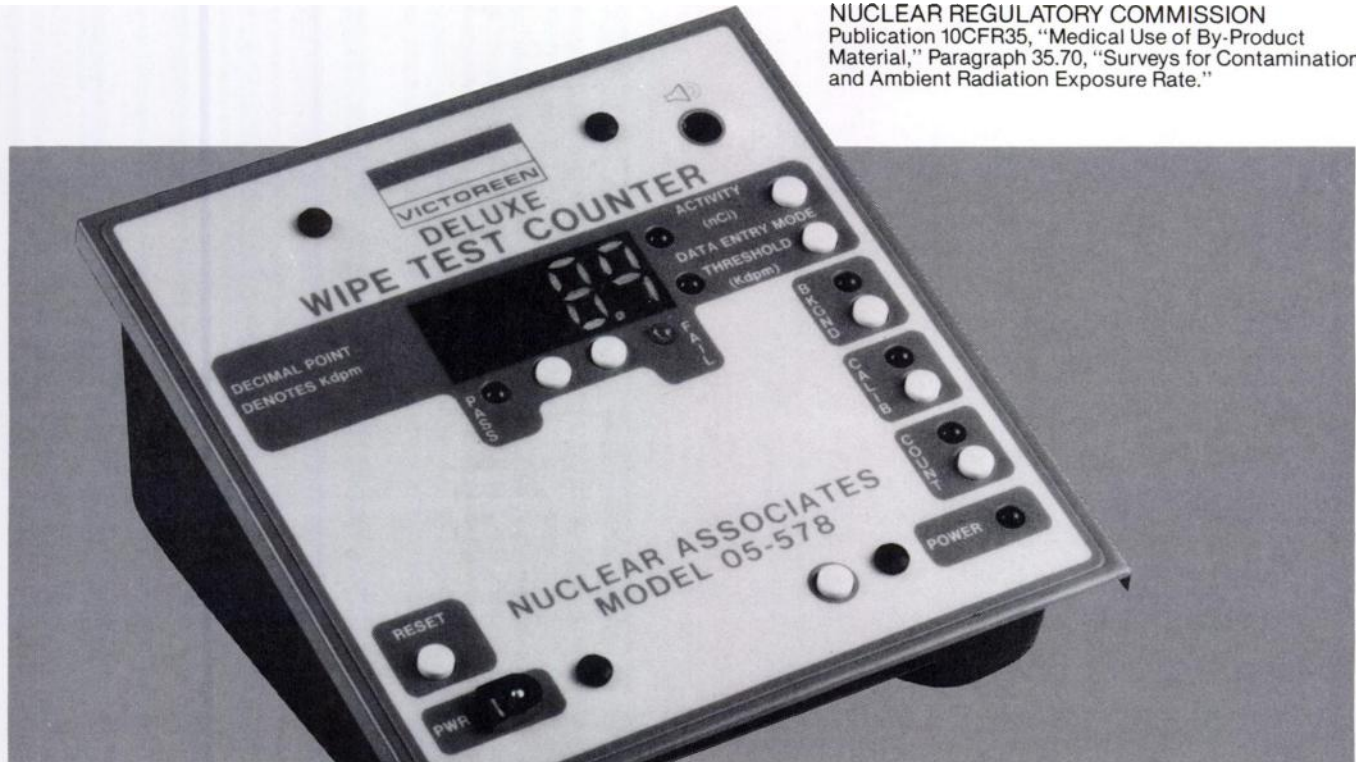
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NUCLEAR REGULATORY COMMISSION  
Publication 10CFR35, "Medical Use of By-Product Material," Paragraph 35.70, "Surveys for Contamination and Ambient Radiation Exposure Rate."



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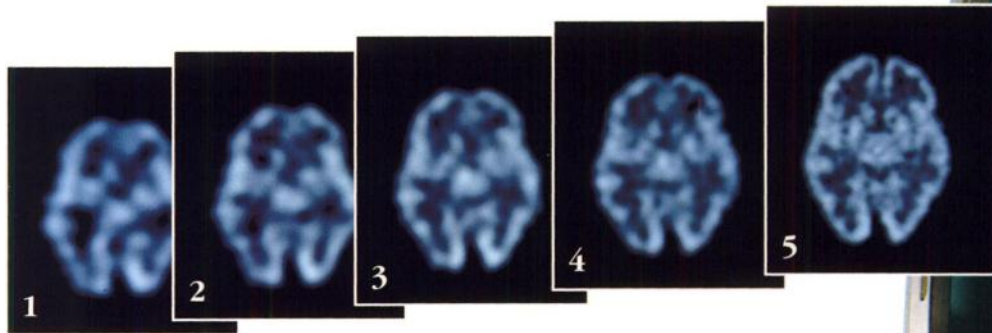


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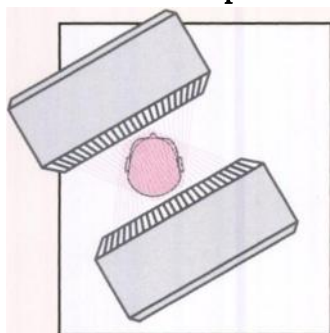
*A sequence of five evolving SPECT images: Note improvement of image quality, yielding final resolution of 7mm (tomographic brain phantom scan, courtesy of Dr. J. Abramovici, Ixelle, Belgium).*

***Elscint***

*The Intelligent Image*

## Dual-head SPECT: triple efficiency

You can perform Helix tomographic

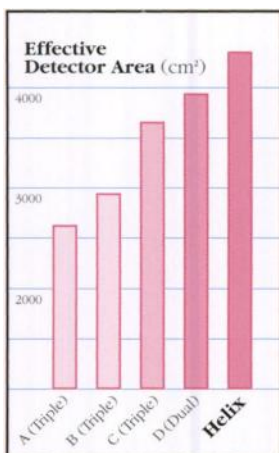


*Ultraflared™ fan-beam collimators: more than triple the sensitivity*

scans at up to 3.5 times the efficiency of conventional imagers, because Helix's jumbo-size detectors cover an area of 4320 square centimeters.

This means maximum SPECT detection efficiency, and makes unsurpassed 7mm system resolution images achievable.

And only Helix can span a 400mm-long segment in a single SPECT scan. Not to mention our unique Scatter-Free Imaging™ package built right into the system for much improved contrast and resolution.



*Helix's 4320 cm² detector area—unsurpassed in the industry*

## SPECT and Whole-Body: the best of both worlds

Face it, most multi-head systems just can't do whole-body scans. Not so with Helix.

Helix gives you the best of SPECT, the best of Whole-Body, with no compromises,

no trade-offs.

Two super-size rectangular detectors provide 3.5mm resolution\* across the entire field. Plus, microcast collimators and Scatter-Free Imaging give you the highest lesion detectability available.

And Helix's pre-programmable, body contoured "smart" scans, with 1280 x 1024 display, give you what you're looking for—the best possible Whole-Body images.

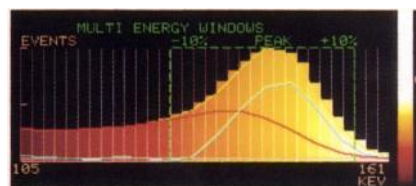
No compromises, no trade-offs—no excuses.



*540 x 400 mm jumbo detectors and 3.5 mm resolution optimize Whole-Body scanning*

## Planar imaging: Scatter-Free and more

With Scatter-Free Imaging, the system "learns" the local scatter characteristics

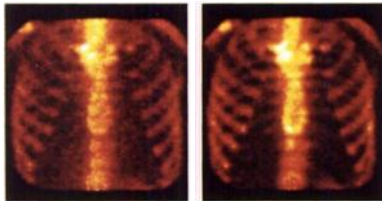


*Multi-window acquisition and energy-weighted processing yield Scatter-Free Imaging.*

and makes corrections based on the measured energy spectrum, for

\* HR configuration

# Helix's golden aspect of Nuc



20% window image

Scatter-Free image

each pixel, for each image, for each patient.

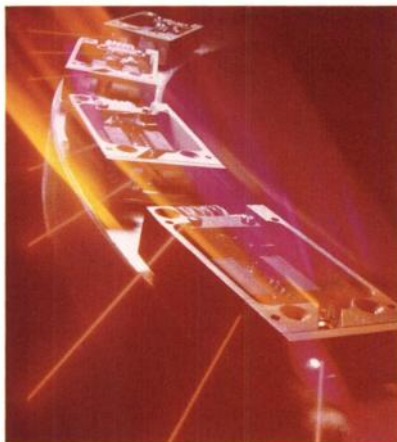
Result: better image contrast, better spatial resolution, better lesion detectability.

For truly complete imaging, jumbo-size 400x540mm detectors with 3.5mm resolution\* maintain image clarity all the way across the entire field.

## A triumph of technology: for now and for the future

Helix represents a culmination of efforts, based on a solid R&D foundation and drawing from a decade of experience gained over the course of close to 2000 APEX installations worldwide.

Helix's Slip-Ring technology will carry it well into the 21st century, together with such features as: a 100 MHz infra-red optronics communications link... an Intel™ i486 33 MHz computer platform... truly modular design... and advanced detector technology.



Helix's high-speed 100 MHz infra-red optronics data link frees SPECT from cable tangles

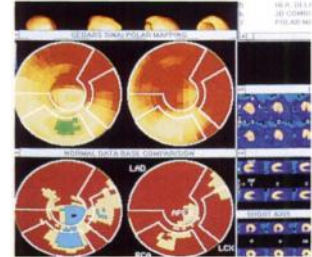
**Clinical software: nobody comes even close to APEX. Nobody.**

Elscent has – right now – the most complete range of nuclear imaging clinical software in the industry.

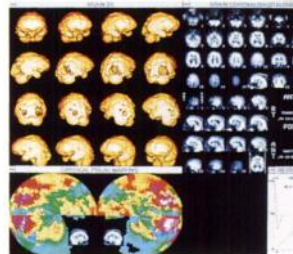
Helix draws on more than a decade of



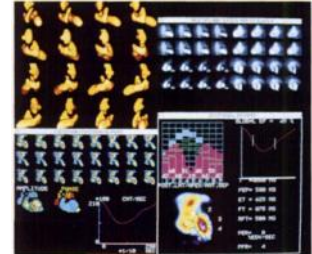
3D volume rendering bone scan



Cedars-Sinai quantitative SPECT



HMPAO brain SPECT polar mapping



Gated tomographic wall motion evaluation

pioneering activity in digital nuclear imaging and over 20 years of medical image processing experience.

Built-in CLIP™ programs cover the widest spectrum of nuclear medicine processing protocols, each optimized for a specific task, and clinically validated over the last decade.

Simply put, when it comes to user-tested, user-available software, nobody comes close to APEX. Nobody.



# **Events that changed the course of Nuclear Imaging:**

**1971–Elscent takes the lead in the 70's  
by introducing the industry's first image  
processing station, the VDP.**

**1981–Elscent sets the trend for the 80's  
by introducing the first digital gamma camera,  
the APEX.®**

**1991–Elscent introduces...**

# Helix:

## We'd like you to join us at the unveiling.

☒ JUNE 11-14  
**SNM**  
Society of Nuclear  
Medicine  
CINCINNATI, OHIO

☐ SEPT 1-5  
**EANM**  
European Association  
of Nuclear Medicine  
VIENNA, AUSTRIA

☐ OCT 16-19  
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☐ DEC 1-6  
**RSNA**  
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*The Intelligent Image*

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# touch. In every lear Imaging.

## **Helix workstation: perfect harmony**

Think of a workstation as a symphony orchestra with instruments like 32 MB RAM, 128 KB cache memory, i486 33 MHz CPU, 800 MB optical disk, 700 MB hard disk, 1280x1024 display, 19" color screen, IBM standard operating system and Ethernet.™

All world-class performers, to be sure. But only if they're playing from the same sheet of music.

Our Helix symphony is a harmonious combination of raw computer power; Elscint's industry-leading clinical software repertoire; real-time acquisition and reconstruction; IBM standard window management; full-simultaneity; multi-tasking; and the most powerful NM PACS in the industry.

Quite an ensemble. So you can give a virtuoso performance, every time.

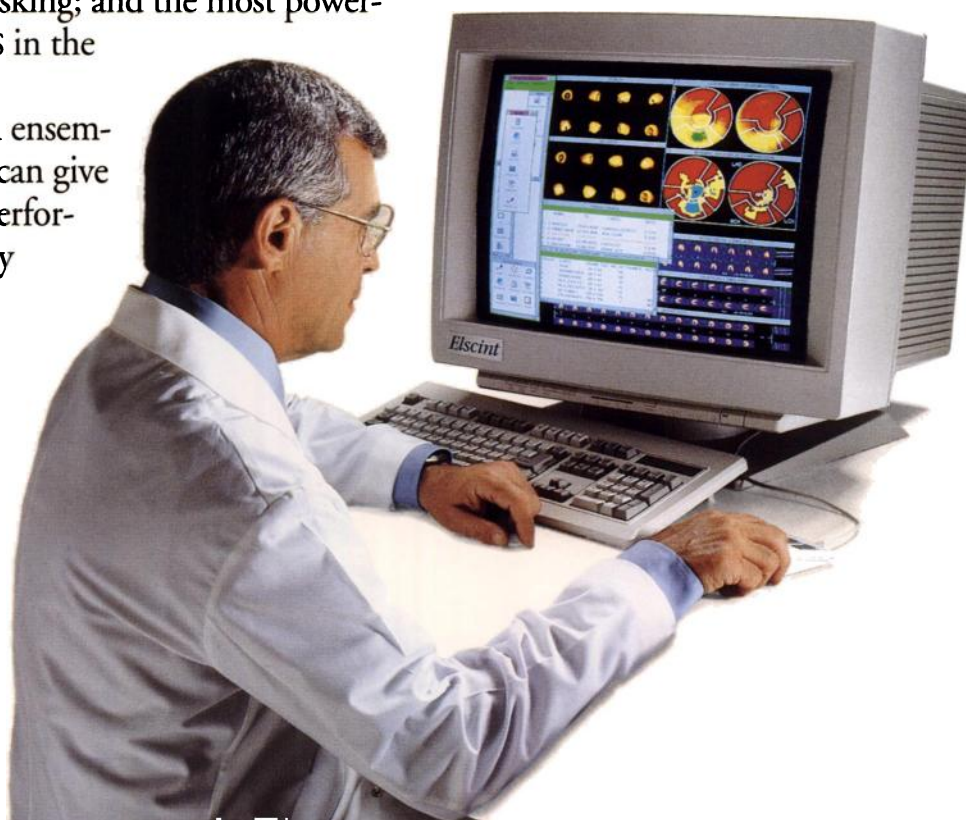
## **Helix: an ergonomic marvel**

A solid, fixed gantry... a superbly balanced cantilevered patient handling system for precise scanning... programmable "home" positions for easy patient set-up and collimator exchange... Touch-Ruler™ for single-touch Whole-Body scans... low-attenuation, ultra-thin interchangeable pallets of carbon fiber composite for high-resolution Whole-Body and SPECT scans... compact gantry design... 2.7-inch "brain reach" for better brain SPECT.

We've addressed every last detail of design to give you the ultimate imaging system.



*Light-weight, interchangeable pallets facilitate patient comfort for SPECT and Whole-Body scans.*





## The well-connected imager: leader of the PACS

Decide on Helix, and you instantaneously become a member of the most advanced NM PACS in the industry – right from day one.

If you have other Elscint APEX systems, Helix connects right into data communication and into centralized data and archive management via ApexNet,<sup>™</sup> Elscint's NM PACS.

Multi-system connectivity is facilitated with more than 90% of the cameras and processors produced by other vendors like General Electric, Siemens, ADAC and Picker, or computers by DEC, IBM and others.

Helix provides instant access to data. ApexNet lets you view and process patient studies from different departments simultaneously, and ApexView,<sup>™</sup> Elscint's remote viewing station, puts you in the picture even at home.

## Service à la MasterMind<sup>™</sup>: no time for down time

At Elscint we value your time. And Helix service support is among the world's most advanced thanks to DigitalGuard, FieldWatch, and MasterMind.<sup>™</sup>

DigitalGuard is a built-in optronic system for periodic automatic calibration of the gamma camera.



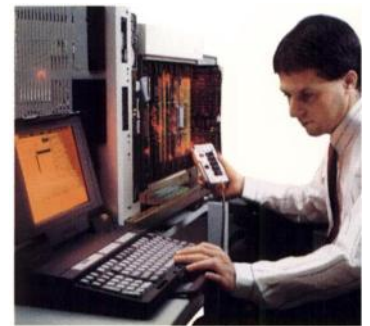
*Helix: global connectivity...all the way home*

FieldWatch is a computerized, quick-response service network.

MasterMind is an artificial intelligence "expert" system, providing every

on-site nuclear medicine field engineer with the constantly updated troubleshooting expertise of the company's leading scientists and engineers.

The result: service done right the first time, every time.



*MasterMind: Artificial Intelligence-guided service*

## Helix: the intelligent investment

When it comes to multi-detector systems, Helix could be the easiest, most logical product choice you ever made. You simply can't go wrong.

With Helix you know that every referral can be imaged, every nuclear medicine

procedure can be performed. No compromises, absolutely none.

Multi-Detector Evaluation	Helix	Product A	Product B
Slip-Ring continuous rotation	✓		
Cardiac SPECT	✓		
Brain SPECT	✓		
Whole-Body imaging	✓		
Scatter-Free Imaging	✓		
Software repertoire	✓		
Workstation power	✓		
Complete PACS	✓		
Advanced ergonomics	✓		
Immunity from obsolescence	✓		



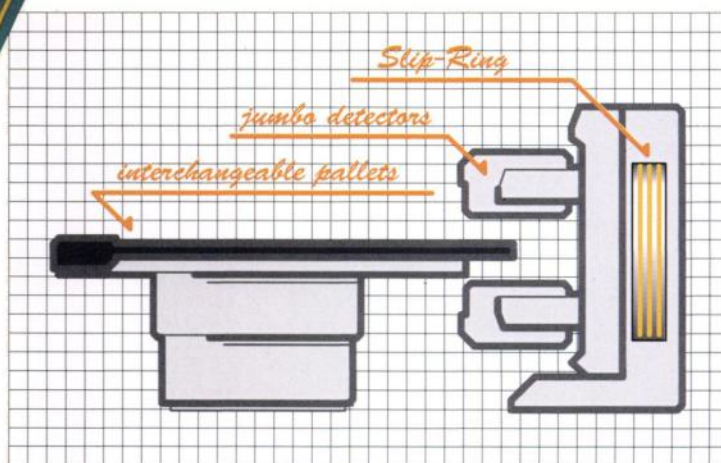
**Look at Elscint's new Helix,** and you're looking at the future of nuclear imaging technology.

A whole new world of imaging brought to life by our RingMaster™ Slip-Ring System. Take Evolving-Images™ and RollBack™, for example, two terms that are probably new to you.

With Evolving-Images you can now display and update SPECT images *as* you acquire them, not only *after* the job is done.

With RollBack, if a patient moves during a scan, you can recall the reconstructed image, as it was just prior to the movement, in order to assess its diagnostic value. Saves re-takes, saves time, saves money.

Helix's continuous-rotation Slip-Ring technology will open new horizons in nuclear imaging, such as Whole-Body SPECT spiral imaging, cardiac SPECT beat rejection and SPECT brain perfusion.



*Large-bore Slip-Rings in the "heart" of the Helix gantry*

**NUTRONICS IMAGING INC.**  
**The**  
**Security Of Protecting Your Investment.**

*Nutronics Imaging is the Engineering company behind the product. Special attention with quality engineering. We will accomodate YOUR needs as appropriate. We are not a broker.*

Nutronics is your source for:

**\* UPGRADES**

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- . Add computerized technology to your system.
- . Upgrade your camera performance by using the Engineering touch.

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Scientific Exhibits	Contact SNM, Attn: Meetings Dept.	1/14/92
Registration Form	November Issue	5/8/92
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# INNOVATION

## TOSHIBA GCA-9300A Digital Gammacamera



TOSHIBA advanced engineering and electronics have led to the practical innovations inherent to the GCA-9300A. Compact in design with improved overall performance, the GCA-9300A delivers unparalleled diagnostic results.

TOSHIBA has developed a sophisticated 3-rectangular field detector system for SPECT data acquisition that has proven stability even for extended periods. Interchangeable fan beam and parallel hole collimators respond to the exacting needs of brain and whole body SPECT imaging with

superb, high resolution results. The unique design concept facilitates easy, time-efficient collimator exchange.

Simplicity and efficiency in gantry design assures proper OM line setting with the OM angle automatically read through the CPU. Safety and comfort are major factors in the design of the motorized table that allows easy patient access and quick patient throughput.

The TOSHIBA GCA-9300A Digital Gammacamera has the technology, performance and reliability necessary for total SPECT data acquisition.



In Touch with Tomorrow  
**TOSHIBA**

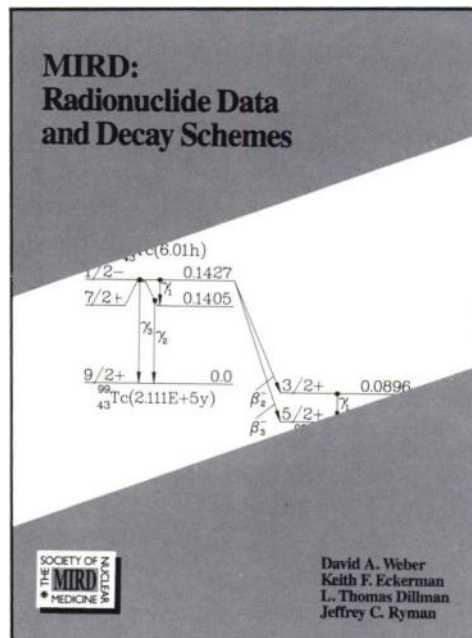
# MIRD:

## Radionuclide Data and Decay Schemes

This new publication from the MIRD committee compiles decay schemes and output tables for 242 radionuclides.

Detailed information on the intensities and energies of radiations and the mean energy emitted per nuclear transition in the decay of radionuclides in this publication provides the data needed for:

- *The calculation of absorbed dose*
- *The assay of radioactivity*
- *The evaluation of radionuclide purity*
- *The determination of suitability of a radionuclide's decay scheme for clinical imaging, RIA, radiation therapy, and other biomedical applications.*



**MIRD: Radionuclide Data and Decay Schemes**  
David A. Weber, Keith F. Eckerman, L. Thomas Dillman, Jeffrey C. Ryman. 456 pp. Hard-bound. \$45 members; \$60 nonmembers.

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# s o p h a

# t o d a y

## A TECHNOLOGICAL FOUNDATION WITH HIGH-END CAPABILITIES.

Superior detector technology. A powerful touchscreen interface that's efficient and easy to use. Unique body-

contouring robotics.

High-speed computing.

The latest clinical protocols.

High-end capabilities?

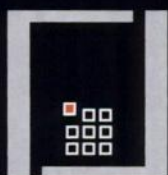
No. Just the kind of

strengths you can expect from today's sophycamera family. A family with systems tailored to SPECT, cardiac, whole-body, mobile, and general imaging applications.

We call it our technological foundation. It's the basis for sophycamera performance— the best performance, whatever the clinical challenge. And that's what makes sophycameras the best value in nuclear medicine today.

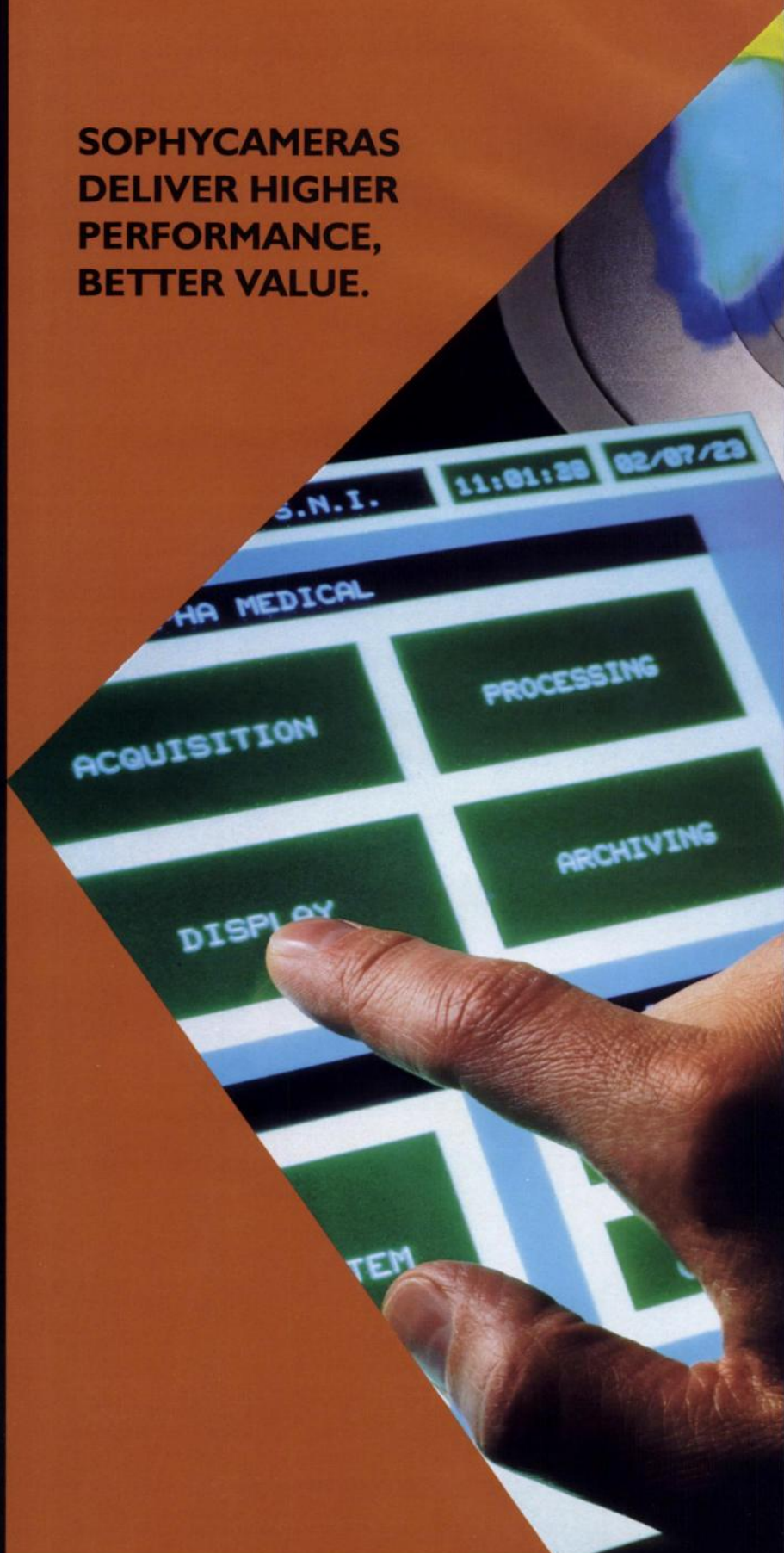


Cardiac SPECT (Sestamibi)

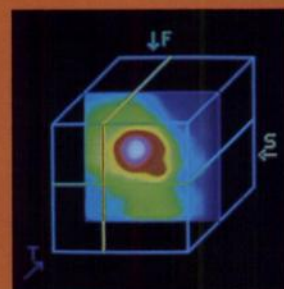
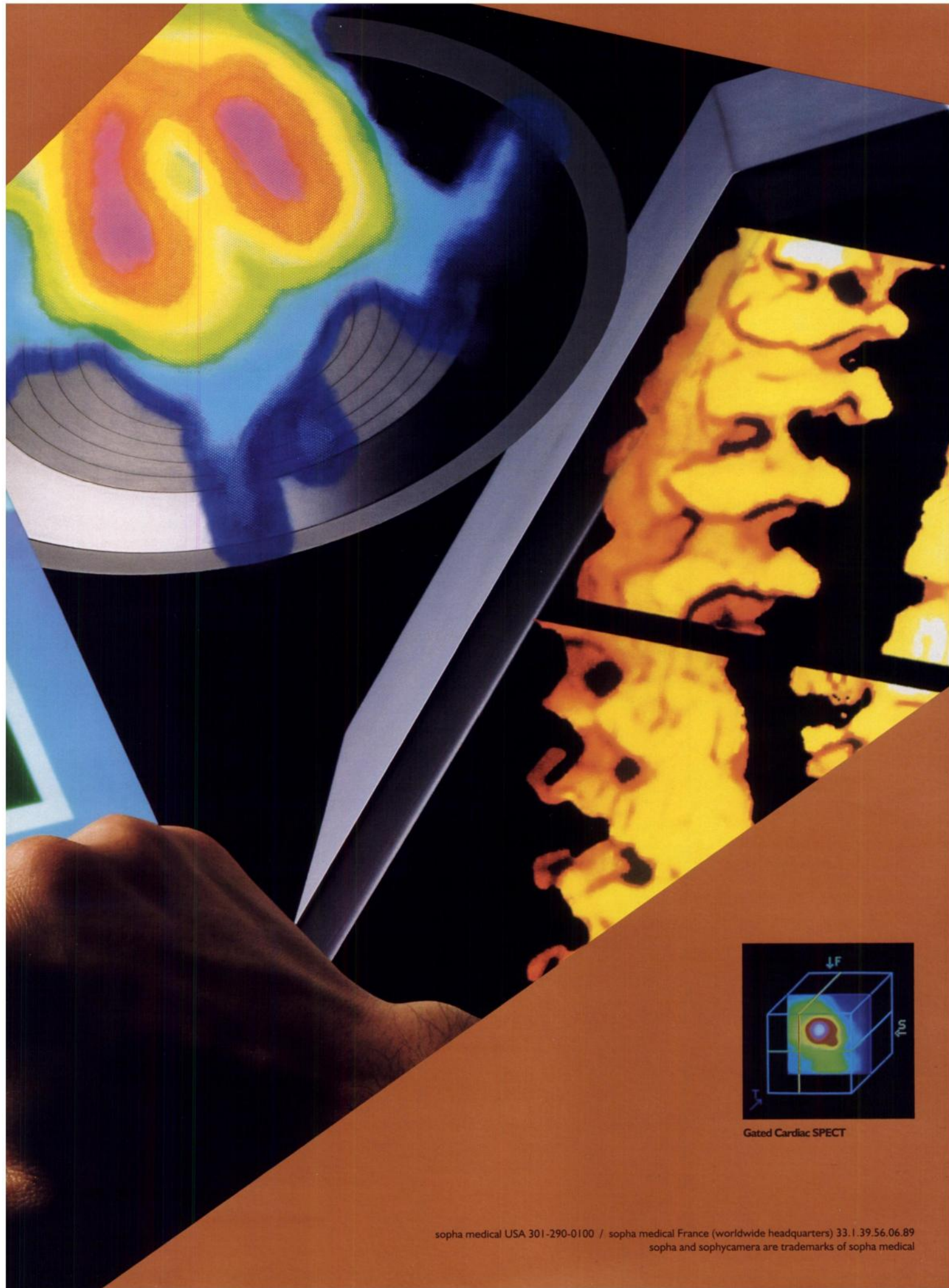


s o p h a m e d i c a l

## SOPHYCAMERAS DELIVER HIGHER PERFORMANCE, BETTER VALUE.







Gated Cardiac SPECT



# s o p h a t o d a y

## MULTIHEAD EFFICIENCY WITHOUT COMPROMISE

Until today, multihead technology has always meant compromise.

Three-head systems? They're efficient for SPECT, but provide limited general-purpose flexibility.

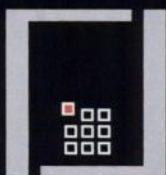
Dual-head systems? They're fine for whole-body studies, but parallel detectors provide no proven advantage for cardiac SPECT.

Today, sophia offers two systems that end the multihead compromise.

The sophycamera DST is the first variable-angle rectangular dual-head WFOV imager. Detectors angled, the DST is optimally positioned for high-efficiency cardiac SPECT. Detectors parallel, the DST is optimally configured for general, whole-body, or other SPECT procedures.

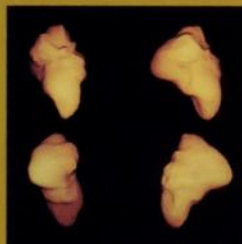
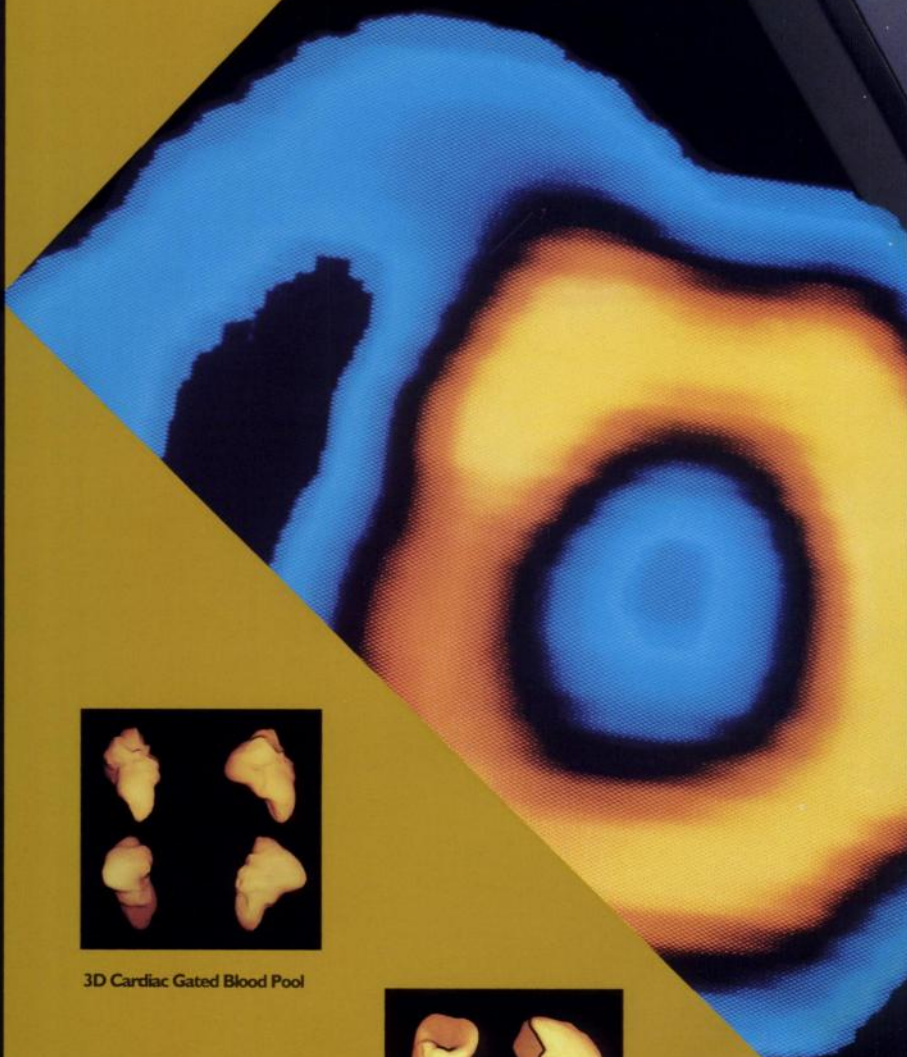
The sophycamera DSX bodyTrak™ is the industry's premium jumbo rectangular system. Twin 94-PMT detectors make the bodyTrak unequalled for whole-body and general imaging. And it has the widest FOV for large-organ SPECT.

sophycamera DST and DSX bodyTrak. Uncompromised efficiency in SPECT, whole-body, and general imaging. Only from sophia medical.

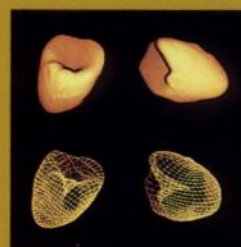


s o p h a m e d i c a l

## IN SPECT, WHOLE-BODY AND GENERAL IMAGING.

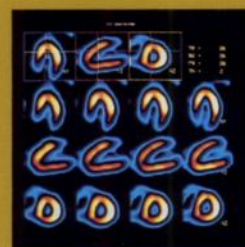
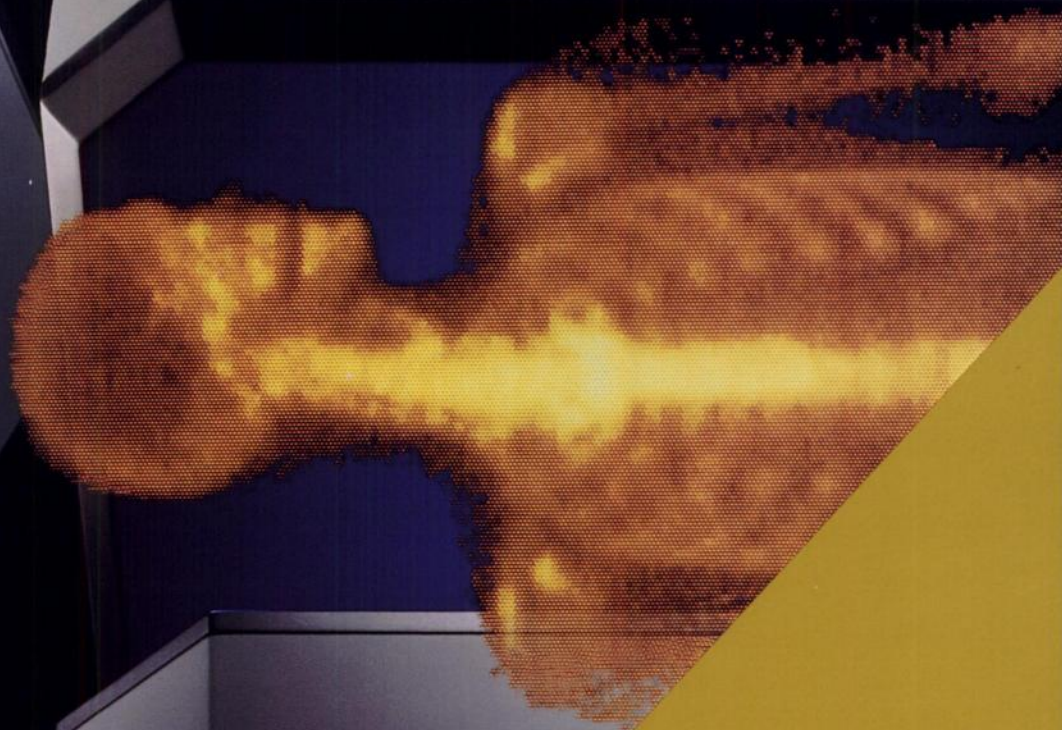


3D Cardiac Gated Blood Pool



Sestamibi 3D Cardiac SPECT





Sestamibi Cardiac SPECT



# s o p h a

# t o d a y

## THE NEW BENCHMARK IN COMPUTER PERFORMANCE.

In the 80s, sophia set new standards  
in nuclear computer performance.

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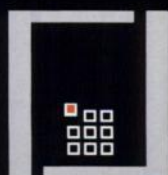
Gated SPECT reconstructions 17 sec

128<sup>3</sup> SPECT reconstructions 10 sec

64<sup>3</sup> SPECT reconstructions 2 sec

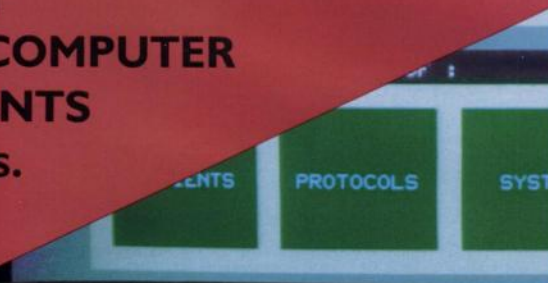
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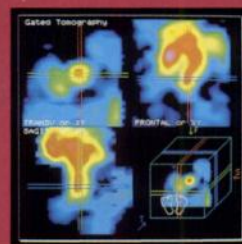
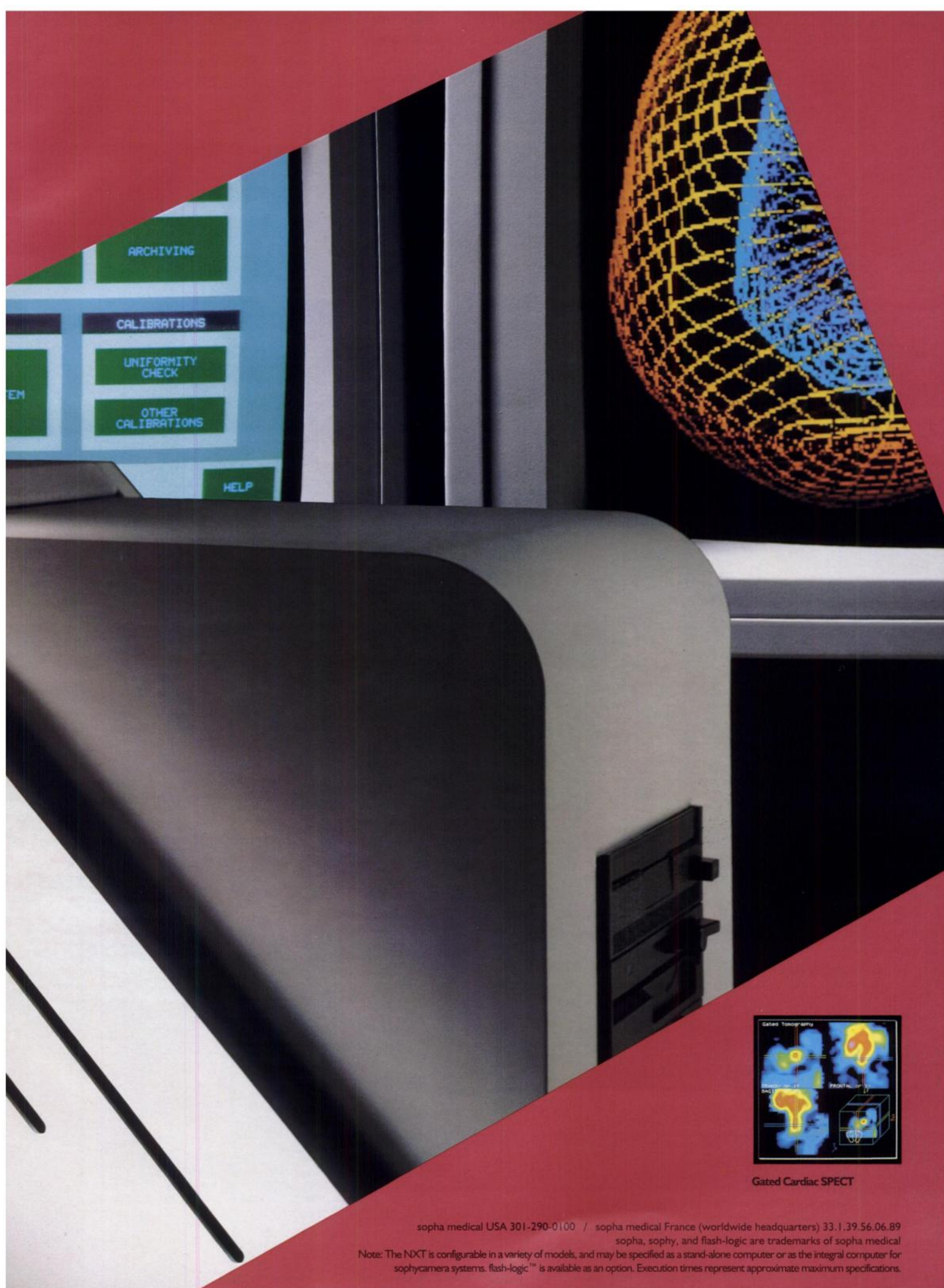
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**Contributing Authors:** Susan Gilbert, Adrian D. LeBlanc, Robert Schlepman, James E. Silvers, Donald E. Widmann, Brenda Woods.

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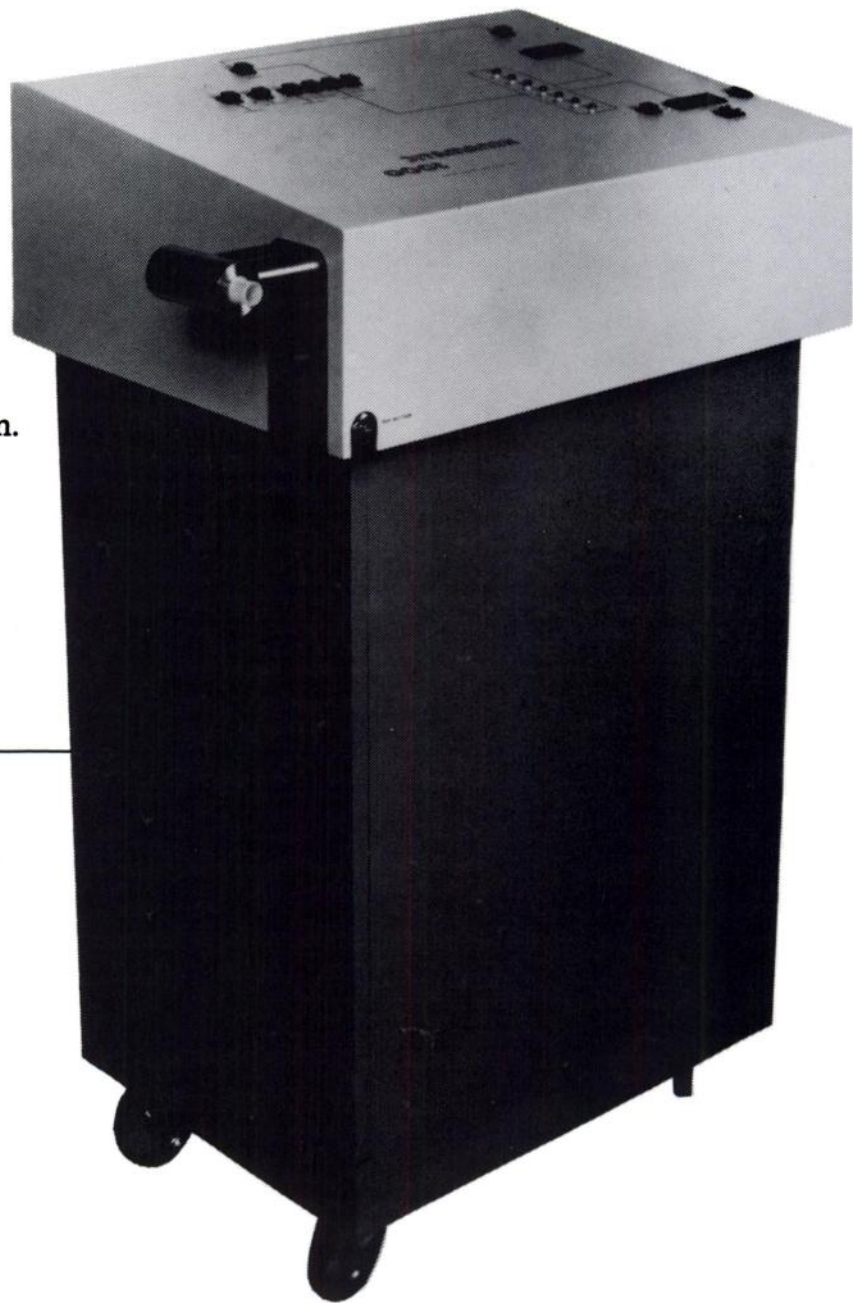
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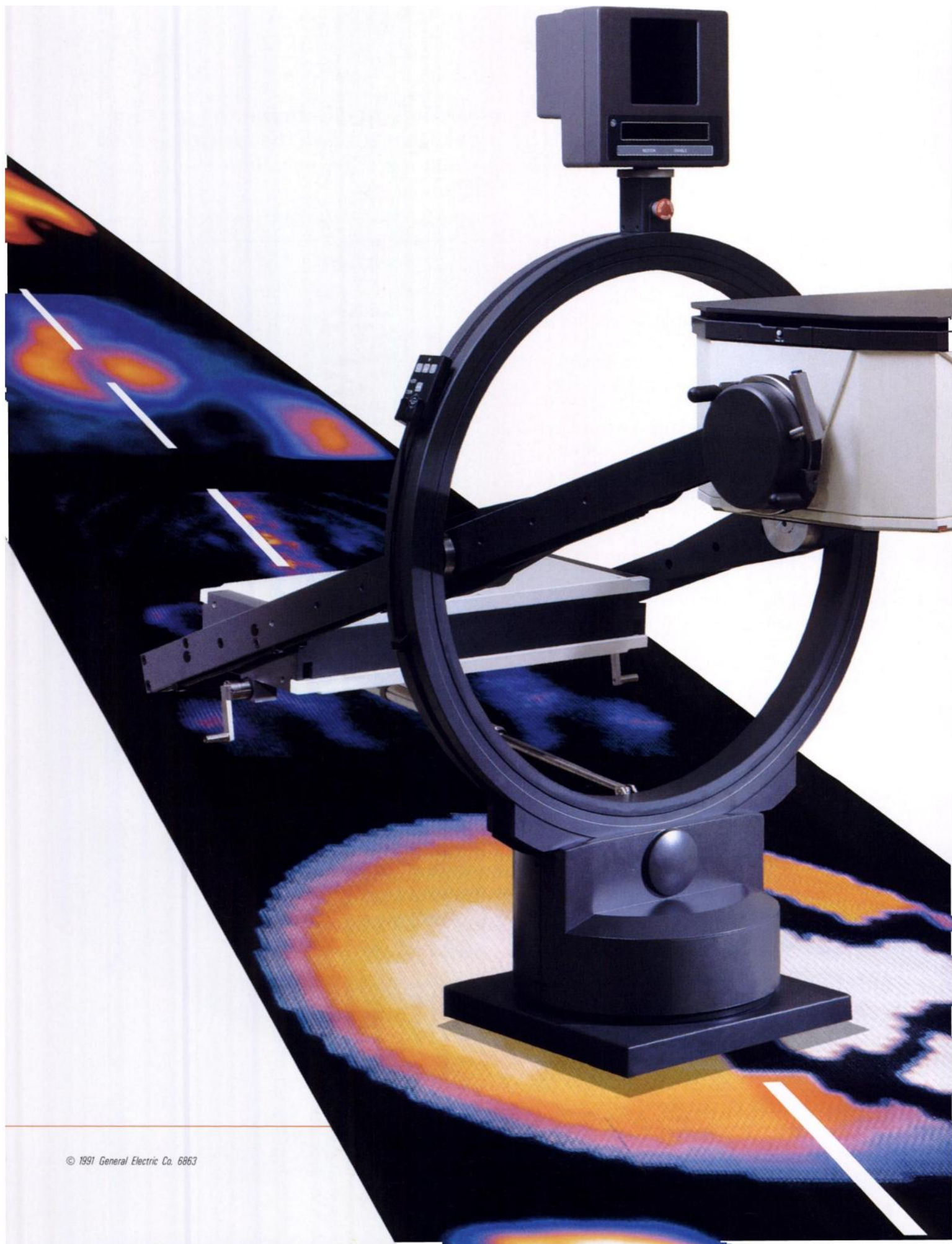
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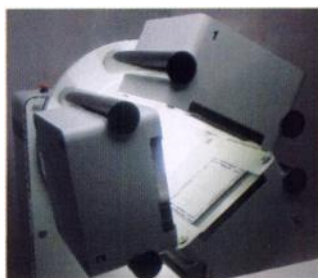


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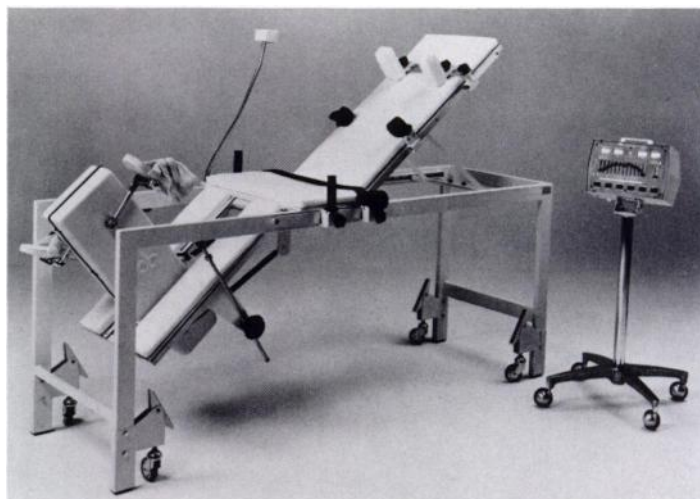
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**THE ONLY TECHNETIUM-BASED  
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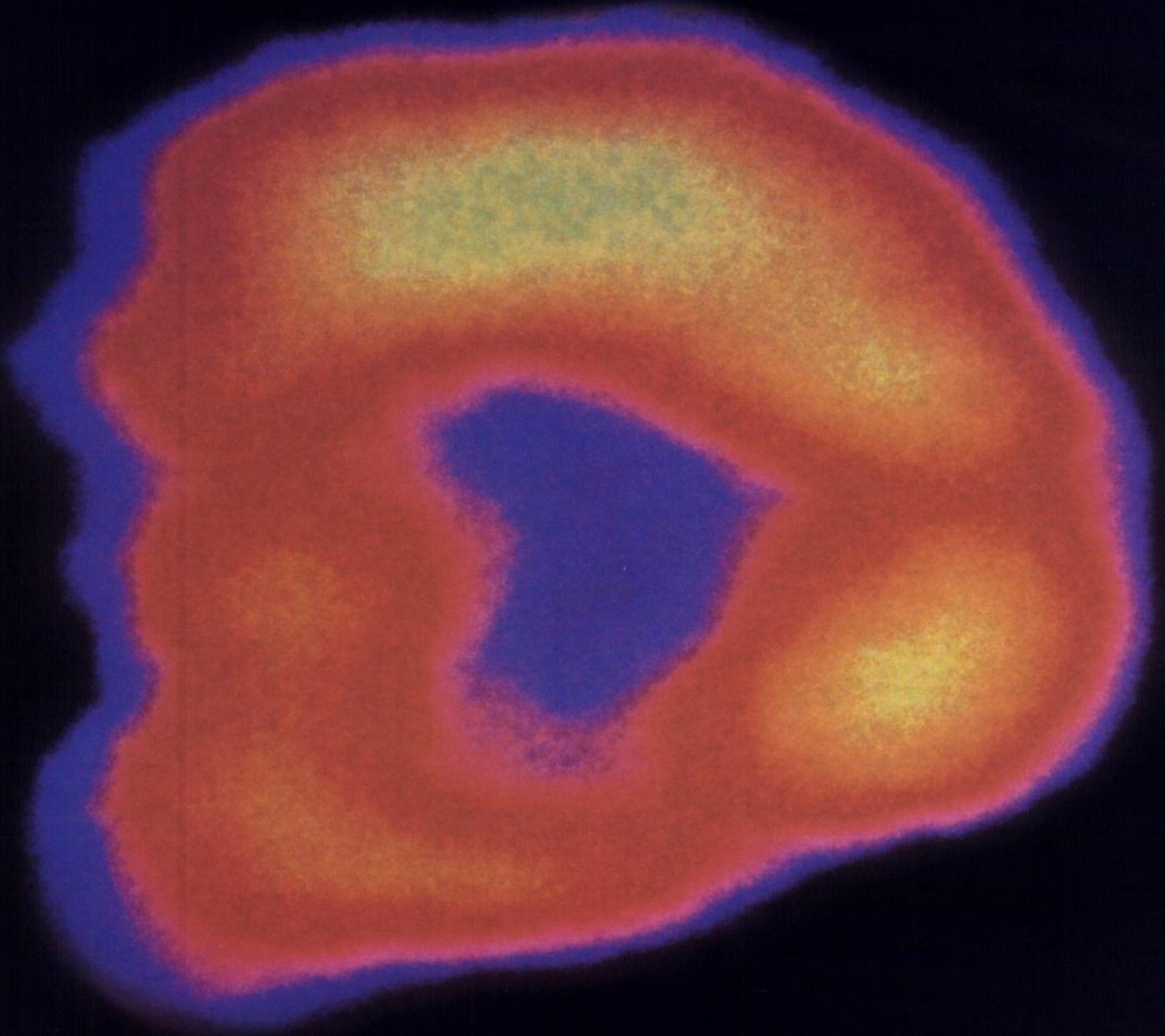
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CardioTec® Myocardial Perfusion Study  
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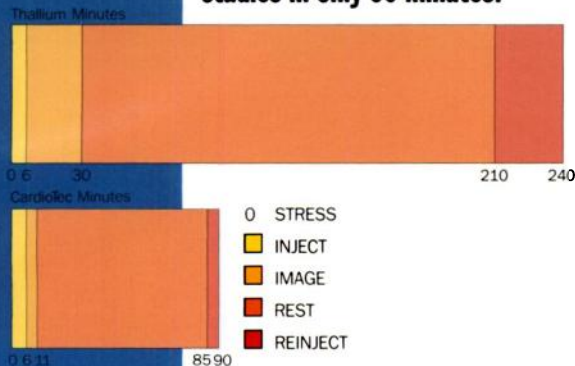




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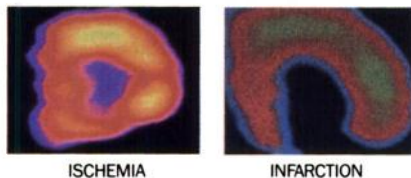
permits complete stress and rest studies in only 90 minutes!



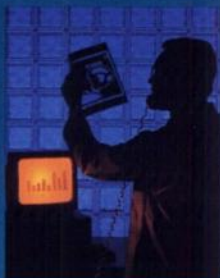
*The rapid uptake and washout of CardioTec enables you to start imaging two minutes after injection, and complete a resting-state study within 90 minutes! CardioTec speed may let you begin patient treatment earlier, enabling patients to return home sooner, improving throughput and scheduling.*

## CLEAR...

sharp images enhance diagnostic ability

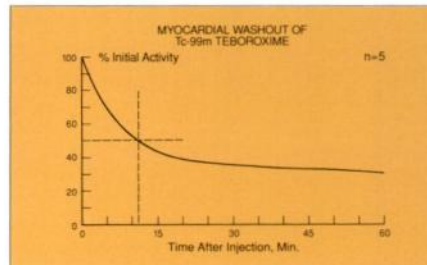


*Good spatial resolution, high myocardial extraction, sensitivity and specificity enhance the ability to distinguish myocardial ischemia and infarction!*



## CLEAN...

rapid clearance;  
greater patient comfort



MYOCARDIAL WASHOUT<sup>1</sup>

**CardioTec redefines efficiency in myocardial perfusion imaging.** Potential uses for myocardial perfusion agents include imaging patients undergoing post-angioplasty (PTCA), post-surgical (CABG) and post-medicinal (thrombolysis).



The only technetium-based myocardial perfusion imaging agent for rest and stress imaging

# CardioTec<sup>®</sup>

(Kit for the Preparation of Technetium Tc 99m Teboroxime)

Please see the brief summary of prescribing information for CardioTec on the adjacent page.

 **SQUIBB**  
Diagnostics

# Cardiotec®

Kit for the Preparation of Technetium Tc 99m Teboroxime

## FOR DIAGNOSTIC USE

### DESCRIPTION

Each 5 mL reaction vial contains a sterile, nonpyrogenic, lyophilized formulation of 2.0 mg cyclohexanedione dioxime, 2.0 mg methyl boronic acid, 2.0 mg pentetic acid, 9.0 mg citric acid, anhydrous; 100 mg sodium chloride, 50 mg gamma cyclodextrin and 0.058 mg (maximum) total tin expressed as stannous chloride ( $\text{SnCl}_2$ ), 0.020 mg (minimum) stannous chloride ( $\text{SnCl}_2$ ). The pH is adjusted with sodium hydroxide and/or hydrochloric acid prior to lyophilization. The contents of the vial are lyophilized and sealed under nitrogen at the time of manufacture. No bacteriostatic preservative is present.

When sterile, pyrogen-free sodium pertechnetate Tc 99m injection is added to the vial, and the solution is heated at 100°C for 15 minutes, the diagnostic agent Technetium Tc 99m Teboroxime is formed for administration by intravenous injection. The pH of the reconstituted product is 3.7 (range 3.3 to 4.1).

### INDICATIONS AND USAGE

Technetium Tc 99m Teboroxime is a myocardial perfusion agent that is useful in distinguishing normal from abnormal myocardium in patients with suspected coronary artery disease using rest and stress techniques.

### CONTRAINDICATIONS

None known.

### WARNINGS

Stress testing should be performed only under the supervision of a qualified physician and in a laboratory equipped with appropriate monitoring, resuscitation and support apparatus.

### PRECAUTIONS

#### General

Contents of the reaction vial are intended only for use in the preparation of Technetium Tc 99m Teboroxime and are not to be administered directly to the patient.

Contents of the kit before preparation are not radioactive. However, after the addition of sodium pertechnetate Tc

99m injection, adequate shielding of the final preparation must be maintained.

The components of the kit are supplied sterile and non-pyrogenic. Aseptic procedures normally employed in making additions and withdrawals from sterile, non-pyrogenic containers should be used during the addition of the pertechnetate solution and the withdrawal of doses for patient administration.

The technetium Tc 99m labeling reactions involved in preparing the agent depend on maintaining the stannous ion in the reduced state. Any oxidant present in the sodium pertechnetate Tc-99m supply may thus adversely affect the quality of the radiopharmaceutical. Hence, sodium pertechnetate Tc-99m containing oxidants should not be employed.

Radiopharmaceuticals should be used only by physicians who are qualified by training and experience in the safe use and handling of radionuclides and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides.

As in the use of any radioactive material, care should be taken to minimize radiation exposure to the patient consistent with proper patient management and to ensure minimum radiation exposure to occupational workers.

Tc-99m Teboroxime should be formulated no more than 6 hours prior to clinical use.

#### Carcinogenesis, Mutagenesis, Impairment of Fertility

In comparison with most other diagnostic technetium labeled radiopharmaceuticals, the radiation dose to the ovaries (1.8 rads/50 mCi) is high. Minimal exposure (ALARA) is necessary in women of childbearing capability. (See Dosimetry subsection in DOSAGE and ADMINISTRATION section.)

No long-term animal studies have been performed to evaluate carcinogenic potential or to determine the effects of Cardiotec on fertility in males or females.

Three different mutagenicity assays (a reversion test with bacteria, a chromosomal aberration assay and an *in vivo* mouse micronucleus assay) conducted with cold (decayed) technetium la-

beled Cardiotec gave negative results. Cardiotec was weakly positive for inducing forward mutations at the TK locus in L5178Y mouse lymphoma cells in the absence of metabolic activation (but only at high concentrations that were toxic to the cells and reduced growth to 33% or less relative to vehicle controls). Cardiotec was negative in this assay in the presence of metabolic activation.

#### Pregnancy Category C

Animal reproduction studies have not been conducted with Technetium Tc 99m Teboroxime. It is also not known whether Technetium Tc 99m Teboroxime can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. Technetium Tc 99m Teboroxime should be given to a pregnant woman only if the expected benefits to be gained clearly outweigh the potential hazards.

Ideally, examinations using radiopharmaceuticals, especially those elective in nature, in women of childbearing capability, should be performed during the first few (approximately 10) days following the onset of menses.

#### Nursing Mothers

Technetium Tc 99m is excreted in human milk during lactation. Therefore, formula feedings should be substituted for breast feedings.

#### Pediatric Use

Safety and effectiveness in children below the age of 18 have not been established.

### ADVERSE REACTIONS

Uncommon adverse reactions reported in clinical trials include metallic taste in mouth, burning at injection site, facial swelling, numbness of hand and arm, hypotension and nausea after administration of Technetium Tc 99m Teboroxime.

### HOW SUPPLIED

Cardiotec® (Kit for the Preparation of Technetium Tc 99m Teboroxime) is supplied in kits of 5, 10, and 25 reaction vials. (J4-282A)



**SQUIBB™**  
Diagnostics

Reference

1. Data on file, Squibb Diagnostics.



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## Positions Available

### Faculty

The University of Chicago Department of Radiology is seeking a **SENIOR FACULTY PHYSICIAN** who is Board certified/eligible in nuclear medicine with experience and commitment to clinical care, medical education and research. Must have demonstrated ability to perform independent and scholarly research, direct a laboratory and have a proven track record of obtaining federal grant support. Please apply to: Dr. Martin J. Lipton, Chairman, Department of Radiology, 5841 South Maryland Avenue, Box 429, Chicago, Illinois 60637. Phone (312) 702-6024, FAX (312) 702-1161. Affirmative action/equal opportunity employer.

**NUCLEAR MEDICINE STAFF POSITION.** Candidate sought for faculty position with strong interest in Nuclear Medicine research and experience in 1. PET receptor imaging in Alzheimer's Disease and 2. development and implementation of MRI-based methods for partial volume correction in PET. MD applicant preferred. Contact: J. James Frost, MD, PhD, Johns Hopkins Medical Institutions, Division of Nuclear Medicine, 600 N. Wolfe Street, Baltimore, Maryland 21205.

The University of California, Los Angeles seeks an **ASSISTANT PROFESSOR** in the Division of Nuclear Medicine and Biophysics. The successful applicant will be expected to develop a research program in the study of the regulatory mechanisms of neurotransmitter systems and the development of selective probes labeled with positron emitting labeled tracers for in-vivo assays of these systems with PET. Applicant will be expected to participate in educational programs for graduate students and residents. Minimum qualifications include a PhD in basic sciences and specialized training in in-vivo neurochemistry. Submit curriculum vitae, bibliography and references by October 1, 1991 to J.R. Barrio, PhD, UCLA School of Medicine, Division of Nuclear Medicine and Biophysics,

Los Angeles, CA 90024-1721. Equal Opportunity/Affirmative Action Employer.

Georgetown University Hospital, Department of Radiology has a **FACULTY POSITION** opening for a board certified (or board eligible) Nuclear Medicine physician. A clinical and research interest in Nuclear Cardiology is desirable, but not mandatory. Send CV to: Harvey A. Ziessman, MD, Director of Nuclear Medicine, Georgetown University Hospital, 3800 Reservoir Road, NW Washington, DC 20007.

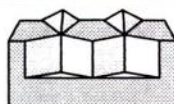
### Fellowship

**FELLOWSHIP in BRAIN SPECT IMAGING**—The Department of Radiology at the Brigham and Women's Hospital/Harvard Medical School, has an opening for one year fellowship, and an optional second year, in brain SPECT imaging. The department has a dedicated system for brain imaging and four rotating-head GE units. The department does approximately 1,000 brain SPECT examinations per year, including perfusion, tumor seeking, and blood pool studies. Ongoing research areas include dementia, substance abuse, tumor detection and therapy, and cerebrovascular disease. Please send curriculum vitae to: B. Leonard Holman, MD, Chairman, Department of Radiology, Brigham and Women's Hospital, 75 Francis Street, Boston, MA 02115. Brigham and Women's Hospital/Harvard Medical School is an affirmative action/equal opportunity educator and employer.

### Physician

**NUCLEAR MEDICINE PHYSICIAN** to join two other MD's practicing in Williamsport, PA. Equipment includes four SPECT cameras. No radiology required. Contact: Judith Gouldin, MD, Department of Nuclear Medicine, The Williamsport Hospital, 777 Rural Avenue, Williamsport, PA 17701 (717) 321-2400.

**NUCLEAR MEDICINE PHYSICIAN** to join busy hospital based private practice on Florida's Gulf Coast. (continued)



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**CHIEF, DIVISION OF NUCLEAR MEDICINE:** A position is available as Chief of Nuclear Medicine at a University Hospital of 500 beds with an active ambulatory care service. Over 5,000 studies are performed annually. There is an approved Nuclear Radiology Training Program as well as an affiliation with a VA Nuclear Medicine Residency Program. Collaborative research is carried out at nearby Brookhaven National Laboratory. Board certification and at least 10 years experience is required. Please forward your CV to: Harold L. Atkins, MD, Chief, Division of Nuclear Medicine, Department of Radiology, Health Sciences Center, State University of New York at Stony Brook, NY 11794-8460. SUNY, Stony Brook is an affirmative action/equal opportunity educator and employer.

#### Physicist

University Hospital at Stony Brook has a position available for a NUCLEAR MEDICINE MEDICAL PHYSICIST in its Diagnostic Medical Physics/Radiation Safety Group. A PhD in Physics, Medical Physics or one of the Physical Sciences and eligibility for board certification (ABR or ABMP) in Medical Physics is required. Candidates

must also have at least 3 years medical physics experience in a Diagnostic Radiology or Nuclear Medicine Department and image processing computer experience. The successful candidate will be responsible for all technical aspects of the clinical operation in the Division of Nuclear Medicine. This will include, but is not limited to purchase specification, acceptance testing and quality control of imaging devices, image processing computers, counters and analyzers. The incumbent will also act as the Radiation Safety Officer for the Division of Nuclear Medicine. In this capacity, the incumbent will oversee the safe receipt, application and disposal of radioactive materials. As an expert of image formation and image processing, the incumbent will serve as a valuable consultation resource to physicians, technologists and researchers. Finally the incumbent will provide Medical Physics instruction at the graduate, resident and technologist levels. Stony Brook is located on the north shore of Long Island, only 60 miles from New York City and 20 miles from Brookhaven National Lab. The area boasts some of the finest residential areas in the country. Salary and academic rank will be based on experience. SUNY at Stony Brook is an equal opportunity employer. For further information, send your curriculum vitae to: Terry M. Button, PhD, Department of Radiology, University Hospital, SUNY-Stony Brook, Stony Brook, NY 11794.

#### Research Associate

**RESEARCH ASSOC.** to dev. reconstruction algorithms to improve brain images for Positron Emission Tomography (PET). Req: PhD in eng'r or phy'l sci & 1 yr exp. as either Research Assoc. or Research Sci. Spec. Req: From educ &/or exp. (1) 1 yr exp in ea of fol (may be concurrent): a. multi-dimensional digital signal processing in tomographic image reconstruction & b. medical imaging research w/focus on PET; (2) exp w/UNIX development of C & Fortran-based image processing SW. Sa.: \$42,500/yr. Res: L. Cheatham (#1-187), MN Job Service, 390 N. Robert, St. Paul, MN 55101.

#### Residency

**NUCLEAR MEDICINE RESIDENCY.** The division of Nuclear Medicine, Department of Radiology, The New York Hospital-Cornell Medical Center, New York City offers a 1 or 2 year residency available July 1, 1992. The Division has a completely new 25,000 square foot facility

with state-of-the-art equipment, and is staffed by three full-time physicians, two basic scientists, and a computer programmer. The residency program includes all aspects of nuclear medicine as well as thyroidology, RIA and clinical research. Electives can be arranged. For further information please contact: Barbara L. Binkert, MD, Director of Residency Program, Division of Nuclear Medicine, New York Hospital-Cornell Medical Center, 525 East 68th Street, New York, NY 10021 or call (212) 746-4580.

**NUCLEAR MEDICINE RESIDENCY.** July 1992. Comprehensive imaging/RIA/therapy program in 3 hospitals (private, country, VA) with 2,800 total beds. Mobile imaging for 216 ICU beds. Large pediatric population. Strong cardiovascular emphasis. State-of-the-art instrumentation including SPECT and computer processing. Training includes introductory rotations in NMR, PET, and CT/ultrasound. Contact: Warren H. Moore, MD, Department of Radiology, Baylor College of Medicine, One Baylor Plaza, Houston, TX 77030. Baylor College of Medicine is an equal opportunity A/A employer.

#### Technologist

**CHIEF NUCLEAR MEDICINE TECH.** Jane Phillips Episcopal Memorial Medical Center is a 244-bed acute care hospital located in Bartlesville, OK, 45 miles north of Tulsa. Our ultramodern diagnostic imaging department is a state-of-the-art environment with many challenges waiting for you. Qualified candidates must have or be eligible for registration. Thrive in our lovely residential community where the lifestyle is healthy and offers a blend of cultural, recreational and civic activities. For immediate consideration, send your resumé to: Jane Phillips Medical Center, Blythe Yorman, RN, BSN, Professional Recruiter, 3500 S.E. Frank Phillips, Bartlesville, OK 74006. EOE.

**NUCLEAR MEDICINE TECHNOLOGIST** for medical group involved in developing new metabolic scans and improving current techniques. Applicants must be registered, registry eligible, or licensed in the state of Louisiana. We offer a competitive salary and excellent benefit package. Please send resumé to P.O. Box 207, Houma, LA 70361-0207.

(continued)

## Nuclear Radiologist

Hanover, New Hampshire 03756. Write to: Peter K. Spiegel, M.D., Chairman, Department of Diagnostic Radiology, Dartmouth-Hitchcock Medical Center, 2 Maynard Street. Permanent position. Department consists of 13 staff, 11 residents and 2 fellows with a full range of modern radiologic practice in a new Department in a new 420-bed Medical Center to be occupied in Fall of 1991. Seeking Nuclear Radiologist at senior assistant - full professor level to be member of a 200-physician academic multispecialty group which forms the clinical faculty of Dartmouth Medical School. ABR/ABNM preferred, experience in Nuclear Cardiology and SPECT essential. Interest in teaching essential. Research interest preferred with opportunity to develop academic program. AA/EOE.



**Dartmouth-Hitchcock  
Medical Center**

The Hitchcock Clinic  
Hanover, New Hampshire

#### CALIFORNIA

## Nuclear Medicine Technologist

El Camino Hospital is a 468-bed acute care community hospital located on the beautiful San Francisco Peninsula. We currently have an excellent opportunity for a Nuclear Medicine Technologist with recent hospital experience to join our staff. You must be a registered (or registry-eligible) Nuclear Medicine Technologist. A thorough understanding of diagnostic ultrasound procedures is desired; SPECT experience is preferred.

We offer an excellent compensation and benefits package. Please call Adriana Dominguez at 800-345-8042 or send/fax your resume to: El Camino Hospital, Personnel Dept., 2500 Grant Road, P.O. Box 7025, Mountain View, CA 94039-7025; fax (415) 940-7305. We are an equal opportunity employer. Principals only, please.



**El Camino Hospital**

*A Golden Opportunity*



### Technologist

**NUCLEAR MEDICINE TECHNOLOGIST.** Full-time position available, on-call every 4-5 weeks, at the University of Washington Medical Center in Seattle, a 360-bed tertiary hospital with an active nuclear medicine residency program. Position requires certification. G.E. Starcam experience is useful. Position includes computer protocol design and implementation, daily clinical nuclear medicine, and participation in research projects. Opportunities are available for participation in professional and scientific meetings. Salary \$2263-2961 per month based on experience. Call back at time and one-half. Standby at \$2.00/hour. Call or send resumé to: Ray Thomas, Nuclear Medicine, RC-70, University of Washington Medical Center, 1959 N.E. Pacific, Seattle, WA 98195. (206) 548-4328 EOE.

**STAFF NUCLEAR TECHNOLOGIST.** Registered or registry eligible technologist to join current staff of eight. Midwestern Regional Medical Center of 450+ beds. Send resumé to: Sioux Valley Hospital, PO Box 5039, Sioux Falls, South Dakota 57557-5039. EOE/AEE

### Equipment

**WANTED, IMMEDIATE PURCHASE:** Picker Dyna 4C Cameras, G/E MAXI 2 Cameras, G/E 400 Cameras, Elscint SPECT & Non-SPECT Cameras, Lunar Bone Densitometer, also Ultrasound, Radiology, CT, Multi-Imagers. Call Health Care Exports, Inc. (305) 924-0026.

For sale: Technicare 420/550, ADAC's vertical CDS, system I, system III, DPS 2800. We offer the highest prices for all types of nuclear medicine cameras & computers. Call Franklin at Imaging Solutions (415) 924-9155.

### Back Issues

For sale: First 15 volumes of the JNM 1960-1974. Vol. 1-5 are bound. Will include Marshall Brucer's Vignettes issues 1-103. \$500.00 plus shipping. L. Moser, MD (818) 858-0750.

## NUCLEAR MED TECH

**Saint Joseph's Hospital - Marshfield, WI., a 524-bed teaching hospital and major referral center, is currently seeking a Nuclear Medicine Technologist, Full-Time, to join our advanced Nuclear Medicine Department. This position will compliment our existing staff of 9 technologists. Qualified applicants must have appropriate registration or be registry eligible.**

Our department serves as the Nuclear Medicine Department for both Saint Joseph's Hospital and the Marshfield Clinic, a 350 physician multi-specialty group practice. Our referral base is from the upper two-thirds of Wisconsin and the Upper Peninsula of Michigan. We perform in excess of 10,000 procedures per year and operate a Siemens Dual Head Bodyscan camera, a Siemens 7500 Orbiter SPECT system, a Lunar DPX Bone densitometer and 3 G.E. Starcam SPECT systems. A broad scope of imaging procedures are performed and the operation of a Nuclear Medicine Technology Student Program in our department keeps us in the forefront of current Nuclear Medicine practice. We are a stand alone department separate from Radiology and have 3 Full-Time Nuclear Medicine physicians dedicated to our growth. **Interested applicants may call or send resume to:**

**Recruitment Specialist**  
1-800-221-3733  
Extension 7880



**SAINT JOSEPH'S HOSPITAL**

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### THE COMPANY

Siemens Gammasonics is a progressive subsidiary of Siemens A.G., one of the world's largest electronics manufacturers. Through advancements in such vital fields as nuclear medicine and digital radiography, our team of professionals has earned an international reputation for innovative excellence. Back your career with a people-oriented company that's enjoyed a 35-year history of pacesetting achievement. The demands for our high tech diagnostic imaging equipment assure you of refreshing challenge and realistic opportunity for advancement.

### THE OPPORTUNITY

Our Applied Physics and Research Group is seeking a Physicist, Computer Scientist or Biomedical Engineer with background in development of software for nuclear medical systems. The particular position now opening up involves the development of innovative nuclear medicine software and the transfer to the engineering stages. Previous experience in the field of nuclear imaging, particularly that of nuclear medicine, is highly desirable. The ideal applicant will have an exceptional GPA, and be an innovative problem solver with good mathematical and problem-solving skills. A Ph.D. or M.S. is required, preferably in physics, computer science, or a related field. Proven ability to work in a multidisciplinary environment is essential together with the interpersonal skills required for the transfer of technology from R&D to the final product.

### THE COMPENSATION PACKAGE

Siemens compensation package ranks among the best in the industry and includes:

- Competitive salaries
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We invite qualified professionals to explore this rewarding career opportunity by sending a detailed resume to:

**Director of Personnel**  
**SIEMENS GAMMASONICS, INC.**  
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Hoffman Estates, IL 60195-7372

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# Supervisor, Nuclear Medicine



## Kaiser Permanente, Southern California

Kaiser Permanente is one of the nation's leading health care providers. As such, we can offer you stimulating professional challenges and exceptional personal rewards, including a comprehensive benefits package. We're currently offering an excellent supervisory position in the Nuclear Medicine Department of our Los Angeles medical center.

You will oversee the development and implementation of sound fiscal control programs, departmental procedures and policies and high quality service programs to maintain effective operations. You will also head the Personnel Management and Quality Assurance programs, as well as ensure radiation safety and compliance with JCAHO and Department of Health standards and regulations.

The candidate we're seeking must be a California certified NMT with a Bachelor's degree, 4 years experience as a Nuclear Medicine Technologist and 2 years as an Administrative Technologist.

Kaiser Permanente offers competitive salaries and a comprehensive benefits package, which includes employer paid medical, dental and vision care coverage for you and your eligible dependents. For immediate consideration, please call or submit resume to: **Gail Franklin, Kaiser Permanente, Dept. J0U-108-09/01/91, 1515 N. Vermont Avenue, 2nd Floor, Los Angeles, CA 90027, (213) 667-4747.** We are an Equal Opportunity/Affirmative Action Employer.

Medical

## ENJOY THE PERFECT CLIMATE, PROFESSIONALLY AND PERSONALLY

You'll find an exceptional climate for professional growth and personal fulfillment when you join the staff at Carolinas Medical Center. Our 777-bed acute care facility is located in the scenic sunbelt city of Charlotte, where the lifestyle is as attractive as the mild year-round climate.

CMC will be opening a full service clinical PET Center in Oct. 1991. The center will eventually include a cyclotron and two scanners. We are currently seeking the following personnel:

### PET SUPERVISOR

Good technical skills combined with supervisory experience are essential. Applicants should be registered with either the ARRT(N) or NMTCB and have previous experience in PET imaging.

### PET TECHNOLOGIST

PET experience preferred. If not, a thorough background in SPECT and Nuclear Medicine technology is required. Candidates should be certified by the ARRT(N) or NMTCB.

We offer a competitive salary and benefits package. For confidential consideration please submit resume or call:

**Sandi Jackson**  
Allied Health Recruiter  
CAROLINAS MEDICAL CENTER  
P.O. Box 32861  
Charlotte, NC 28232  
(704) 355-2101 locally  
1-800-426-4677, Ext. 2101 (outside NC)  
1-800-772-6133, Ext. 2101 (inside NC)

EOE



**CAROLINAS  
MEDICAL CENTER**

## Director of Nuclear Medicine with Diagnostic Radiology Responsibilities

This private practice opportunity for a Diagnostic Radiologist with Special Competence in Nuclear Radiology offers the outstanding earnings potential of a very busy, successful, and respected practice, but the real attraction is the superb quality of life offered by this culturally, recreationally and economically diversified city of 250,000. This city is highly rated as one of the most desirable places to live in the United States and is located in one of the most popular recreational areas in the country. Numerous lakes, state parks, ski resorts, renowned vacation resorts, and a national park are within an hour's drive; you will not have to wait for that occasional holiday or vacation to enjoy hiking, camping, fishing, boating and skiing, with your family and friends. The city offers superb shopping and some of the finest dining anywhere. The city's numerous excellent public schools are complemented by many private school options. Many colleges and a major southeastern university are located here. A nationally acclaimed theatre group, a symphony orchestra and a metropolitan airport are all present.

This is an opportunity to be Director of the Nuclear Medicine Departments at two hospitals, as well as interface extensively in a broad range of Diagnostic Radiology duties and special procedures. As Director of Nuclear Medicine, you will set up the protocols and procedures of the Nuclear Medicine Departments and will interpret the lion's share of Nuclear Medicine studies of both hospitals. Additionally, you will work closely with the group members in Diagnostic Radiology interpretations. The expected percentage split is 33% Nuclear Medicine and 66% Diagnostic Radiology. Coverage will be shared equally with all members in the group. The position is with an extremely busy 9 man radiology group covering 2 of the city's busiest major hospitals. There is a strong emphasis on Nuclear Cardiology at one of the hospitals. Each radiologist averages over 20,000 procedures per year. The group relies heavily on teleradiography, both for transmitting images between hospitals for second opinions and consults, and for transmitting images to the home of the radiologist on call. The radiology departments are modern and well-equipped with each hospital having 3 G.E. SPECT Cameras, 2 G.E. 9800 C.T. Scanners, and 1 G.E. 1.5 Testa MRI Scanner. The latest state-of-the-art equipment and facilities for all other general and interventional radiology procedures are present.

The group has a busy nuclear medicine service already in place, but they are recruiting a Director of Nuclear Medicine to replace the retiring Director. The preferred candidate will be board certified in Radiology with Special Competence in Nuclear Radiology and/or certification in Nuclear Medicine. **Radiologists who are interested in committing to sub-specialty training in Nuclear Radiology will be considered.** A comprehensive financial package includes interview expenses, competitive salary, and fringe benefits. Partnership option is available.

To receive additional information on this or other opportunities, please call **Jeff Bohannon at 1(800) 467-4001 or (615)370-0100** and send your Curriculum Vitae to:

**Jeff Bohannon**  
The Resource Company, Inc.  
500 Wilson Pike Circle, Suite 218  
Brentwood, Tennessee 37027



## NUCLEAR MEDICINE SUPERVISOR

OUR LADY OF THE LAKE REGIONAL MEDICAL CENTER, located in Baton Rouge, LA is Louisiana's largest and finest private acute-care facility, and we are currently seeking a Supervisor for our Nuclear Medicine Department. Duties include: Utilizing technical, educational and management skills to develop department & personnel to maximum potential, plans, organizes and schedules department operations and maintains open communication within department and other hospital areas.

Qualifications include: Current NMTCB registry or ARRT-N. 5 years minimum experience in nuclear medicine. Bachelor's degree desirable.

We offer an outstanding salary and benefits package to include interview and relocation assistance. Send confidential resumé to:

Dawn Abbott  
Human Resources Dept.  
OUR LADY OF THE LAKE  
REGIONAL MEDICAL CENTER  
5000 Hennessy Blvd.  
Baton Rouge, LA 70808  
(504) 765-8803



## VIRGINIA MASON CLINIC

VMC, in beautiful Seattle, has a FT position for a Nuc. Med. Tech who will perform a full-range of Nuclear Planar and SPECT imaging, radiopharmaceutical preparations, and teach students in technology program. Qualified candidates must hold current (ARRT(N), NMTCB, RTNM). For more information, please call **Richard Lee, (206) 223-6951** or **Bob Shimer, (206) 223-7642**

### Nuclear Medicine Physician

Victoria Hospital is a 750-bed teaching hospital with affiliated regional children's hospital, cancer clinic, chronic care and other health facilities. The Department of Nuclear Medicine is seeking a nuclear medicine physician to join a professional staff of five nuclear medicine physicians and three scientists. The department provides comprehensive diagnostic and therapeutic services (14,000 procedures yearly) and participates in physician, technologist, and graduate science training programs. The successful candidate will have a strong clinical background and be extensively involved in nuclear cardiology including stress testing. Academic and investigational activities are expected as requirements for appointment at the University of Western Ontario. Applicants must be certified in nuclear medicine by the Royal College of Physicians and Surgeons of Canada or eligible to take the examinations. Canadian law requires that preference be given to qualified applicants who are Canadian citizens or permanent residents of Canada. Position available immediately. Apply to Dr. J.E. Powe, Chief of Nuclear Medicine, Victoria Hospital Corporation, 375 South Street, London, Ontario N6A 4G5. Phone: (519) 667-6571, FAX: (519) 667-6734.

## Diagnostic Imaging

### STAFFING SPECIALISTS


Specializing in Diagnostic Imaging and Nuclear Medicine Personnel

- Temporary Staffing Service
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- ✓ highly qualified, experienced technologists on a PRN basis
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Southern California Permanente Medical Group, the nation's largest and most respected multi-specialty group practice, is seeking

### RADIOLOGISTS

**Nuclear Medicine**  
BC in Radiology BC/BE in Nuclear Medicine.  
Prior experience in thyroid clinic helpful.


We provide you the freedom, technology and resources to focus on quality patient care, the collaborative support of knowledgeable colleagues and the opportunity to make a significant contribution to your field.

Our compensation and benefits package includes:

- Guaranteed practice and income
- Paid educational and sabbatical leaves
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- Comprehensive retirement plans.

Send your curriculum vitae to: **Irwin P. Goldstein, M.D., Associate Medical Director, SCPMG, Dept. 066, Walnut Center, Pasadena, CA 91188-8013.**

**Or call 1-800-541-7946.**

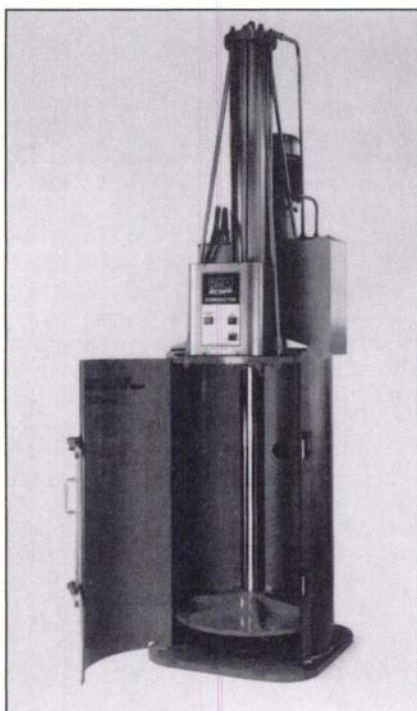


**KAISER PERMANENTE**  
Southern California Permanente Medical Group  
*Partners Practicing Good Medicine*



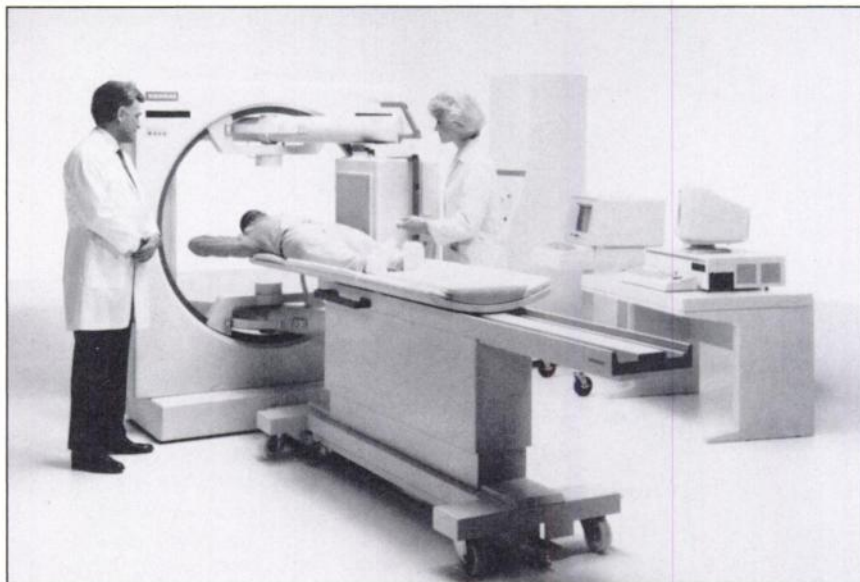
*Each description of the products below was condensed from information supplied by the manufacturer. The reviews are published as a service to the professionals working in the field of nuclear medicine and their inclusion herein does not in any way imply an endorsement by the Editorial Board of The Journal of Nuclear Medicine or by The Society of Nuclear Medicine.*

## LLRW Compactor



S&G Enterprises announces the RAM FLAT Compactor Model 85AR, engineered for compacting hazardous materials within an 85-gallon drum. The machine was developed in response to hazardous waste safety standards that require packaging of dry waste or leaking 55-gallon drums and their contents in 85-gallon drums. The unit has an 85,000-pound compaction force, and can compact within any type of 85-gallon drum, including drums that are reconditioned, or made from fiber, plastic, or metal. Prepared for normal or explosion-proof service, the unit can deal with any hazardous or low-level radioactive wastes requiring compaction. With a change of the compaction head, the machine can reduce 85-gallon drums to five-inch metal disks for easy disposal. Options include a compaction chamber pump-out system for wastes in-

## Whole-Body/SPECT Imaging System



Siemens' DIACAM, a rectangular body/SPECT imaging system was developed for advanced nuclear medicine imaging procedures that require cameras with a high-energy range. The system is designed to cover all energy ranges of radionuclides used in nuclear medicine from cardiac to monoclonal antibody studies. It utilizes a patented electronic technique that permits high spatial resolution at high count rates. An Auto Balance feature maintains system stability for easy patient positioning and fast collimator changing. The Patient Handling System requires no patient repositioning for planar, SPECT, and single-pass whole-body studies. The system incorporates Siemens Digital

Integrated Processor and ZLC correction circuitry for intrinsic energy variations and spatial nonlinearities. The DIGITRAC detector further enhances the camera's performance by continuously monitoring and calibrating each Photomultiplier Tube (PMT) for gain drift. The detector also utilizes Bonded Optics to alleviate crystal stress from PMT pressure. Bonded Optics assures long-term reliability by eliminating decoupling of the PMTs and providing uniform light transmission. **Siemens Medical Systems, Inc., Nuclear Medicine Division, 2501 Barrington Road, Hoffman Estates, IL 60195. (708) 304-7252.**

Circle Reader Service No. 102

volving hazardous or toxic liquids, sealed compaction chambers for volatile materials, remote controls for complete operator protection, and air filtering systems for fume and particulate matter removals. The door opening width of 29 inches supplies ample room to load 85-gallon drums. Other features include a 1.5-inch structural steel base plate, and a door and compaction chamber made of 0.375-inch steel plates. **Lorin C. Griffith, Grasso/Hillmer and Associates Inc., Communication and Marketing Services, 1505 11th Avenue, P.O. Box 318, Grafton, WI 53024. (414) 375-1015.**

Circle Reader Service No. 101

## Three-Detector SPECT System

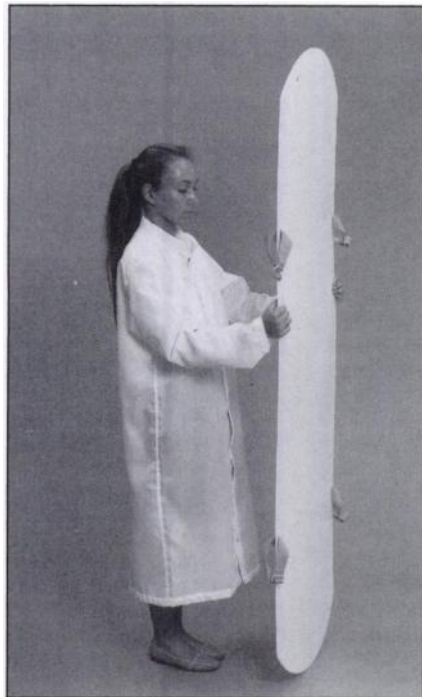
Toshiba America Medical Systems, Inc. offers the GCA-9300A multi-detector, whole-

body ultrasound system dedicated to SPECT studies. Designed to perform head and total-body SPECT, this three-detector gamma camera provides high-resolution images of functional anatomy. The system allows clinicians to image an object as small as the caudate nucleus and view the heart, liver, brain, and other vital organs. It utilizes Toshiba's Optotune Detector Performance Optimization Electronics System to improve imaging performance. By constantly regulating the detector electronics, the response is optimally-maintained, resulting in higher-resolution images with increased diagnostic content. The system can simultaneously perform digital image data acquisition, image processing, data transfer, and computer communication. **Suzanne Flynn, Toshiba America Medical Systems, Inc., 2441 Michelle Drive, Tustin, CA 92681. (714) 730-5000.**

Circle Reader Service No. 103



## Patient Transport Board



Atomic Products Corporation has developed a high-density polyethylene patient transport board that features high-impact strength, resistance to abrasion and stress cracks, and tensile strength. The unit allows patient repositioning to be done quickly with minimal effort. Often only one person is needed to complete the move. Available in two sizes, the Atomlab Easy Mover is semirigid and radiolucent, allowing the patient to remain on the mover during imaging procedures. A hardwood wall rack is available when the unit is not in use. **Atomic Products Corporation, P.O. Box 702, Shirley, NY 11967. (516) 924-9000.**

Circle Reader Service No. 104

## Digital Image Recorder

The new Matrix Digistore 2100, released by Agfa Corporation, is designed for interventional radiology and stores hundreds of images with removable cartridge technology. Capable of being configured for mobile C-Arm, fluoroscopic, and angiographic digital image recording, the unit can store two frames in RAM for instant playback. The unit's 40-megabyte, internal hard disk drive can retain 100 frames in its memory and can access those images at the rate of two-per-second. An optional 44-megabyte, removable hard disk drive utilizes removable disk cartridges, each of which can store 100 images. A removable disk from the system can be read by a Matrix RDS reader connected to a Matrix Mini video imager/film processing center. The result is hard copy capability plus daylight image recording and processing without cassettes or a darkroom. In addition

to an alphanumeric keyboard, a remote keypad is also included for a quick review of disk contents as well as for simplification of image processing functions and mode selection. Other capabilities include DSA-type subtraction, road-mapping, vascular tracing, instantaneous reply of images for review with last-image-hold, image-enhancement, and edge-enhancement. **Tom Colucci, Agfa Matrix Division, Agfa Corporation, 100 Challenger Road, Ridgefield Park, NJ 07660. (201) 641-9566.**

Circle Reader Service No. 105

## Emission Tomography Carousel

A.T.F. Consolidated introduces the Emission Tomography Carousel as an alternate gantry for nuclear SPECT imaging. The unit's design permits erect SPECT imaging of the heart, brain, upper abdomen, and chest. It is compatible with most nuclear medicine computers with SPECT software. Large and small field gamma cameras may be utilized. The unit requires no construction or space changes. It can be stored in any 3x3-foot storage space and installation requires less than one day. Since there are few moving parts, downtime is minimal. **A.T.F. Consolidated, Inc., 94 J Jeffry Blvd., Deer Park, NY 11729. (516) 586-9762.**

Circle Reader Service No. 106

## Uninterruptible Power System



Best Power Technology, Inc. has released Fortress, an uninterruptible power system that uses line-interactive circuitry to deliver no-break power. The unit measures 6.75 inches

high, 5.25 inches wide, and 15.75 inches long, and weighs 21 pounds. It offers a digital display that allows users to view true, load-dependent runtime, percent loading, voltage in/out, and battery voltage. It also has nine user-programmable operation functions and alarms that warn users of low backup time, overloads, overcurrent shutdowns, site wiring faults, and other conditions. The power systems feature the following runtimes: the 360 VA model will support an Apple Macintosh SE/30 for 53 minutes and an IBM PS/2 model 55 with VGA monitor for 15 minutes. The 460 VA model will support an IBM 3151 display station for 53 minutes and a Compaq Deskpro 386 for 14 minutes. The 660 VA model supports a Sun 3/60 workstation for 26 minutes and an IBM RS/6000 320 for six minutes. Fortress' line-interactive design is the key to uninterruptible power protection. Its inverter constantly interacts with the input line to buck, boost, or replace incoming power. The inverter is controlled by a three-stage power analysis circuit that uses artificial intelligence to learn prevailing power conditions and anticipate problems before they happen. In addition, the unit has a zero-surge clamping response time and can dissipate 300 Joules of energy at 6,500 amps. Fortress provides 47 dB of normal-mode noise rejection, and 38 dB of common-mode noise rejection. Its multi-stage noise filtering circuitry is constantly on-line to protect loads. The system boosts output voltage during brownouts without going to inverter. It features an autotransformer that can keep output within accepted industry standards, even when the input voltage drops as low as 88 volts. Fortress also provides pure sine-wave output, with less than 5% total harmonic distortion. **Kenneth Urban, Best Power Technology, Inc., P.O. Box 280, Necedah, WI 54646. (608) 565-2929 or (800) 356-5794.**

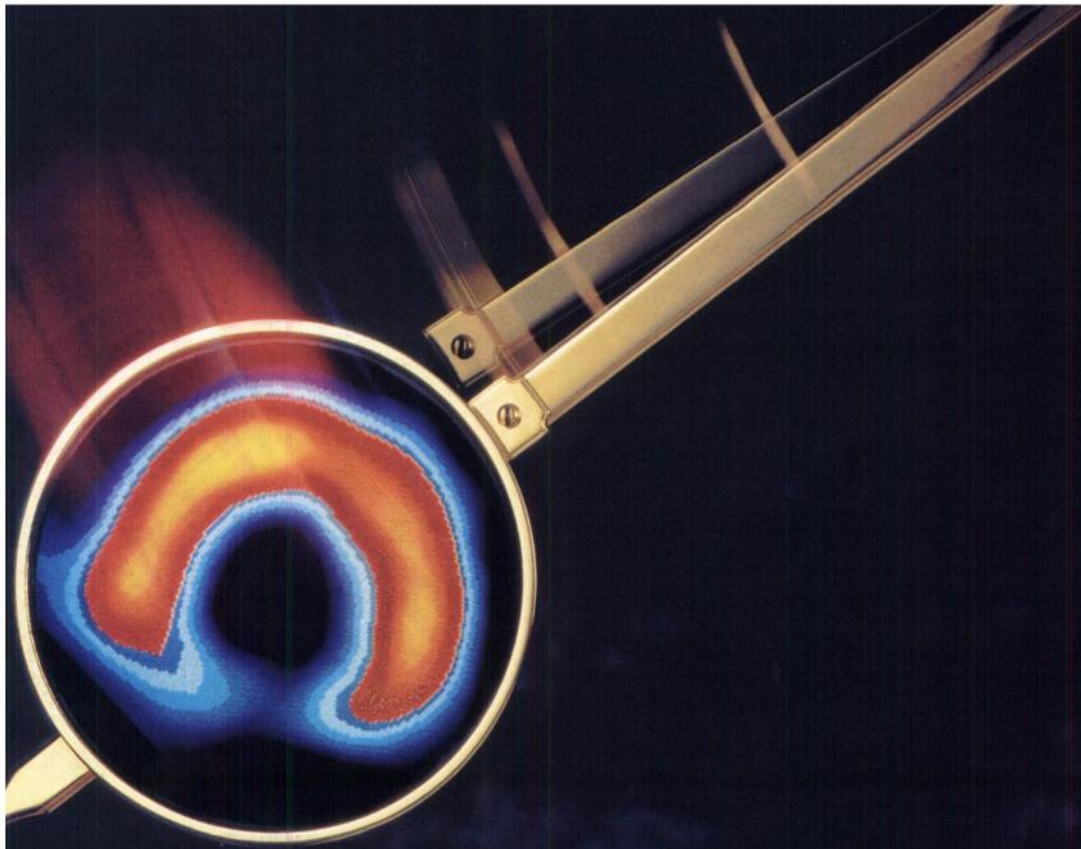
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## Pressurized Ion Chamber Survey Meter

Victoreen, Inc. announces the availability of Model 450P-DE-SI Pressurized Ion Chamber Survey Meter. The chamber is designed to meet the International Council of Radiation Protection's published energy response curve for the determination of the ambient dose equivalent. The dose quantity was derived by the ICRP to better predict absorbed doses in tissue at a depth of 1 cm. The model's other features include five operating ranges from 0-5  $\mu\text{Sv/hr}$  to 0-50 mSv/hr, combined analog/digital liquid crystal display, fast response time, automatic zeroing and ranging, and RS-232 communications capability with the optional Model 450-1A Communicator. **Margaret Meek, Marketing Services, Victoreen, Inc., 6000 Cochran Road, Cleveland, OH 44139. (216) 248-9300.**


Circle Reader Service No. 108





*Here come two  
important new benefits  
in cardiac imaging*



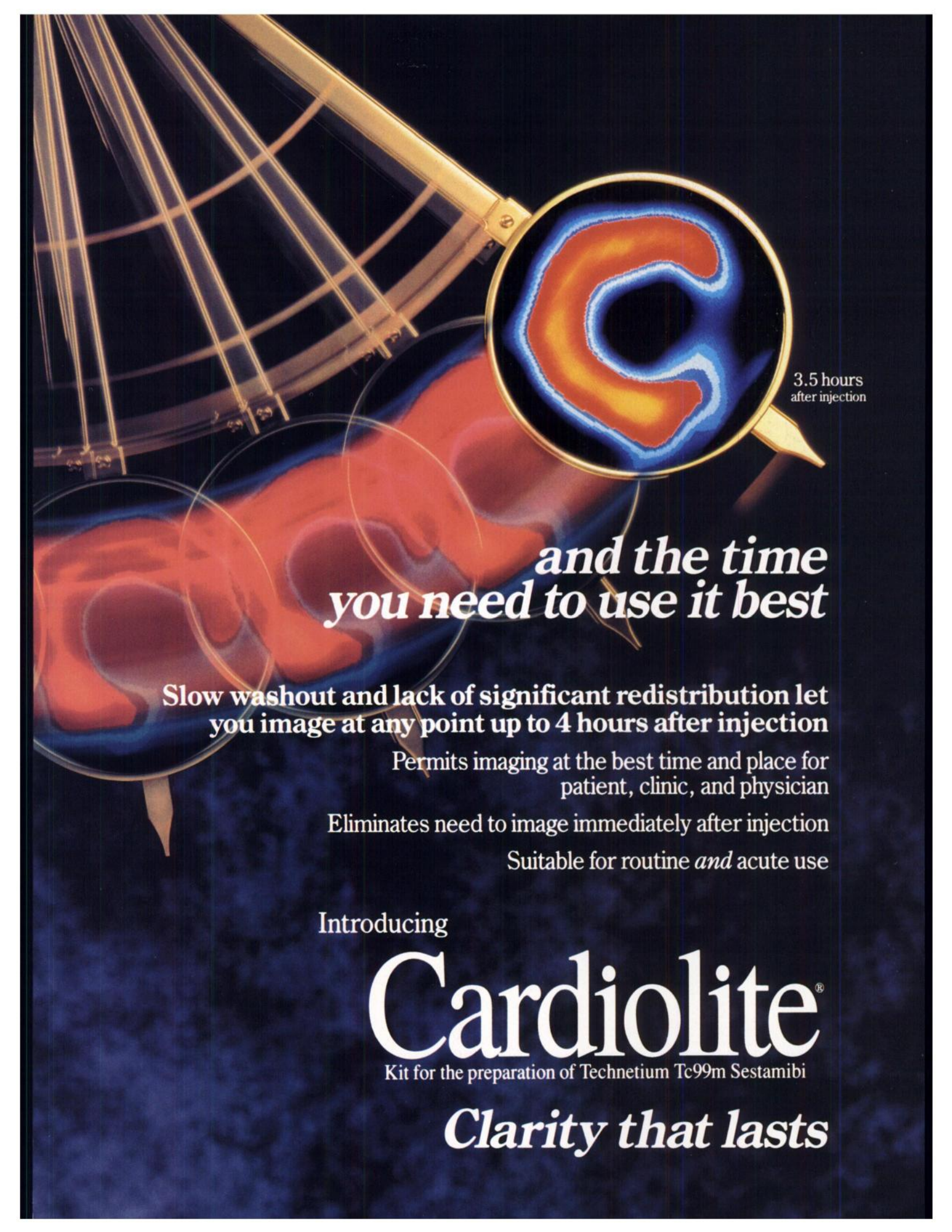


1 hour  
after injection

*The superior  
image clarity of technetium...*

*Please see final pages for prescribing information.*





3.5 hours  
after injection

*and the time  
you need to use it best*

**Slow washout and lack of significant redistribution let  
you image at any point up to 4 hours after injection**

Permits imaging at the best time and place for  
patient, clinic, and physician

Eliminates need to image immediately after injection

Suitable for routine *and* acute use

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# Cardiolite<sup>®</sup>

Kit for the preparation of Technetium Tc99m Sestamibi

*Clarity that lasts*

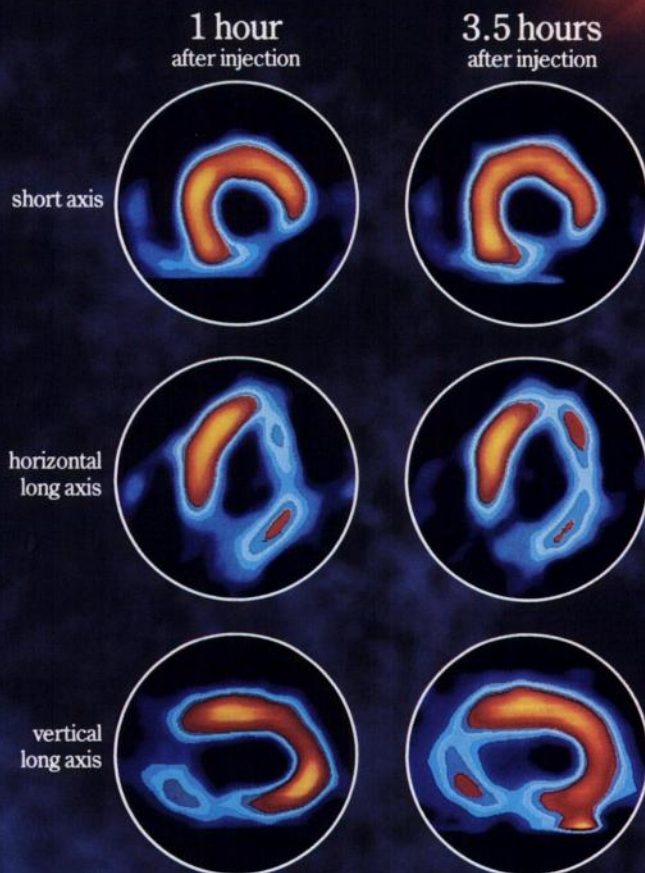


Introducing

# Cardiolite<sup>®</sup>

Kit for the preparation of Technetium Tc99m Sestamibi

*Clarity that lasts*



CARDIOLITE scans (SPECT) from a 61-year-old female 8 days following acute MI (LFOV camera, high-resolution collimator, 64 x 64 matrix, 180° arc RAO to LPO, 64 projections, 25 s/projection)

## High degree of accuracy in detection of myocardial abnormalities

In blinded studies, CARDIOLITE imaging was 83% to 96% sensitive and 79% to 100% specific in detecting myocardial infarction, when compared with final diagnoses<sup>1</sup>

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No known contraindications  
Few adverse reactions

Of 2780 patients in worldwide trials, approximately 8% experienced a transient metallic taste following injection. A few cases of transient headache, mild nausea, flushing, and non-itching rash have also been reported. In worldwide commercial experience, one patient showed signs and symptoms consistent with seizure 8 to 10 min after injection. No other adverse reactions specifically attributable to the use of CARDIOLITE have been reported.<sup>1</sup>

### Reference

1. Data on file, Du Pont File H-23531.

**DU PONT  
PHARMA**

Radiopharmaceutical

*Please see final pages for prescribing information.*

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## Brief Summary

# Cardiolite<sup>®</sup>

Kit for the preparation of Technetium Tc99m Sestamibi

## FOR DIAGNOSTIC USE

**DESCRIPTION:** Each 5 mL vial contains a sterile, non-pyrogenic, lyophilized mixture of:

Tetrakis (2-methoxy isobutyl isonitrile) Copper (I) tetrafluoroborate - 1.0 mg  
Sodium Citrate Dihydrate - 2.6 mg  
L-Cysteine Hydrochloride Monohydrate - 1.0 mg  
Mannitol - 20 mg  
Stannous Chloride, Dihydrate, minimum (SnCl<sub>2</sub>•2H<sub>2</sub>O) - 0.025 mg  
Stannous Chloride, Dihydrate, (SnCl<sub>2</sub>•2H<sub>2</sub>O) - 0.075 mg  
Tin Chloride (Stannous and Stannic) Dihydrate, maximum (as SnCl<sub>2</sub>•2H<sub>2</sub>O) - 0.086 mg

Prior to lyophilization the pH is 5.3 to 5.9. The contents of the vial are lyophilized and stored under nitrogen.

This drug is administered by intravenous injection for diagnostic use after reconstitution with sterile, non-pyrogenic, oxidant-free Sodium Perchnetate Tc99m Injection. The pH of the reconstituted product is 5.5 (5.0-6.0). No bacteriostatic preservative is present.

The precise structure of the technetium complex is Tc99m[MIBI]<sub>6</sub><sup>+</sup> where MIBI is 2-methoxy isobutyl isonitrile.

**INDICATIONS AND USAGE:** CARDIOLITE<sup>®</sup>, Kit for the preparation of Technetium Tc99m Sestamibi, is a myocardial perfusion agent that is useful in distinguishing normal from abnormal myocardium, and in the localization of the abnormality, in patients with suspected myocardial infarction. It is also useful in the evaluation of myocardial function using the first-pass technique.

**CONTRAINDICATIONS:** None known.

**WARNINGS:** In studying patients in whom cardiac disease is known or suspected, take care to assure continuous monitoring and treatment in accordance with safe, accepted clinical procedure.

### PRECAUTIONS:

#### GENERAL

The contents of the vial are intended only for use in the preparation of Technetium Tc99m Sestamibi and are not to be administered directly to the patient without first undergoing the preparative procedure (as outlined in the full prescribing information).

Radioactive drugs must be handled with care and appropriate safety measures should be used to minimize radiation exposure to clinical personnel. Also, care should be taken to minimize radiation exposure to the patients consistent with proper patient management.

Contents of the kit before preparation are not radioactive. However, after the Sodium Perchnetate Tc99m Injection is added, adequate shielding of the final preparation must be maintained.

The components of the kit are sterile and non-pyrogenic. It is essential to follow directions carefully and to adhere to strict aseptic procedures during preparation.

Technetium Tc99m labeling reactions involved depend on maintaining the stannous ion in the reduced state. Hence, Sodium Perchnetate Tc99m Injection containing oxidants should not be used.

Technetium Tc99m Sestamibi should not be used more than six hours after preparation.

Radiopharmaceuticals should be used only by physicians who are qualified by training and experience in the safe use and handling of radionuclides and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides.

#### Carcinogenesis, Mutagenesis, Impairment of Fertility

In comparison with most other diagnostic technetium-labeled radiopharmaceuticals, the radiation dose to the ovaries (1.5 rads/30 mCi) is high. Minimal exposure (ALARA) is necessary in women of childbearing capability. (See Dosimetry subsection in DOSAGE AND ADMINISTRATION section.)

The active intermediate, Cu(MIBI)<sub>4</sub>BF<sub>4</sub>, was evaluated for genotoxic potential in a battery of five tests. No genotoxic activity was observed in the Ames, CHO/HPRT and sister chromatid exchange tests (all *in vitro*). At cytotoxic concentrations ( $\geq 20 \mu\text{g/mL}$ ), an increase in cells with chromosome aberrations was observed in the *in vitro* human lymphocyte assay. Cu(MIBI)<sub>4</sub>BF<sub>4</sub> did not show genotoxic effects in the *in vivo* mouse micronucleus test at a dose which caused systemic and bone marrow toxicity (9 mg/kg,  $>600 \times$  maximal human dose).

#### Pregnancy Category C

Animal reproduction and teratogenicity studies have not been conducted with Technetium Tc99m Sestamibi. It is also not known whether Technetium Tc99m Sestamibi can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. There have been no studies in pregnant women. Technetium Tc99m Sestamibi should be given to a pregnant woman only if clearly needed.

Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability, should be performed during the first few (approximately 10) days following the onset of menses.

#### Nursing Mothers

Technetium Tc99m Perchnetate is excreted in human milk during lactation. It is not known whether Technetium Tc99m Sestamibi is excreted in human milk. Therefore, formula feedings should be substituted for breast feedings.

#### Pediatric Use

Safety and effectiveness in children below the age of 18 have not been established.

**ADVERSE REACTIONS:** During clinical trials, approximately 8% of patients experienced a transient metallic or bitter taste immediately after the injection of Technetium Tc99m Sestamibi. A few cases of transient headache, flushing and non-itching rash have also been attributed to administration of the agent. One patient demonstrated signs and symptoms consistent with seizure, 8 to 10 minutes after administration of the drug. No other adverse reactions specifically attributable to the use of Technetium Tc99m Sestamibi have been reported.

**DOSAGE AND ADMINISTRATION:** The suggested dose range for I.V. administration to be employed in the average patient (70 kg) is:

370 to 1110 MBq (10 to 30 mCi)

The dose administered should be the lowest required to provide an adequate study consistent with ALARA principles (See also PRECAUTIONS).

When used in the diagnosis of myocardial infarction, imaging should be completed within four hours after administration (see also CLINICAL PHARMACOLOGY section in full prescribing information).

The patient dose should be measured by a suitable radioactivity calibration system immediately prior to patient administration. Radiochemical purity should be checked prior to patient administration.

Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration whenever solution and container permit.

Store at room temperature (15 to 30°) before and after reconstitution.

**RADIATION DOSIMETRY:** Table 4 shows the radiation doses to organs and tissues of an average patient (70 kg) per 1110 MBq (30 mCi) of Technetium Tc99m Sestamibi injected intravenously.

**Table 4. Radiation Absorbed Doses from Tc99m Sestamibi**

Organ	Estimated Radiation Absorbed Dose			
	REST			
	2.0 hour void		4.8 hour void	
	rads/ 30 mCi	mGy/ 1110 MBq	rads/ 30 mCi	mGy/ 1110 MBq
Breasts	0.2	2.0	0.2	1.9
Gallbladder Wall	2.0	20.0	2.0	20.0
Small Intestine	3.0	30.0	3.0	30.0
Upper Large Intestine Wall	5.4	55.5	5.4	55.5
Lower Large Intestine Wall	3.9	40.0	4.2	41.1
Stomach Wall	0.6	6.1	0.6	5.8
Heart Wall	0.5	5.1	0.5	4.9
Kidneys	2.0	20.0	2.0	20.0
Liver	0.6	5.8	0.6	5.7
Lungs	0.3	2.8	0.3	2.7
Bone Surfaces	0.7	6.8	0.7	6.4
Thyroid	0.7	7.0	0.7	6.8
Ovaries	1.5	15.5	1.6	15.5
Testes	0.3	3.4	0.4	3.9
Red Marrow	0.5	5.1	0.5	5.0
Urinary Bladder Wall	2.0	20.0	4.2	41.1
Total Body	0.5	4.8	0.5	4.8

Stabin, M., July, 1990, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831, (615) 576-3449.

**HOW SUPPLIED:** Du Pont's CARDIOLITE<sup>®</sup>, Kit for the preparation of Technetium Tc99m Sestamibi is supplied as a 5 mL vial in kits of two (2), five (5) and thirty (30) vials, sterile and non-pyrogenic.

Prior to lyophilization the pH is between 5.3 and 5.9. The contents of the vials are lyophilized and stored under nitrogen. Store at room temperature (15 to 30°C) before and after reconstitution. Technetium Tc99m Sestamibi contains no preservatives. Included in each two (2) vial kit is one (1) package insert, five (5) vial shield labels and five (5) radiation warning labels. Included in each five (5) vial kit is one (1) package insert, five (5) vial shield labels and five (5) radiation warning labels. Included in each thirty (30) vial kit is one (1) package insert, thirty (30) vial shield labels and thirty (30) radiation warning labels.

The US Nuclear Regulatory Commission has approved this reagent kit for distribution to persons licensed to use byproduct material identified in 35.100 and 35.200 of 10 CFR Part 35, to persons who hold an equivalent license issued by an Agreement State, and, outside the United States, to persons authorized by the appropriate authority.

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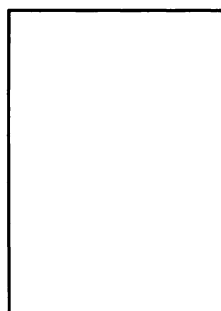
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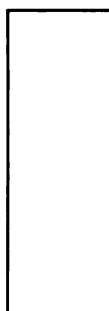
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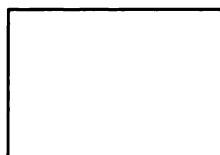
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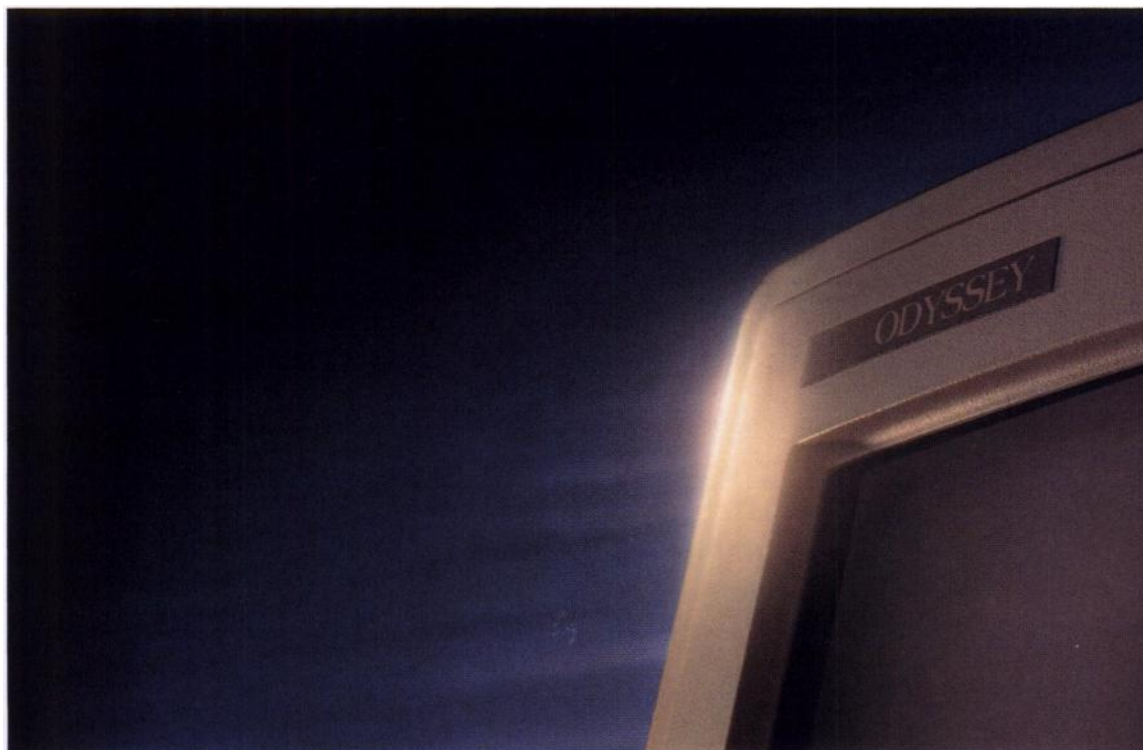
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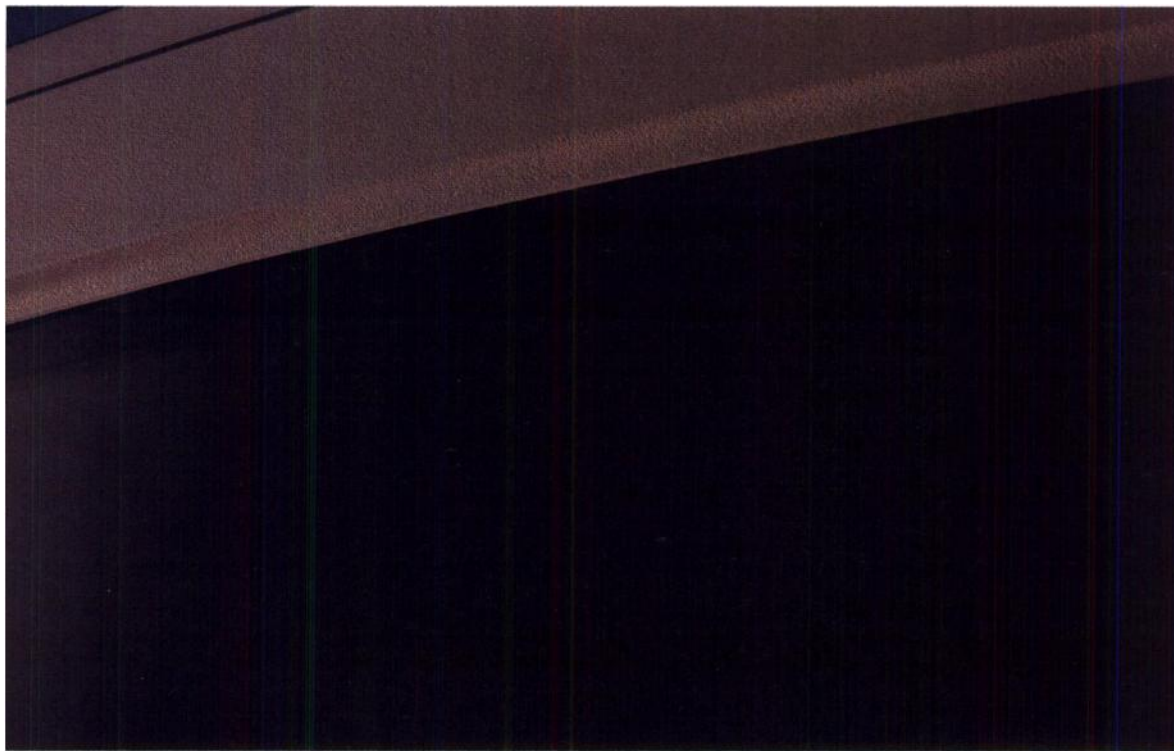




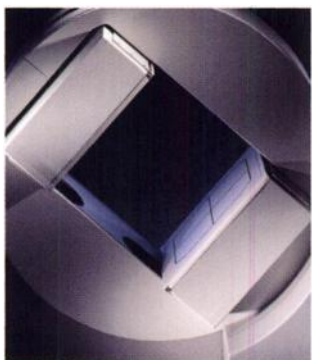
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Cardiogen-82 (Rubidium Rb 82 Generator) must be used with an infusion system specifically labeled for use with the generator and capable of accurate measurement and delivery of doses of rubidium chloride Rb 82 injection not to exceed a single dose of 2220 MBq (60 mCi) and a cumulative dose of 4440 MBq (120 mCi) at a rate of 50 mL/min with a maximum volume per infusion of 100 mL and a cumulative volume not to exceed 200 mL. These performance characteristics reflect the conditions of use under which the drug development clinical trials were conducted.

Adequate data from clinical trials to determine precise localization of myocardial infarction or identification of stress-induced ischemia have not been collected.

Positron emission tomographic (PET) instrumentation is recommended for use with rubidium chloride Rb 82 injection.

#### CONTRAINDICATIONS

None known.

#### WARNINGS

Caution should be used during infusion as patients with congestive heart failure may experience a transitory increase in circulatory volume load. These patients should be observed for several hours following the Rb-82 procedure to detect delayed hemodynamic disturbances.

#### PRECAUTIONS

##### General

Data are not available concerning the effect of marked alterations in blood glucose, insulin, or pH (such as is found in diabetes mellitus) on the quality of rubidium chloride Rb 82 scans. Attention is directed to the fact that rubidium is physiologically similar to potassium, and since the transport of potassium is affected by these factors, the possibility exists that rubidium may likewise be affected.

Rubidium chloride Rb 82 injection must be administered only with an appropriate infusion system capable of meeting the performance characteristics previously described. (See INDICATIONS AND USAGE). The drug should be used only by those practitioners with a thorough understanding of the use and performance of the infusion system.

Repeat doses of rubidium chloride Rb 82 injection may lead to an accumulation of the longer lived radioactive contaminants strontium Sr 82 and strontium Sr 85.

Since eluate obtained from the generator is intended for intravenous administration, aseptic techniques must be strictly observed in all handling. Only additive free Sodium Chloride Injection USP should be used to elute the generator. Do not administer eluate from the generator if there is any evidence of foreign matter.

As in the use of any radioactive material, care should be taken to minimize radiation exposure to the patient consistent with proper patient management and to insure minimum radiation exposure to occupational workers.

Radiopharmaceuticals should be used only by physicians who are qualified by training and experience in the safe use and handling of radionuclides and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides.

#### Carcinogenesis, Mutagenesis, Impairment of Fertility

No long-term studies have been performed to evaluate carcinogenic potential, mutagenicity potential, or to determine whether rubidium Rb 82 may affect fertility in males or females.

#### Pregnancy Category C

Animal reproductive studies have not been conducted with rubidium Rb 82. It is also not known whether rubidium Rb 82 can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. Rubidium Rb 82 should be given to pregnant women only if the expected benefits to be gained clearly outweigh the potential hazards.

Ideally, examinations using radiopharmaceuticals, especially those examinations which are elective in nature, in women of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

#### Nursing Mothers

It is not known whether rubidium Rb 82 is excreted in human milk. Due to the short half-life of rubidium Rb 82 (75 sec) it is unlikely that the drug would be excreted in human milk during lactation. However, because many drugs are excreted in human milk, caution should be exercised when rubidium Rb 82 is administered to nursing women.

#### Pediatric Use

Safety and effectiveness in children have not been established.

#### ADVERSE REACTIONS

No adverse reactions specifically attributable to rubidium Rb 82 have been reported during controlled clinical trials.

#### HOW SUPPLIED

Cardiogen-82 (Rubidium Rb 82 Generator) is supplied in the form of strontium Sr 82 adsorbed on a hydrous stannic oxide column with an activity of 90-150 millicuries Sr-82 at calibration time. The generator is encased in a lead shield surrounded by a labeled plastic container. Complete assay data for each generator are provided on the container label. Cardiogen-82 (Rubidium Rb 82 Generator) is intended for use only with an appropriate, properly calibrated infusion system labeled for use with the generator.

(J4-263)

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