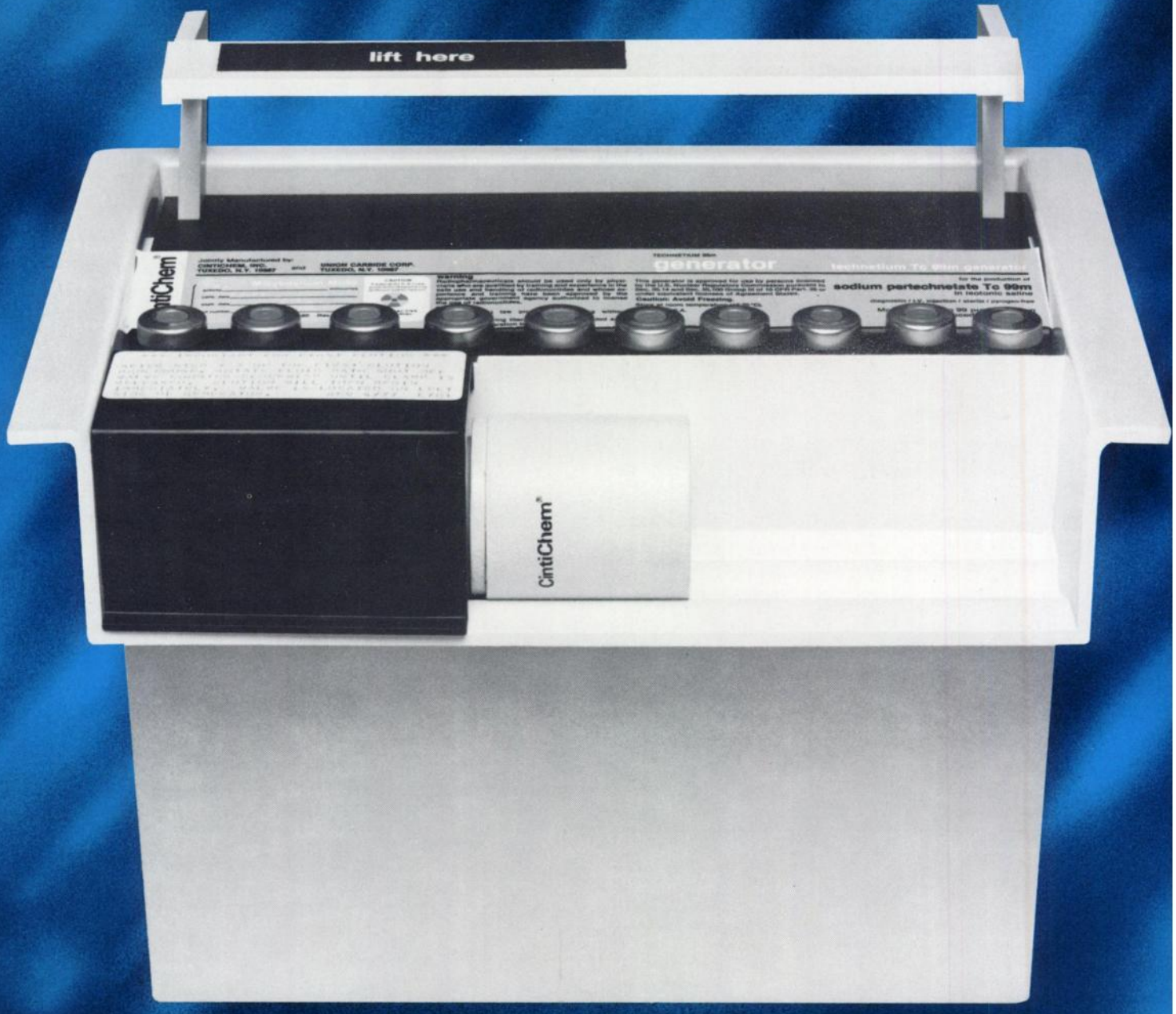
Heavyweight



CintiChem® Technetium 99m Generators Are The Heaviest You'll Find– On Purpose

Your Safety Is Our Concern, Too

Technetium 99m Generators from Cintichem, Inc. have 3.77 inches of lead surrounding the column for maximum radiation protection. The secondary shield adds 5/8″ more lead to make our generators safer yet. And only MPI Generators offer depleted uranium shielding in higher calibrations, designed to maximize radiation protection, convenience and reduce costs. With 20 sizes and 2 calibration days, we can meet virtually every need.

Convenience is also designed INTO every MPI Generator. It is the only generator with rapid, easy horizontal elution via a shielded elution port. The simple, one-step elution reduces work time while eliminating direct eye exposure during the elution process. Eluate sterility is assured by the 0.22 micron filter on the terminal fluid line and an autoclaved column.

And all CintiChem Technetium 99m Generators from Medi-Physics incorporate the following important advantages:

- **A NEW STERILE NEEDLE is utilized for each elution, reducing the chances of a septic or pyrogenic situation occurring in routine clinical usage.**
- **5cc, 10cc AND 20cc EVACUATED ELUTION VIALS are available, allowing you to optimize the elution concentration to meet your needs.**
- **RIGID QUALITY CONTROL TESTING, which includes an elution check on each Generator, assures that it meets our rigid internal specifications. The assurance that 20 years experience in nuclear medicine brings.**
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We are concerned about your safety. That will be evident when you receive your first CintiChem generator from MPI.

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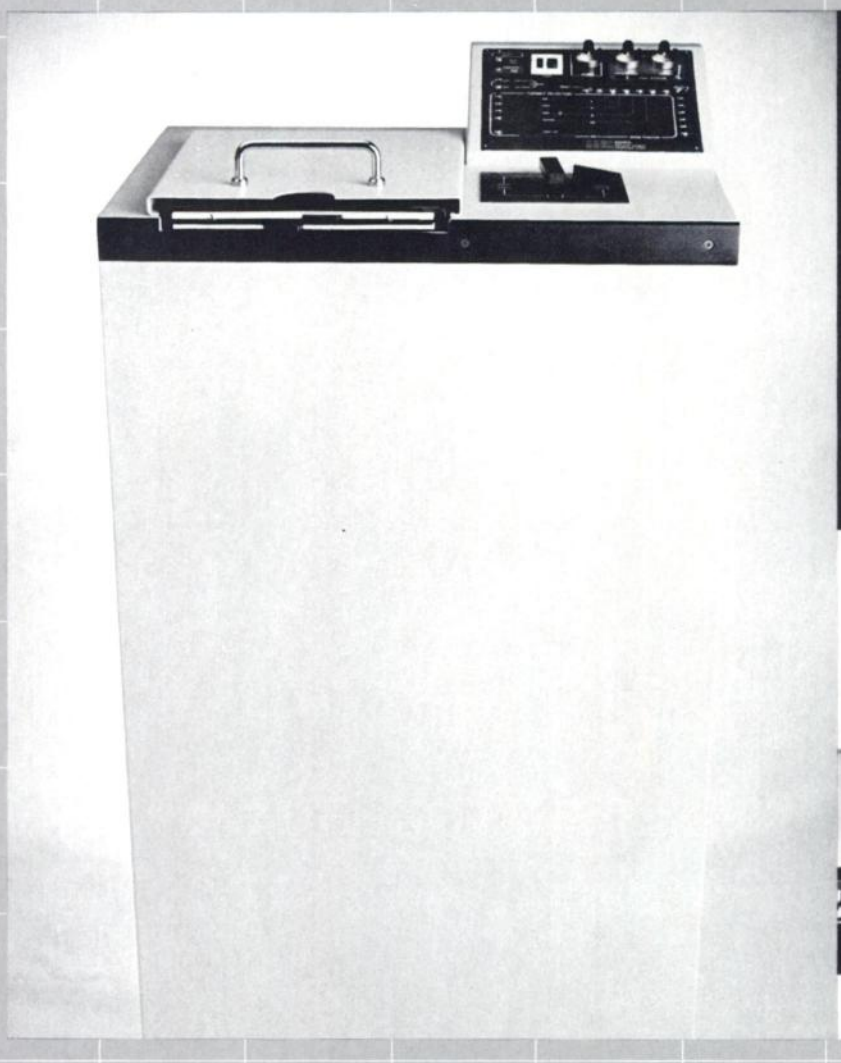
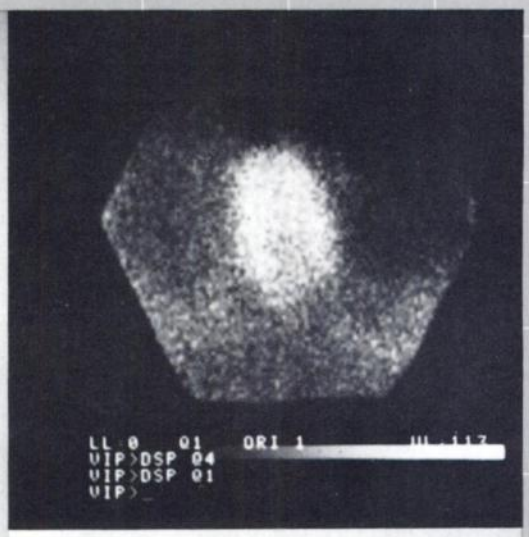
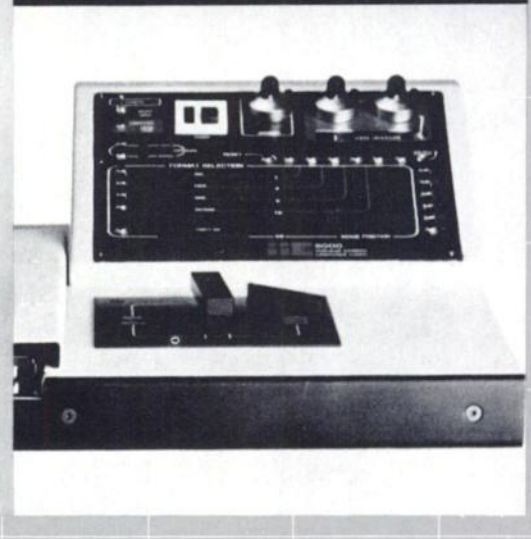
CintiChem® Technetium Tc99m Generators are jointly manufactured by Union Carbide Corporation and Cintichem, Inc. a wholly owned subsidiary of Medi-Physics, Inc.

The Schizo Imager!







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The new 5000C analog/digital camera from Illinois Imaging Electronics has a split personality. It's a nuclear imager. It's a video imager. In fact, it's the **only** combination imager available for today's computer-assisted nuclear medicine department or practice!

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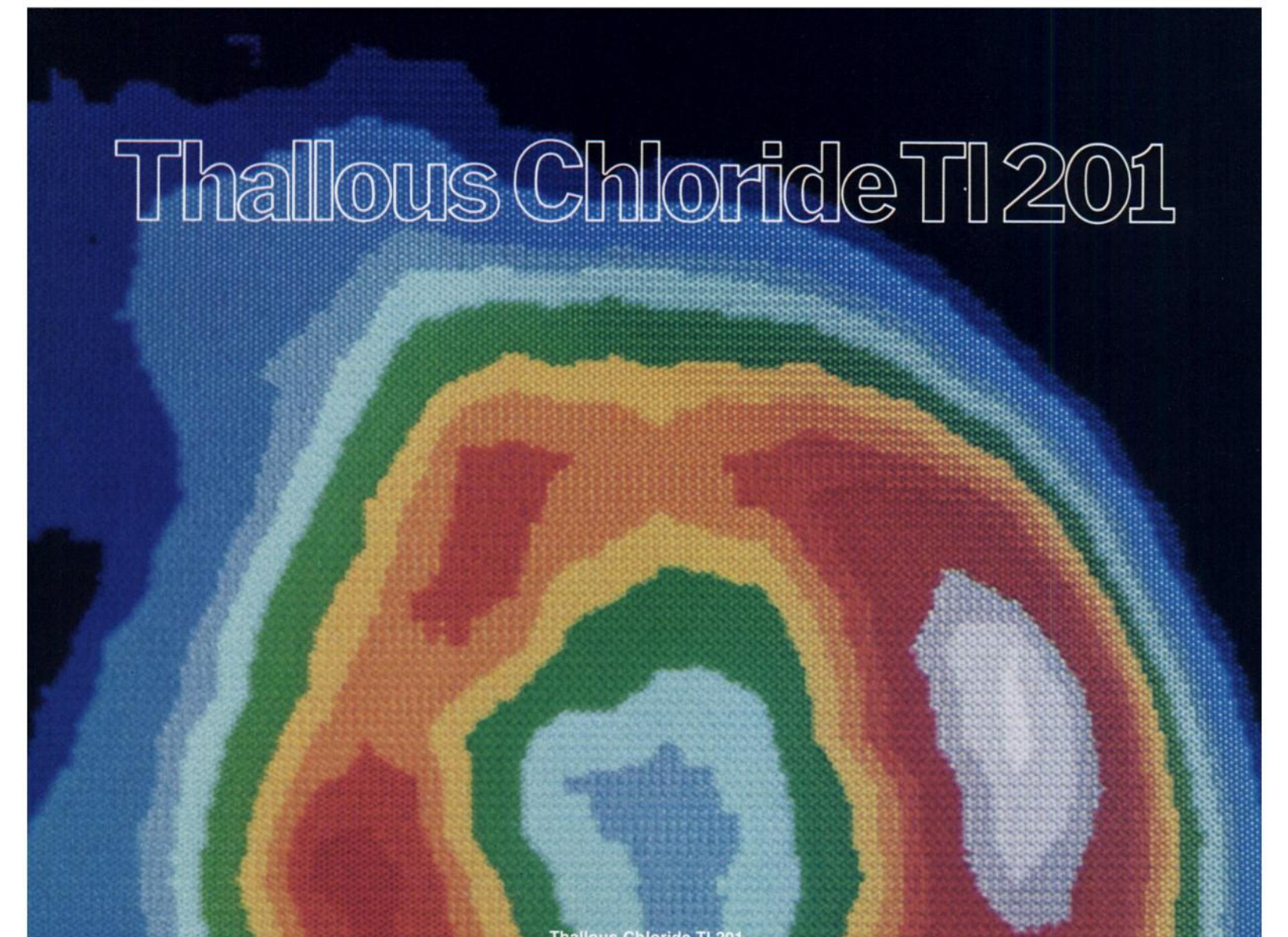
Thallous Chloride Tl 201



Thallous Chloride Tl 201
For complete prescribing information consult package insert, a brief summary of which follows:

DESCRIPTION: Thallous Chloride Tl 201 is supplied in isotonic solution as a sterile, nonpyrogenic diagnostic radiopharmaceutical for intravenous administration. Each unit dose contains 1 milliliter and each milliliter contains 2 millicuries of Thallous Chloride Tl 201 at calibration time. pH adjusted to 5.0–8.0 with hydrochloric acid and/or sodium hydroxide. Contains no bacteriostatic preservative. Thallium Tl 201 is cyclotron produced and is essentially carrier-free. Radionuclidic purity at calibration time is at least 98.0% with less than 1.0% Thallium Tl 200, 1.0% Thallium 202 and 0.2% Lead Pb 203. The concentration of each radionuclidic contaminant changes with time.

INDICATION AND USAGE: Thallous Chloride Tl 201 may be used in cardiac imaging to define the extent of myocardial infarction.

It may also be useful in conjunction with exercise stress testing as an adjunct in the diagnosis of ischemic heart disease (atherosclerotic coronary artery disease).

CONTRAINDICATIONS: None known.

WARNINGS: When studying patients suspected or known to have myocardial infarction or ischemia, care should be taken to assure continuous clinical monitoring and treatment in accordance with safe, accepted procedure. Exercise stress testing should be performed only under the supervision of a qualified physician and in a laboratory equipped with appropriate resuscitation and support apparatus.

PRECAUTIONS

General

Do not use after the expiration time and date (4 days after calibration time) stated on the label.

Discard vial after single use. Do not use if contents are turbid.

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

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

Thallous Chloride Tl 201 as well as other 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 patient consistent with proper patient management.

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 animal studies have been performed to evaluate carcinogenic potential, mutagenicity potential, or whether Thallous Chloride Tl 201 affects fertility in males or females.

Pregnancy Category C

Animal reproduction studies have not been conducted with Thallous Chloride Tl 201. It is also not known whether Thallous Chloride Tl 201 can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Thallous Chloride Tl 201 should be given to a pregnant woman only if clearly needed.

Nursing Mothers

It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when Thallous Chloride Tl 201 is administered to a nursing woman.

Pediatric Use

Safety and effectiveness in children have not been established.

ADVERSE REACTIONS: Adverse reactions related to use of this agent have not been reported to date.

HOW SUPPLIED: Thallous Chloride Tl 201 is supplied as a sterile, nonpyrogenic, isotonic solution in unit dose vials containing 1 milliliter. Each milliliter contains 2 millicuries of Thallous Chloride Tl 201 at calibration time. Contains no bacteriostatic preservative.

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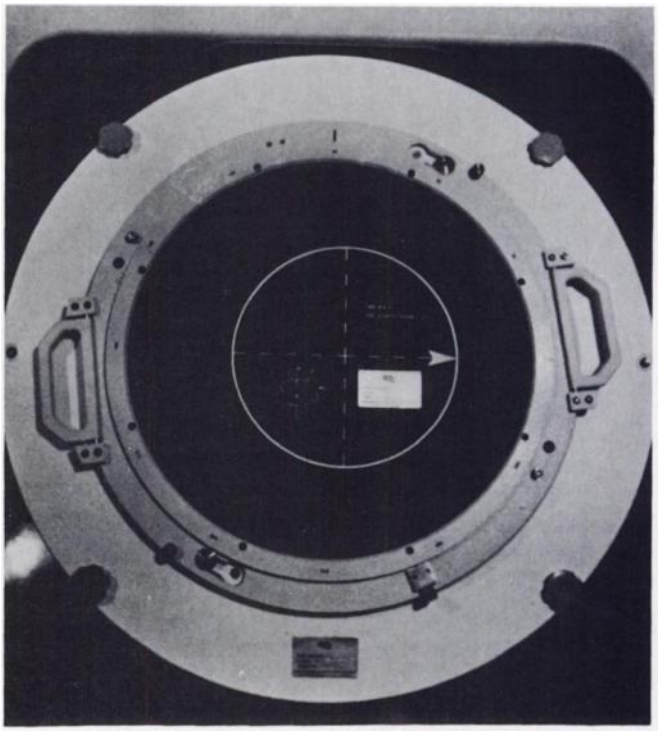

The EDC Rotating Slant Hole Collimator Tomography Program operates on a Gamma — 11 with 28K of memory.

The program accepts 6-128 × 128 images as input, and produces 12 planes with a starting depth and spacing designated by the operator. Processing is performed in 128 × 128 using the impedance method for initial plane construction. The amount of background subtracted may be chosen by the operator. The operator may input the slant angle of the collimator.

Two output formats may be selected — 12 - 128 × 128 planes or 12 - 64 × 64 planes. (The latter by cropping — not by size adjustment).

For further information, please call: (617) 458-9064.

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"An excellent all purpose collimator. Much faster than standard all purpose collimators — no loss of resolution."

Benjamin Reed, Chief Technologist
Stamford Hospital, Stamford, CT

(concerning the .070" Hex Array).
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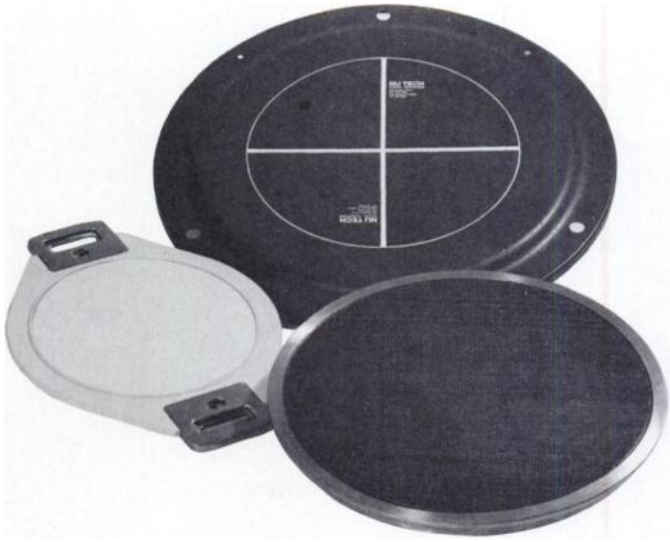

There's more you should know about NU TECH's collimators and "upgrade accessories". For more information write:
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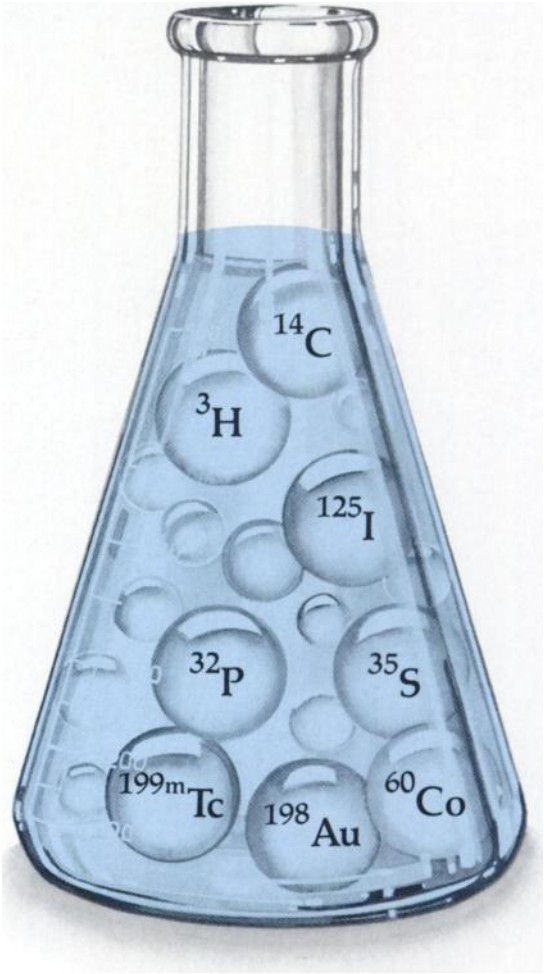

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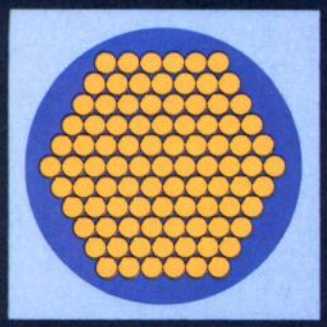
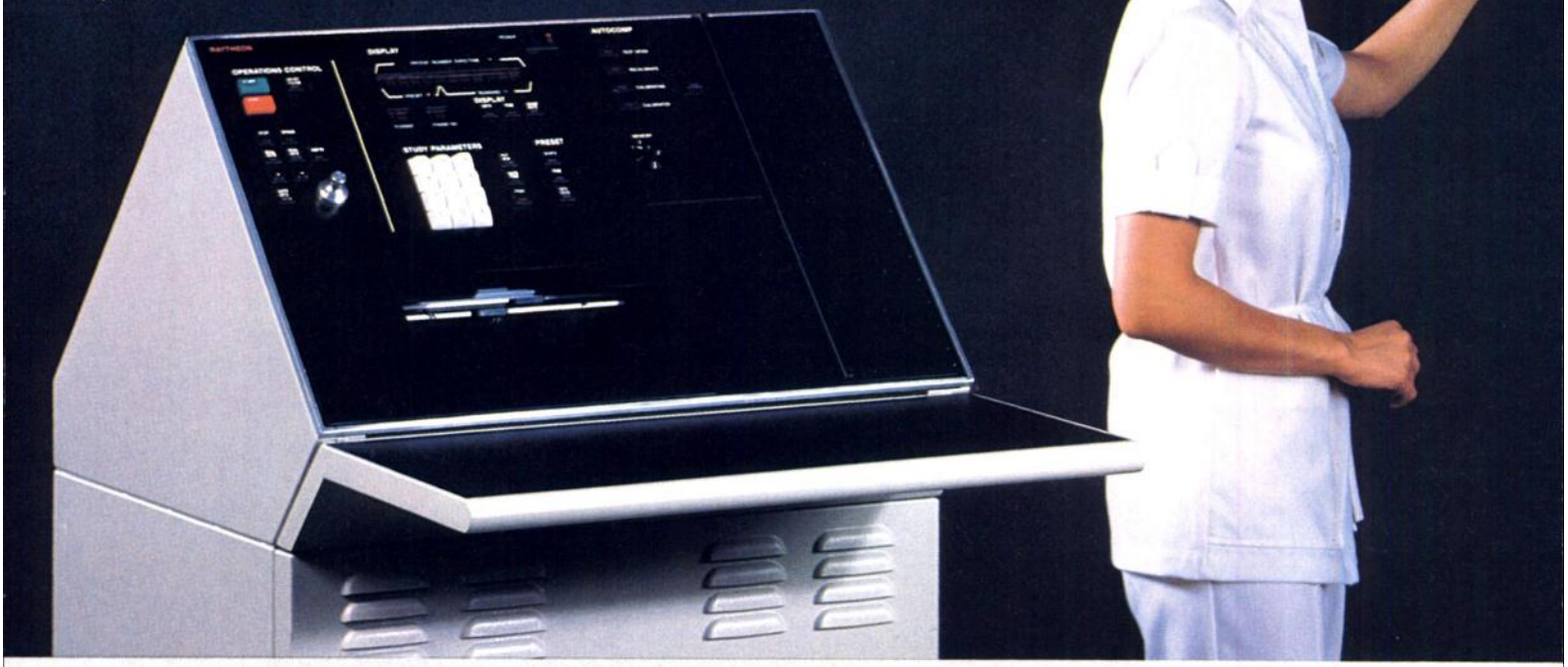


"Honeycomb" 91-tube detector array provides edge-to-edge LFOV resolution, detail and speed.



You've heard a lot of talk about improvements in linearity... or uniformity... or resolution.

But the gain in one parameter is usually at the expense of others. In short—a compromise.

With Raytheon nuclear systems, there is no such compromise. All factors are optimized in a superbly balanced, thoroughly proven system. One that gives you a closer, more detailed view of every patient.

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Performance is, ultimately, a function of the detector head. And in our Step One gamma camera, Raytheon's technological expertise comes to the fore.

In the largest useful field of view, Raytheon uses a "honeycomb" array of 91 two-inch tubes. And couples it to a specially-designed ½-inch receptor crystal and 8-stage dynode PMT. Thus, your Raytheon nuclear system can record the *full* spectrum of static and dynamic studies... with optimized efficiency.

What's more, the system is ultra sensitive, extremely fast. A 1-million count image takes about one minute. That's up to 50% faster than other systems. And represents a considerable time savings for you.

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The exclusive Raytheon detector head is interfaced with a specialized triple-pulse height detector. This advanced electronic system accepts peak pulses only and analyzes each one separately. So you can study up to three Ga^{67} photo peaks at one time... and know you've captured the most significant detail.

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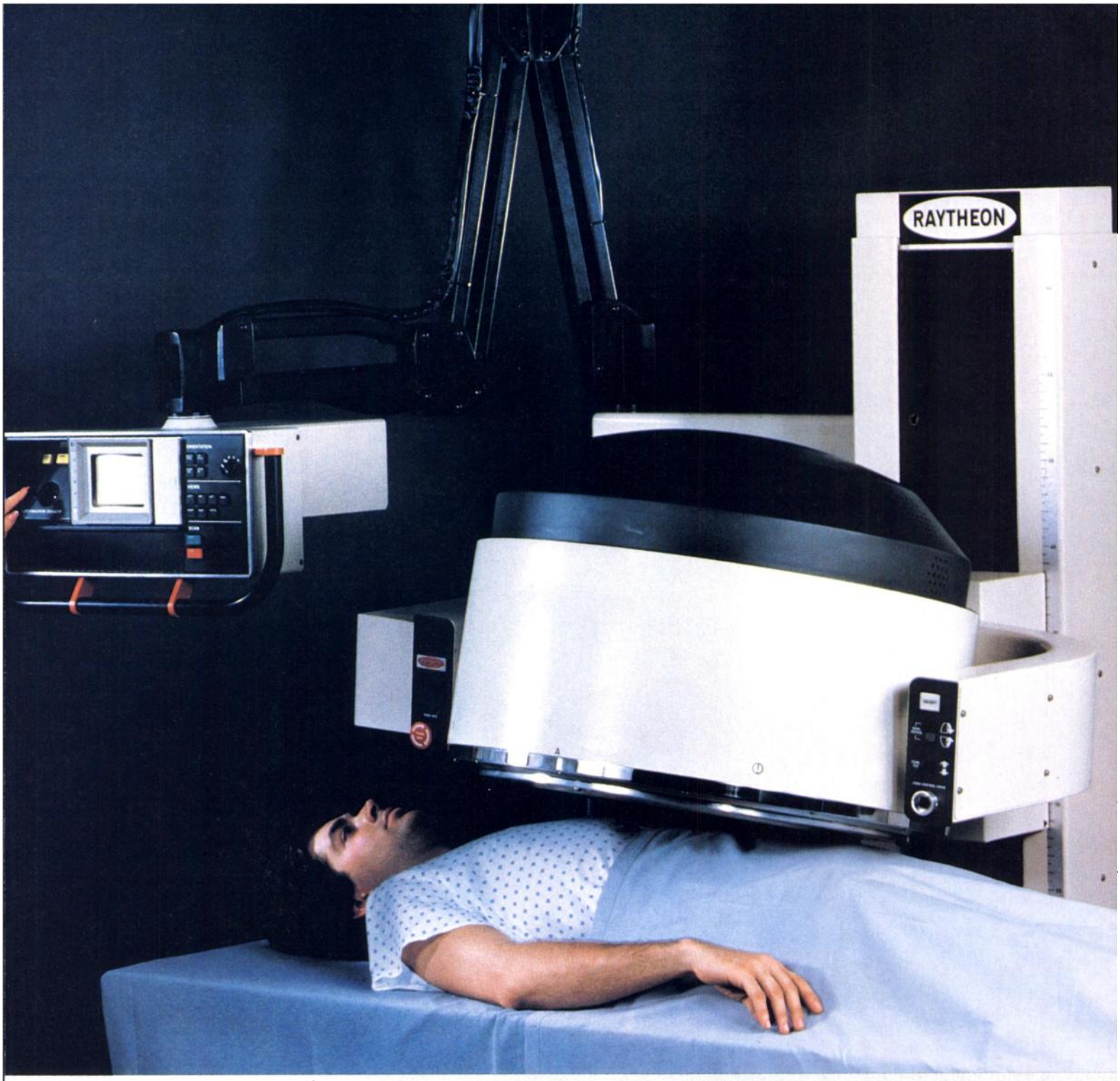

ter with remote control, patient data entry and exceptional information density.

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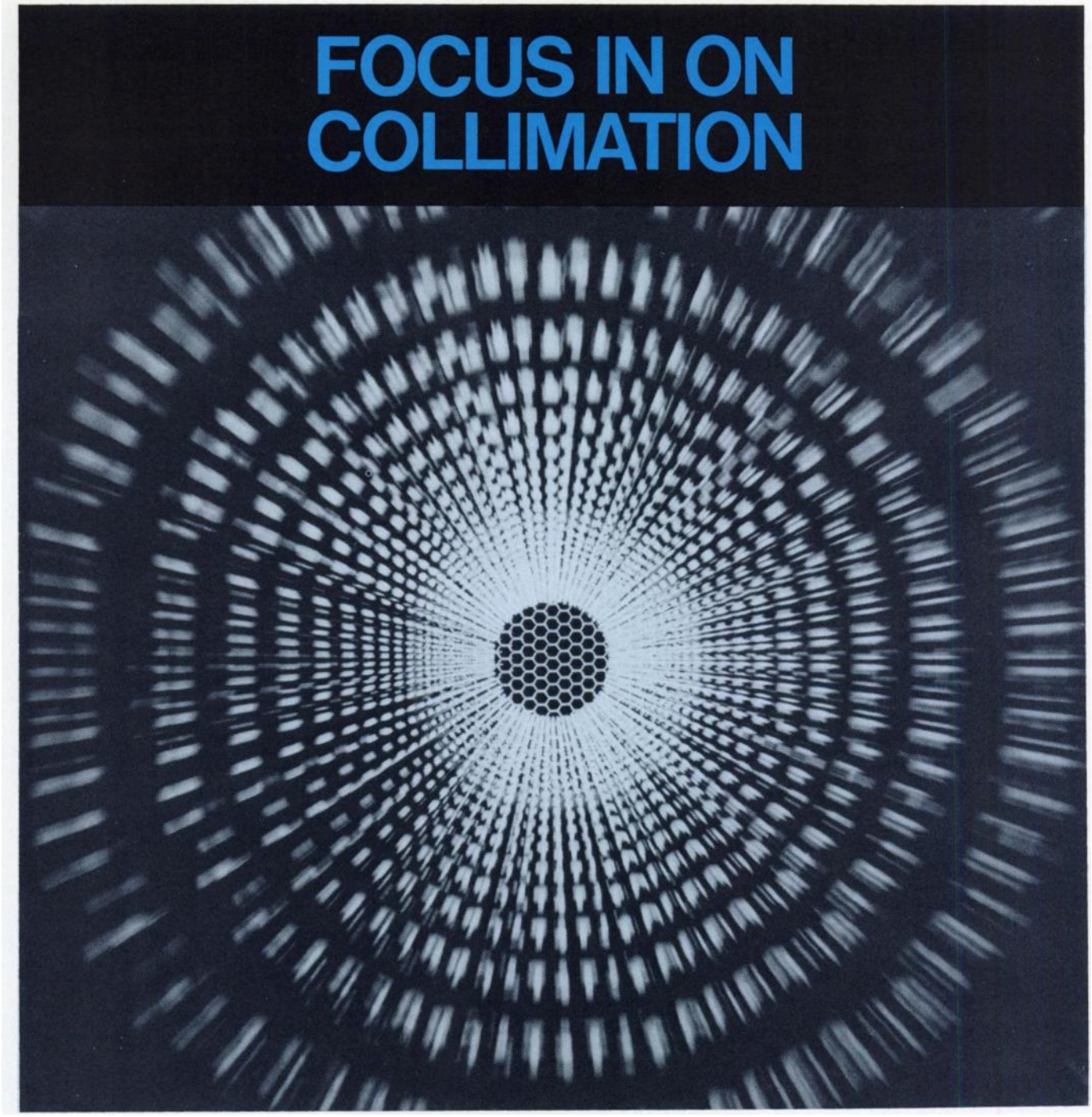

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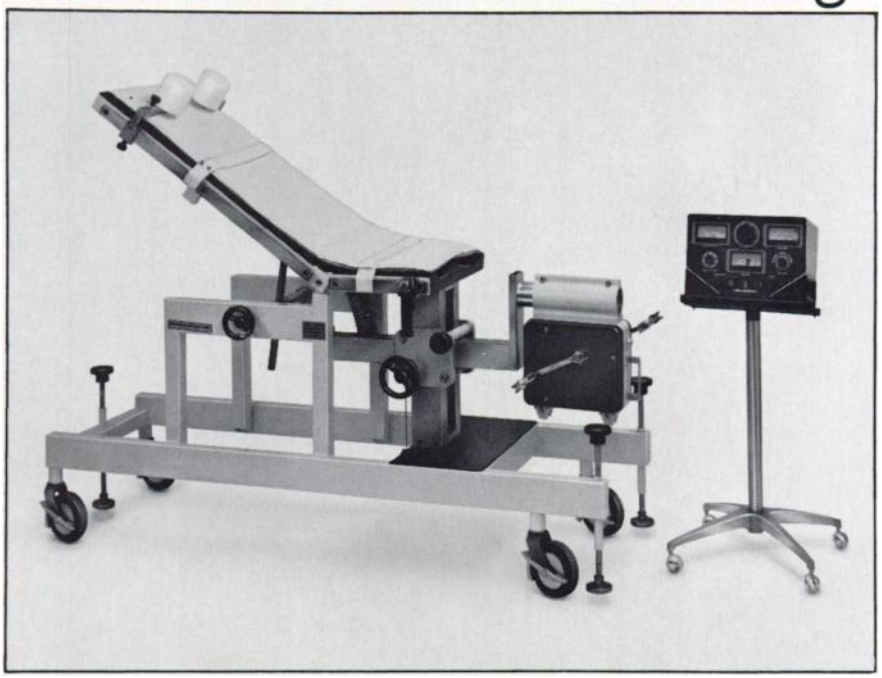

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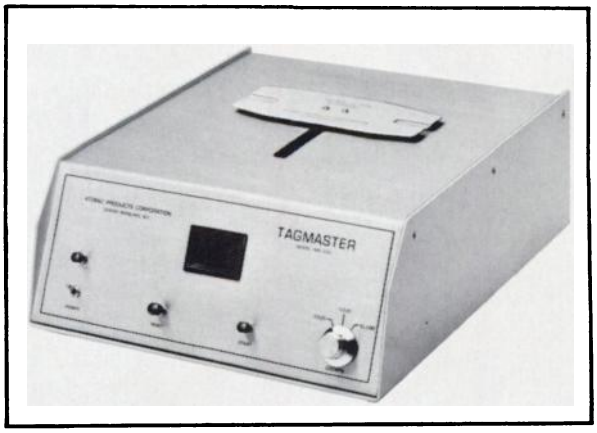

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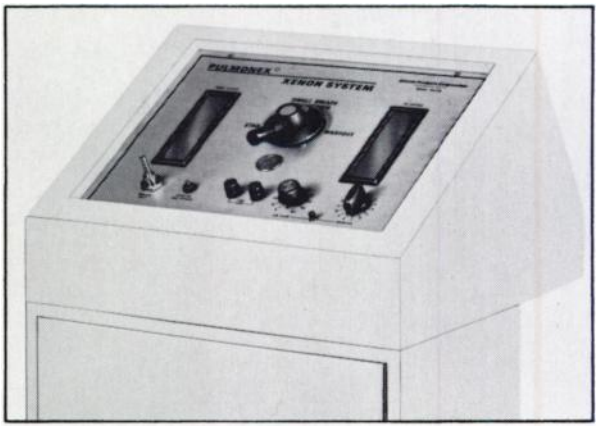

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- Easy two-step procedure

* An example of new vial shield available late 1982.

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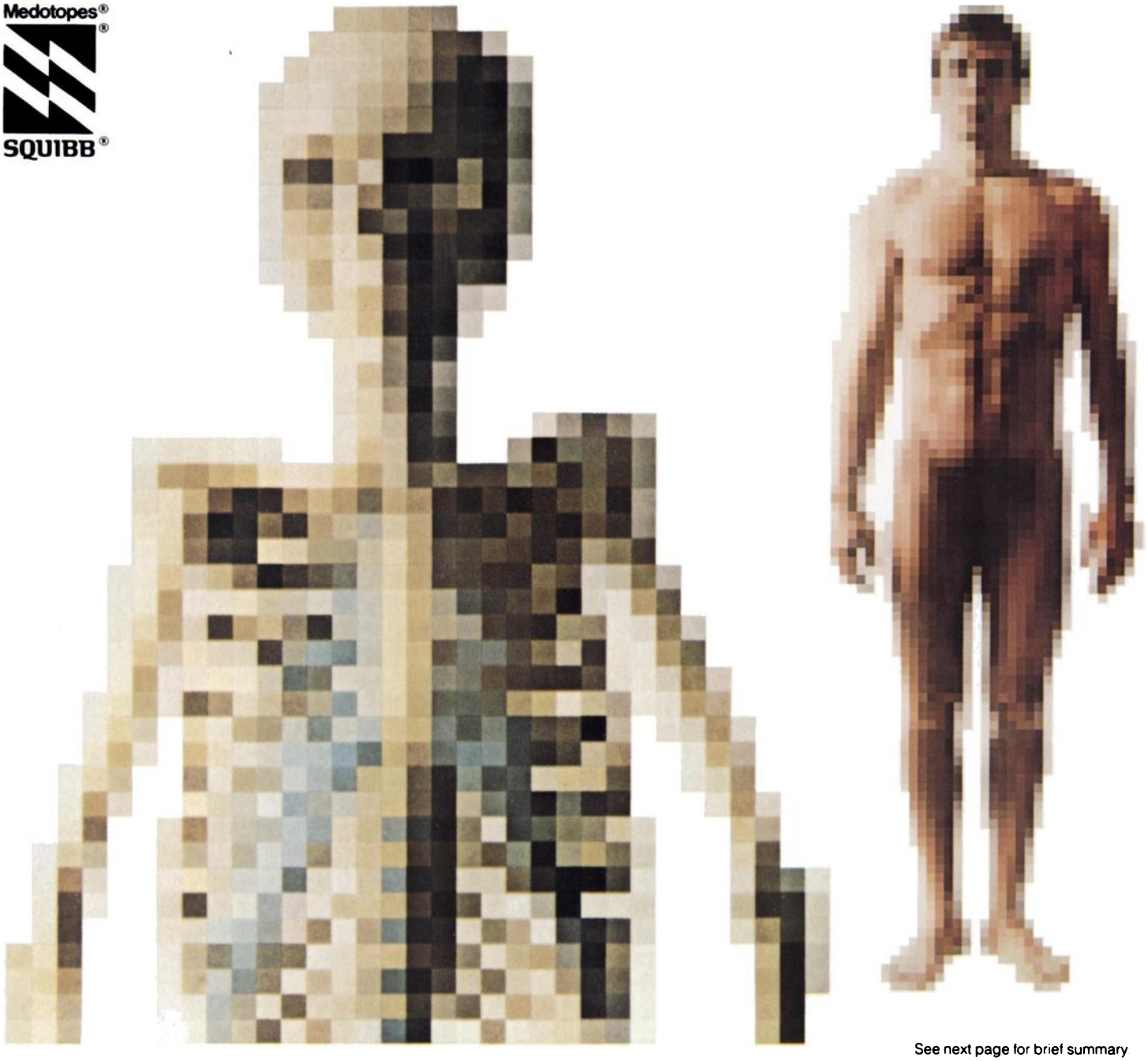

See next page for brief summary

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Toll-Free Technical Customer Service	800-257-5181 In New Jersey, 800-582-5913

MDP-SQUIBB™
Technetium Tc 99m Medronate Kit
For Diagnostic Use

DESCRIPTION: Each 10 ml capacity reaction vial contains a sterile, nonpyrogenic lyophilized powder prepared from 20 mg medronic acid, 11 mg sodium hydroxide, and 0.25 mg tin as fluoride; the product does not contain a preservative. When sterile, nonpyrogenic sodium pertechnetate Tc 99m is added to the vial, technetium Tc 99m medronate is formed.

CONTRAINDICATIONS: None known.

WARNINGS: This class of compounds is known to complex cations such as calcium. Particular caution should be used with patients who have or who may be predisposed to hypocalcemia (i.e., alkalosis).

Preliminary reports indicate impairment of brain scans using sodium pertechnetate Tc 99m injection which have been preceded by a bone scan using an agent containing stannous ions. The impairment may result in false-positive or false-negative brain scans. It is recommended, where feasible, that brain scans precede bone imaging procedures. Alternatively, a brain-imaging agent such as technetium Tc 99m pentetate may be employed.

PRECAUTIONS: General — Contents of the reaction vial are not radioactive and are intended only for use in the preparation of technetium Tc 99m medronate and are **NOT** to be administered directly to the patient.

Technetium Tc 99m medronate as well as other radioactive drugs must be handled with care, and appropriate safety measures should be used to minimize radiation exposure to the patient and occupational workers consistent with proper patient management.

To minimize radiation exposure to the bladder, the patient should be encouraged to drink fluids and to void immediately before the examination and as often thereafter as possible for the next four to six hours.

Technetium Tc 99m medronate should be formulated within 6 hours prior to clinical use. Optimal imaging results are obtained one to four hours after administration.

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 animal studies have been performed to evaluate carcinogenic potential or whether technetium Tc 99m medronate affects fertility in males or females.

Pregnancy Category C — Animal reproduction studies have not been conducted with technetium Tc 99m medronate. It is also not known whether technetium Tc 99m medronate can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Technetium Tc 99m medronate 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 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 have not been established.

ADVERSE REACTIONS: Although adverse reactions specifically attributable to the use of technetium Tc 99m medronate have not been reported, allergic dermatological manifestations (erythema) have been infrequently reported with similar agents.

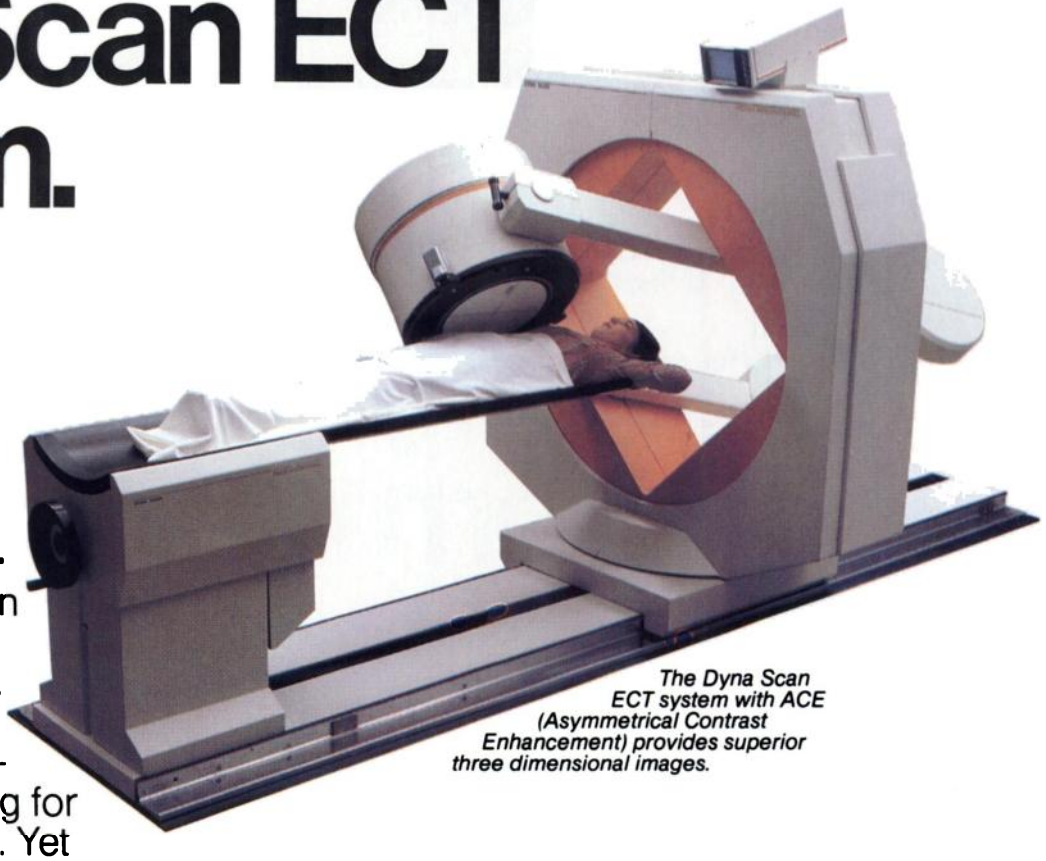
For full prescribing information, consult package insert.

HOW SUPPLIED: In packages of 10 reaction vials.

SQUIBB® Princeton, N.J. 08540

 602-502 Issued: August 1982

Now, more accurate images from Picker International's new Dyna™ Scan ECT System.



The Dyna Scan ECT system with ACE (Asymmetrical Contrast Enhancement) provides superior three dimensional images.

Dyna Scan with Micro Z and ACE™ Imaging for increased contrast and resolution.

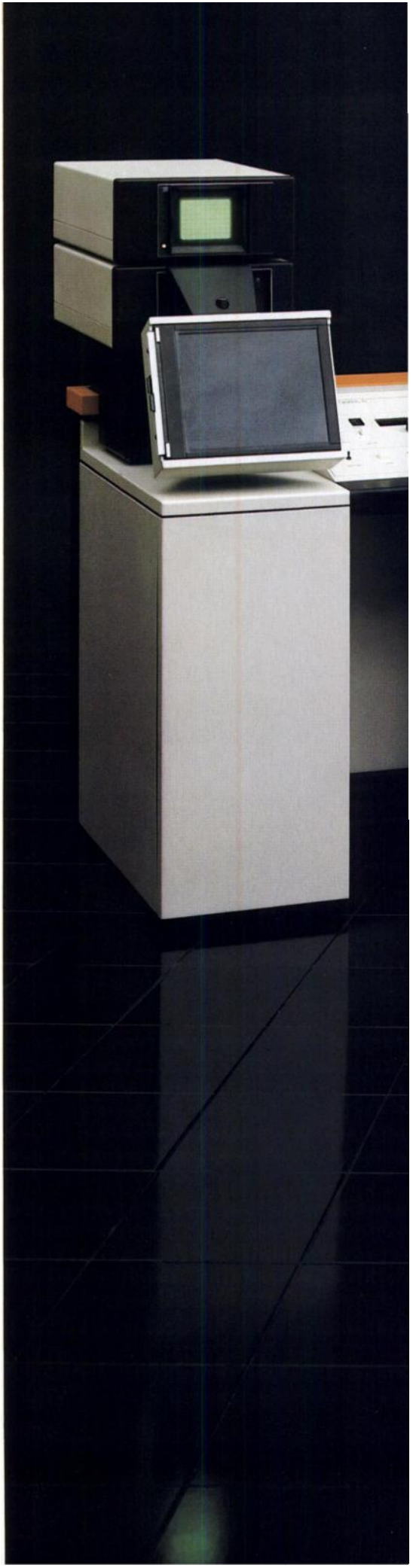
Now, you can attain superior three dimensional ACE images. The Dyna Scan system provides rock-solid rotation and body contouring for clearer, sharper images. Yet this system preserves the positioning flexibility required for routine spot-view imaging, while adding the capacity for single or multi-pass whole body scanning. The Dyna Scan system is compatible with Dyna Cameras 4, 4C and Series 5. And unlike other ECT manufacturers, we didn't compromise on our shielding which remains at 500 KeV.

Easily interfaces with all computers. Our microprocessor-based gantry allows trouble free interface with your present computer. You can also purchase the system with a complete turnkey work station with computer.

See the Dyna Scan difference in image quality. Call your local representative, or write Picker International, Nuclear and Ultrasound, 12 Clintonville Road, P.O. Box 99, Northford, CT 06472.

PICKER INTERNATIONAL

The most beautiful thing about our Dyna Camera Series 5 is the way it performs.



We're proud of the way our new Dyna™ Camera system looks. We think it's the industry's most attractive gamma camera system package. But we're far prouder of just how well Dyna Camera Series 5 works.

A beautiful design. Our central workstation, for instance, is stylish. But it was designed to meet your needs for efficiency, comfort and patient throughput. And, unlike its complicated and cluttered competitors, our control console has been fashioned to facilitate the performance of all the many manipulations necessary in the practice of modern nuclear medicine.

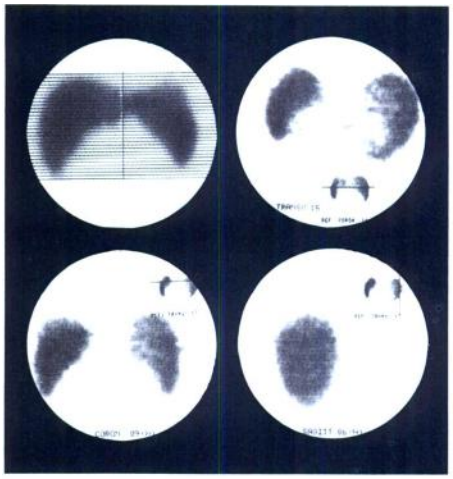
A beautiful image. Picker International continues to supply you with the leading edge in gamma camera technology in its Dyna Camera Series 5 system. Your choice of high performance detectors, exclusive Micro Z ACE™ Imaging for unequaled contrast enhancement, built-in Dyna Dot photographic camera system for high resolution films, and a host of other accessories insure top performance in all nuclear medicine modalities.

A beautiful choice. The Dyna Camera Series 5 represents the latest evolutionary step in the continuing development of Picker International's renowned gamma camera system. It's a performance-engineered package available in a number of upgradable system configurations, one of which is sure to fill your specific needs for both today and tomorrow.

Precision performance. Sophisticated styling. The new Dyna Camera Series 5 has it all. And it all works beautifully. For you. Contact Picker International, Nuclear and Ultrasound, P.O. Box 99, 12 Clintonville Road, Northford, CT 06472.

PICKER INTERNATIONAL

Meeting your diagnostic into the future.



For established and emerging applications in nuclear medicine, Siemens has new and advanced imaging systems with built-in upgradeability to accommodate the future.

At the heart of each system is our proven ZLC detector. Unequalled for its energy and linearity correction electronics, it now achieves a significant increase in count rate while maintaining image integrity. ZLC is your assurance of accuracy in imaging.

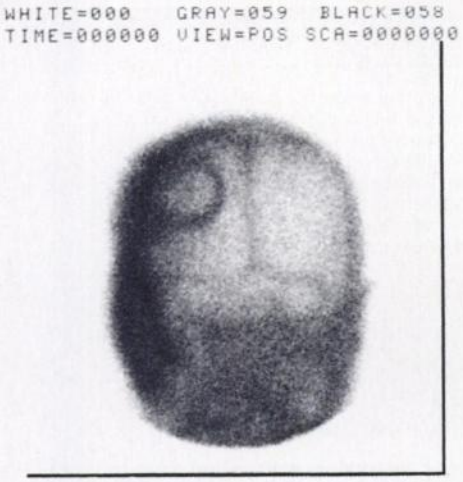
Whatever the clinical requirement, Siemens imaging systems are ready to provide you with the consistent results and system flexibility you expect.

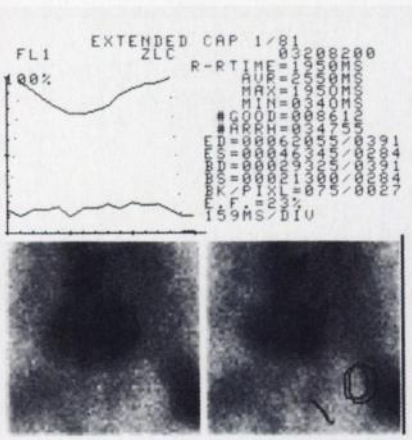
For additional information on Siemens complete line of nuclear imaging systems, contact your local representative or:
Siemens Corporation
Nuclear Medicine Division
186 Wood Avenue South
Iselin, New Jersey 08830.
Telephone (201) 321-3400

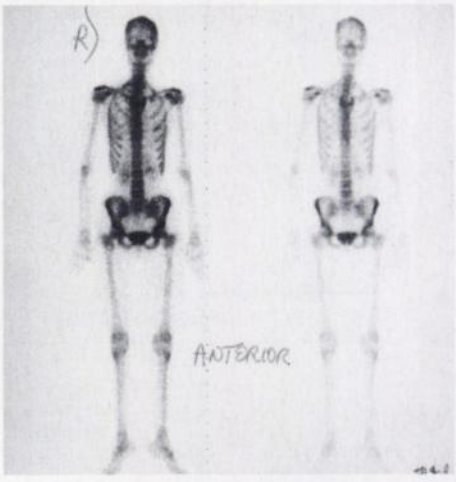
SPECT Procedures
We offer you a secure approach to SPECT imaging with a choice of three ZLC based systems with expanded high count rate. The ZLC 3700 S and the ZLC 7500 S are backed by a new and powerful ECT processor for computerized acquisition, reconstruction, and display of tomographic images. And, our ROTA CAMERA system is upgradeable from single to dual head for greater system sensitivity, data accuracy, and image quality.

Siemens...
an investment in diagnostic confidence.

requirements...







Conventional Imaging

We combined our high count rate ZLC detectors with the all new counterbalanced camera stand to give you a compact, articulate and exceptionally efficient imaging system. You will appreciate how this new design facilitates detector and patient positioning. Best of all, to maximize your investment, every Siemens counterbalanced system is upgradeable to SPECT.

Nuclear Cardiology

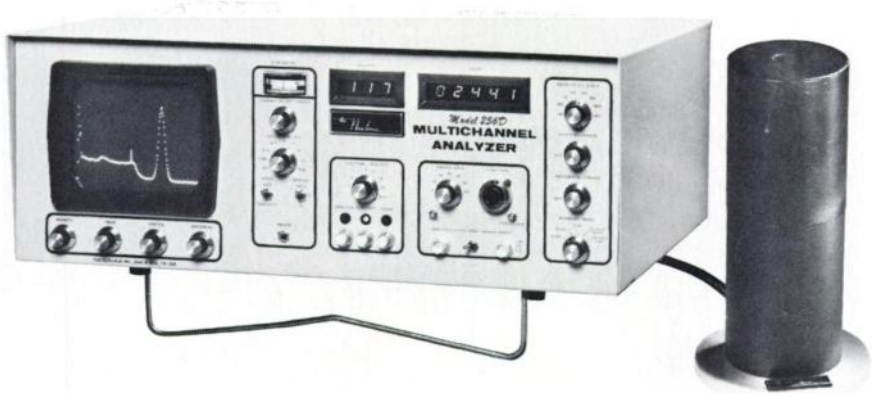
For bedside studies, our lightweight LEM (Low Energy Mobile) system now features ZLC detectors and expanded high count rate. It combines the convenience of a mobile camera with excellent imaging, and delivers both the performance and expanded count rate required for fast dynamic studies. The detector arrangement and counter-balanced design of the ZLC 370 and 750 provides for fast and easy patient positioning in stress test examination.

Whole Body Scanning

Our ROTA CAMERA system and ZLC 370 and 750 cameras with a whole body table perform whole body bone studies with minimal time and space requirements. For the diagnostic benefits of whole body image tomography, Siemens offers the PHO-CON camera system—the only proven system available for bone and gallium longitudinal tomographic studies. The tomographic display facilitates the location of lesions, and the removal of superimposed structures.

MG/5310-012 SIO 106

GAMMA SPECTROMETER

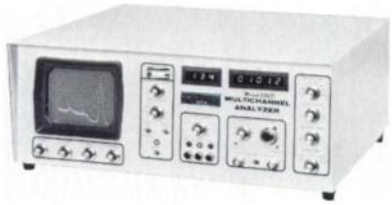


for NUCLEAR MEDICINE

Do you check your incoming radionuclides for purity and possible contamination? Better yet, do you have permanent proof of your quality assurance?

With over 20 years of experience in nuclear instrumentation, The Nucleus offers two complete gamma spectrometry systems designed for radionuclide analysis — and at a price suitable for tight budgets!

MULTICHANNEL ANALYZER



A multichannel analyzer is ideally suited for gamma scintillation spectrometry utilizing a NaI well-type detector. Our standard Model 256D (256 channels of memory) offers all the features required to analyze and compare a known gamma spectra with any unknown sample. And, the data add/subtract feature lets you "strip" known spectra from a mixture of radionuclides. For more sophisticated solid state detectors, we recommend the Model 1024D with 1024 channels of memory. Standard features on the 1024D include an integral 8-decade region of interest sum counter, multichannel scaling, and teletype output. Both models offer a direct reading LED display of channel number and total counts per channel with an illuminated marker cursor.

SCOPE DISPLAY

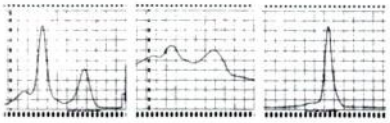
The built-in 5" (12.7 cm) CRT provides a bright, clear display of the accumulated data. On the Model 256D, the memory may be split into halves, 128/128 channels each. This permits direct comparison of spectra. For example, store a known I-125 spectrum in the first half, and then examine the second half spectrum of an incoming shipment. The Model 1024D features a 1024 channel memory which may be split into halves and quarters; each may be overlapped for direct comparison. Naturally, both vertical and horizontal expands are standard on every Nucleus MCA.

WELL DETECTOR

Numerous NaI scintillation probes are available for nearly every gamma spectrum analysis requirement. If you already have such a detector, most likely it will be compatible with either of these multichannel analyzers. Pictured is our Model WP-2000 well-type NaI scintillation probe with a 1.75" by 2" well crystal, on a 2" photomultiplier tube. Well size is .7" (17.8 mm) diameter by 1.5" (38.1 mm) deep. Resolution is 9% or better, full-width-half-maximum for Cs-137 (0.662 MeV). The crystal is surrounded by .75" (19 mm) of virgin lead.

HARD COPY RECORDER

For permanent records, a hard copy recorder documents the accumulated spectra. Any chart recorder is compatible, and several inexpensive models are available. Of course, a scope camera by Polaroid makes quick work of documentation. Linear and log readouts are standard features of these MCAs. Reproduced below are actual copies or photographs of some gamma spectra.



HARD COPY RECORD

SCOPE DISPLAYS

AVAILABLE NOW!

Picture what a Nucleus Gamma Spectrometer can do in your lab. We have mentioned just a few uses - you can probably suggest many more. Some of our customers are presently using this system for monitoring lab waste, reading wipe/smear tests, and uptake applications. Complete systems are available now! But, if you have some equipment and want to talk with our engineers about compatibility or discuss your particular requirements, just write or call, today. Let us send you free brochures describing these and other fine nuclear instruments for quality assurance, health physics and teaching laboratories.

In Mexico:

MEDIDORES INDUSTRIALES
Y MEDICOS, S. A. DE C. V.
América 145 Col. Parque San Andrés
México 04040, D.F. • Tel. 549-43-93

461 Laboratory Road
Oak Ridge, TN 37830
Telephone 615-482-4041
Tlx 557-482

the Nucleus®

Techneplex®
(Technetium Tc 99m Pentetate Kit) from Squibb

For kidney imaging, brain imaging, to assess renal perfusion, and to estimate glomerular filtration rate

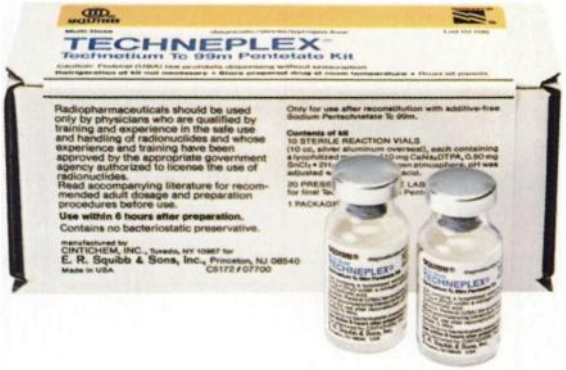
Does not accumulate in choroid plexus
Rapid clearance rate of DTPA allows:
- brain imaging in less time than with sodium pertechnetate Tc 99m
- delayed brain imaging in 30-40 minutes, as compared with 3-4 hours with technetium Tc 99m pertechnetate

Easy two-step procedure

Kit contains 10 multidose reaction vials.

For further information, call Technical Customer Service, 609-921-4100.

See next page for brief summary.



Medotopes®
SQUIBB®

TECHNEPLEX®
Technetium Tc 99m Pentetate Kit
DIAGNOSTIC—FOR INTRAVENOUS USE

DESCRIPTION: The kit consists of 10 multidose reaction vials, each containing a sterile, pyrogen-free lyophilized mixture of 10 mg pentetate calcium trisodium, 0.50 mg stannous chloride under a nitrogen atmosphere. When sterile, pyrogen-free sodium pertechnetate Tc 99m in isotonic saline is added to the vial, a chelated technetium Tc 99m pentetate is formed. The product as supplied is sterile and pyrogen-free.

INDICATIONS AND USAGE: Technetium Tc 99m pentetate may be used to perform kidney imaging, brain imaging, to assess renal perfusion, and to estimate glomerular filtration rate.

CONTRAINDICATIONS: None known.

WARNINGS: None known.

PRECAUTIONS: Contents of the vial are intended only for use in the preparation of technetium Tc 99m pentetate and are **not** to be administered directly to the patient except after the addition of sodium pertechnetate Tc 99m. The contents of the kit are not radioactive. However, after the sodium pertechnetate Tc 99m is added, adequate shielding of the final preparation must be maintained. Technetium Tc 99m pentetate as well as other radioactive drugs, must be handled with care, and appropriate safety measures should be used to minimize radiation exposure to the patients consistent with proper patient management and to insure minimum radiation exposure to occupational workers.

To minimize radiation dose to the bladder, the patients should be encouraged to drink fluids and to void immediately before the examination, and for the next 4 to 6 hours thereafter, as often as possible.

Technetium Tc 99m pentetate should be formulated within 6 hours prior to clinical use for brain and kidney imaging, and for assessing renal perfusion. For estimating glomerular filtration rates Tc 99m pentetate should be used within 1 hour after formulation.

The components of the Technetium Tc 99m Pentetate Kit (Chelate) are supplied sterile and non-pyrogenic. Aseptic procedures normally employed in making additions and withdrawals from sterile, non-pyrogenic containers should be used during addition of pertechnetate solution and the withdrawal of doses for patient administration.

The labeling reactions involved in preparing the agent depend on maintaining the tin in the reduced state. Any oxidant present in the sodium pertechnetate Tc 99m supply may thus adversely affect the quality of the prepared agent. Hence, sodium pertechnetate Tc 99m containing oxidants, or other additives, should not be employed without first demonstrating that it is without adverse effect on the properties of the resulting agent.

Carcinogenesis, Mutagenesis, Impairment of Fertility: No long-term animal studies have been performed to evaluate carcinogenic potential or whether technetium Tc 99m pentetate affects fertility in males or females.

Pregnancy Category C: Animal reproductive studies have not been conducted with technetium Tc 99m pentetate. It is also not known whether technetium Tc 99m pentetate can cause fetal harm or affect reproduction capacity when administered to a pregnant woman. Technetium Tc 99m pentetate 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 (approx. 10) days following the onset of menses.

Nursing Mothers: Since Tc 99m is excreted in human milk during lactation, formula feedings should be substituted for breast feedings.

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

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.

ADVERSE REACTIONS: None specifically attributable to the use of technetium Tc 99m pentetate have been reported.

Drug Abuse and Dependence: There is no report of any drug abuse or dependence with this diagnostic agent.

Overdosage: Increased radiation exposure would be expected if an overdosage of the diagnostic agent occurred.

For complete prescribing information, consult package insert.

HOW SUPPLIED: Techneplex (Technetium Tc 99m Pentetate Kit) is supplied as a sterile, pyrogen-free kit containing 10 sterile multidose reaction vials and 20 pressure-sensitive labels.

SQUIBB® 'The Priceless Ingredient of every product is the honor and integrity of its maker.'™

Nuclear Medicine Surveys — Imaging Techniques and Ligand Assay Procedures

1983 Surveys — College of American Pathologists Interlaboratory Comparison Program

The College of American Pathologists Nuclear Medicine Surveys include four Surveys and one reference material: two educational studies in imaging techniques, two specialty Surveys in ligand assay procedures, and one ligand assay reference material.

Imaging technique studies correlate abnormal scintiphoto findings with various techniques and different imaging devices. Each Survey contains an imaging device permitting:

☐ interlaboratory comparison of technique and instrumentation; and

☐ initiation and maintenance of a quality control program for imaging. The imaging device contains no radioactive material; no specific license or safety equipment is required to participate in the Survey.

Ligand Assay Surveys, Series 1 and Series 2 (formerly Basic and Advanced Ligand Assay) are state of the art assessment and educational programs that can be used to satisfy the requirements of the CAP Laboratory Accreditation Program, CLIA 1967, Medicare/Medicaid, JCAH, and most state agencies.

Participants in the Ligand Assay-Series 1 Survey can purchase up to 10 additional reference material sets annually of the same material used in Survey K. One of the few standard materials available for ligand assay, **Reference Material KRM** allows specific comparison with your own methods to a degree of reliability not found in any other quality control material. Subscribers to KRM receive the most up-to-date approach to insure a high quality analytical effort.

Survey TSA
Nuclear Medicine-Series 1
(Liver Imaging Simulator) $228.00

This single-shipment Survey contains a liver imaging simulator for imaging purposes.

Survey TSB
Nuclear Medicine-Series 2
(Cardiovascular Imaging Simulator) $232.00

This single-shipment Survey contains a cardiovascular imaging simulator for imaging purposes. *Participants will be required to provide and use thallium as an imaging source.*

Survey K
Ligand Assay-Series 1
(Basic Ligand Assay) $236.00

Each quarterly shipment contains three samples (10 ml/sample) of varying concentrations to be tested for the 19 constituents included in the Survey.

Survey Y
Ligand Assay-Series 2
(Advanced Ligand Assay) $272.00

Each quarterly shipment contains two specimens (two 10 ml vials/specimen) to be tested for the 15 constituents included in the Survey.

Reference Material KRM
Ligand Assay-Series 1 (Basic Ligand Assay)
Reference Material $152.00

Four mailings for Ligand Assay-Series 1 Survey participants (a total of twelve 10 ml vials) will be sent three weeks after the Ligand Assay-Series 1 Survey kits. *Reference Material KRM must be ordered in advance and is available only to those laboratories enrolled in the Ligand Assay-Series 1 Survey.*

For further information on the Nuclear Medicine Surveys programs and Reference Material, please call or write:

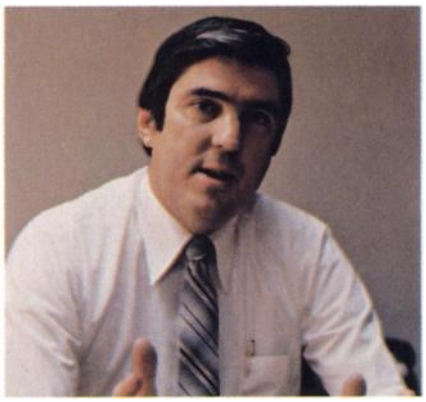
College of American Pathologists
7400 North Skokie Boulevard
Skokie, Illinois 60077
Telephone: 312/677-3500

CAP Surveys
A Laboratory
Improvement
Program

"Most systems can't discriminate between normal and ectopic beats during gated cardiac studies. So they can't give you accurate data on patients with abnormal rhythms.

But the ADAC system can.

It analyzes 100% of the R-R interval for every beat.



You can store ectopic beats separately for later review, or delete them entirely. Result: you get a precise and complete picture of the normal beats alone, and a true representation of ejection fraction in abnormal patients.

You won't find this Bad Beat Rejection capability on any system but ours."

CHARLES W. CANTONI, PRESIDENT

Bad Beat Rejection for ADAC Nuclear Medicine Systems.

ADAC's Bad Beat Rejection gives you many options never before possible with cyclic gated acquisition.

This new development - part hardware, part software - is designed specifically for ADAC Nuclear Medicine Systems that have an ADAC Arithmetic Processing Unit (APU).

For the first time in nuclear medicine, it enables you to separate or delete bad beats and save every good beat without time-consuming reconstruction.

It also lets you store beats so studies may be framed forward *and backward* from the R-wave.

In addition, you can preselect windows for rest and stress heart rates, or normal and ectopic beat studies.

Bad Beat Rejection significantly reduces acquisition time for patients with abnormal rhythms. It may also reduce the number of cases requiring catheterization.

And because it allows analysis of the entire R-R interval - including the P-wave - valuable information about atrial contractions may be obtained for the first time.

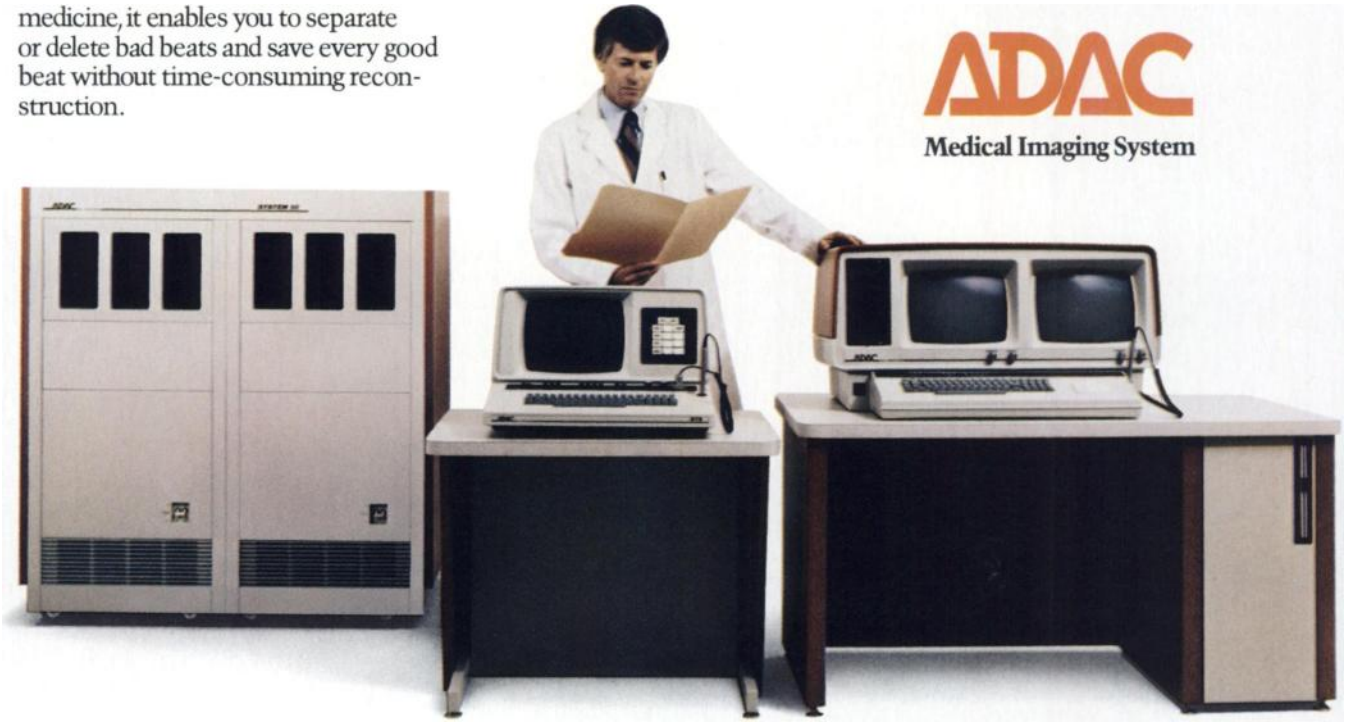
For more information about Bad Beat Rejection and ADAC Nuclear Medicine Systems, please write or call.

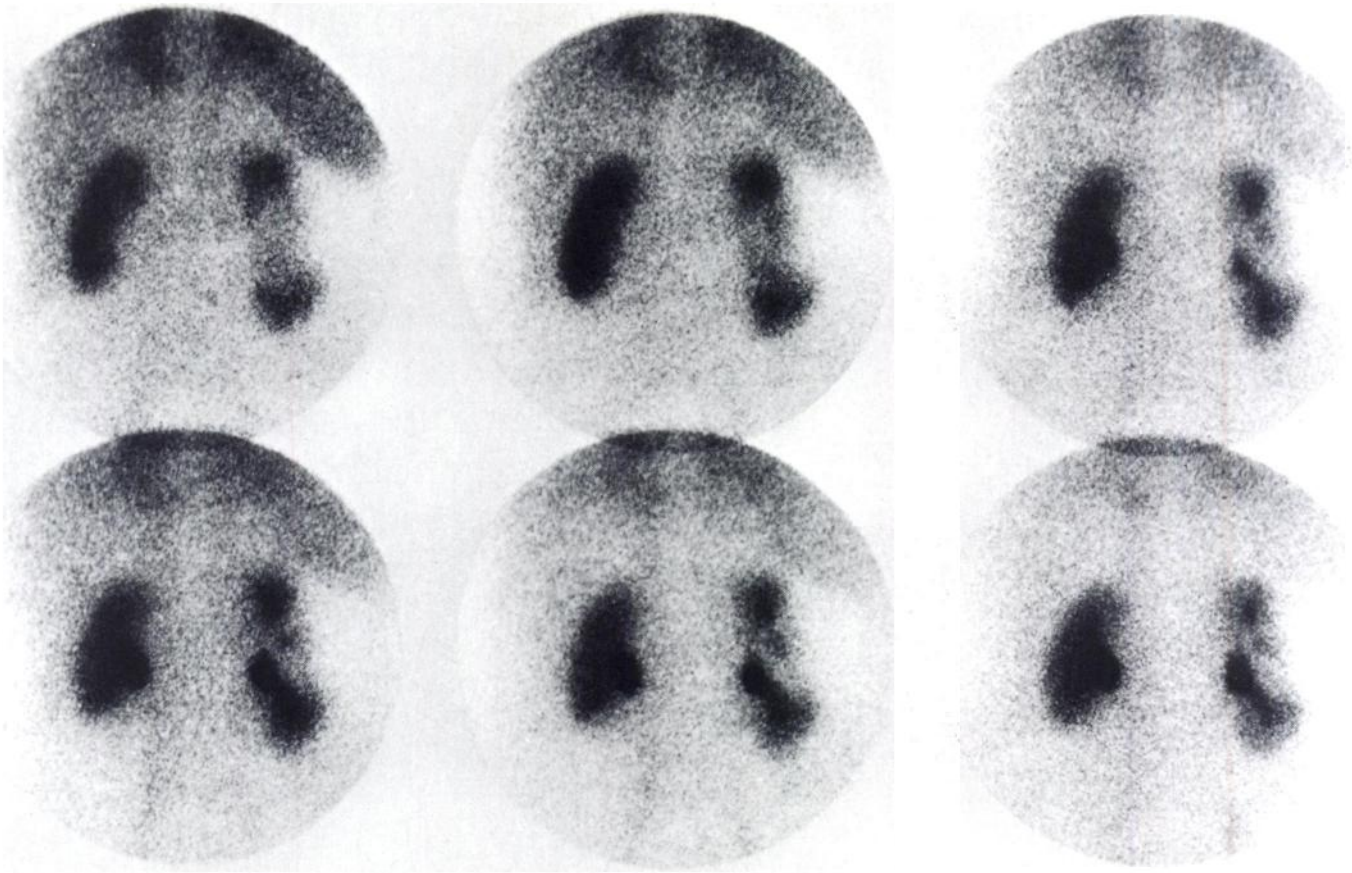
ADAC Laboratories, 255 San Geronimo Way, Sunnyvale, CA 94086. (800) 538-8531.

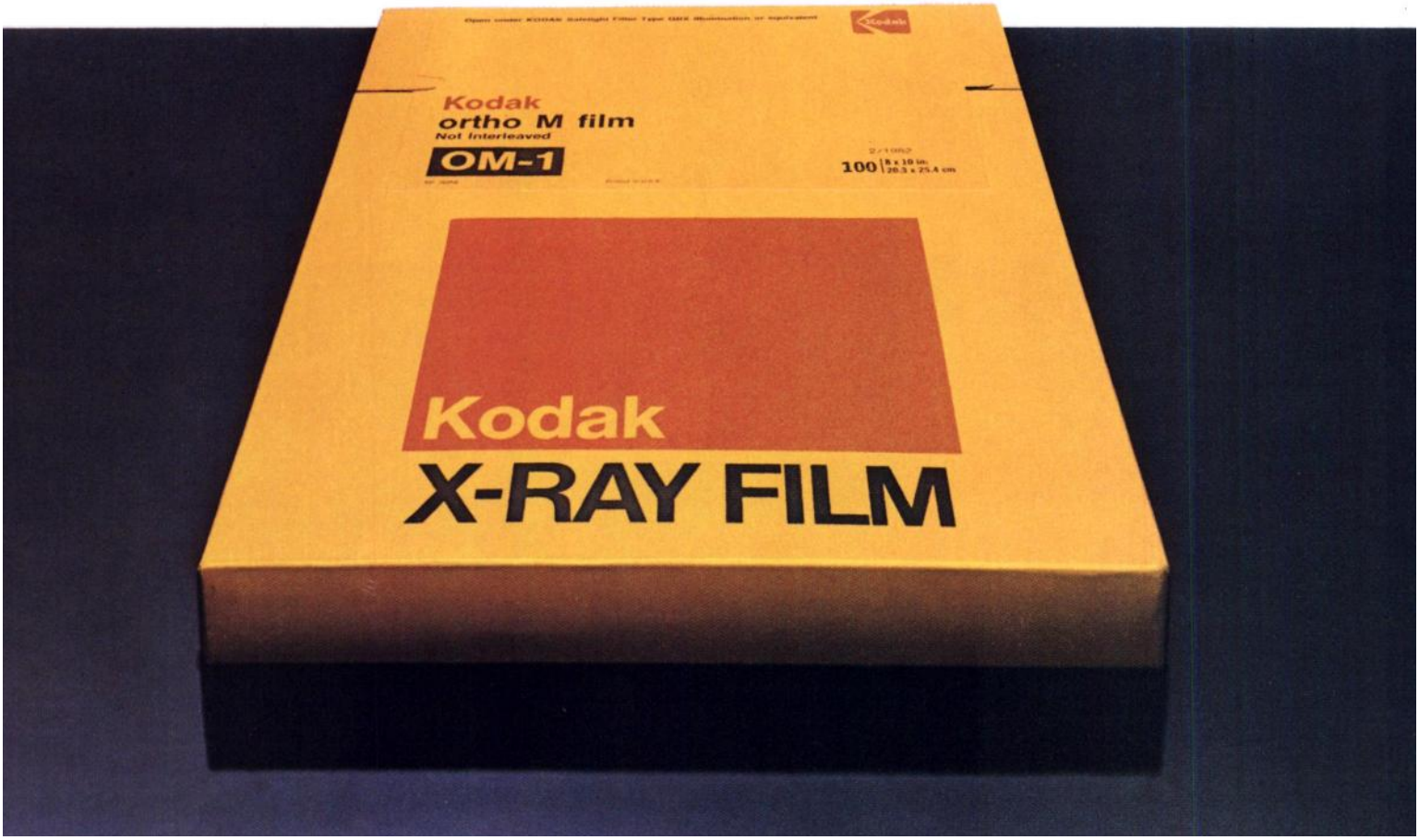
In California, call collect (408) 736-1101. TWX: 910-339-9393.

ADAC

Medical Imaging System






Kodak
ortho M film
Not Interleaved
OM-1
100
Kodak
X-RAY FILM

With this Dosecalibrator you will always be up-to-date.

The RADX Assayer I isotope dosecalibrator is the heart of the RADX system. It is the **only** dosecalibrator with an atmospheric ionization chamber for high activity linearity. It also incorporates an optical scanner for isotope selection — no moving parts, no contacts to corrode. Other standard features include a remote chamber, automatic monitoring of background with subtraction, automatic ranging and much more. Unchallenged for reliability, accuracy and linearity.

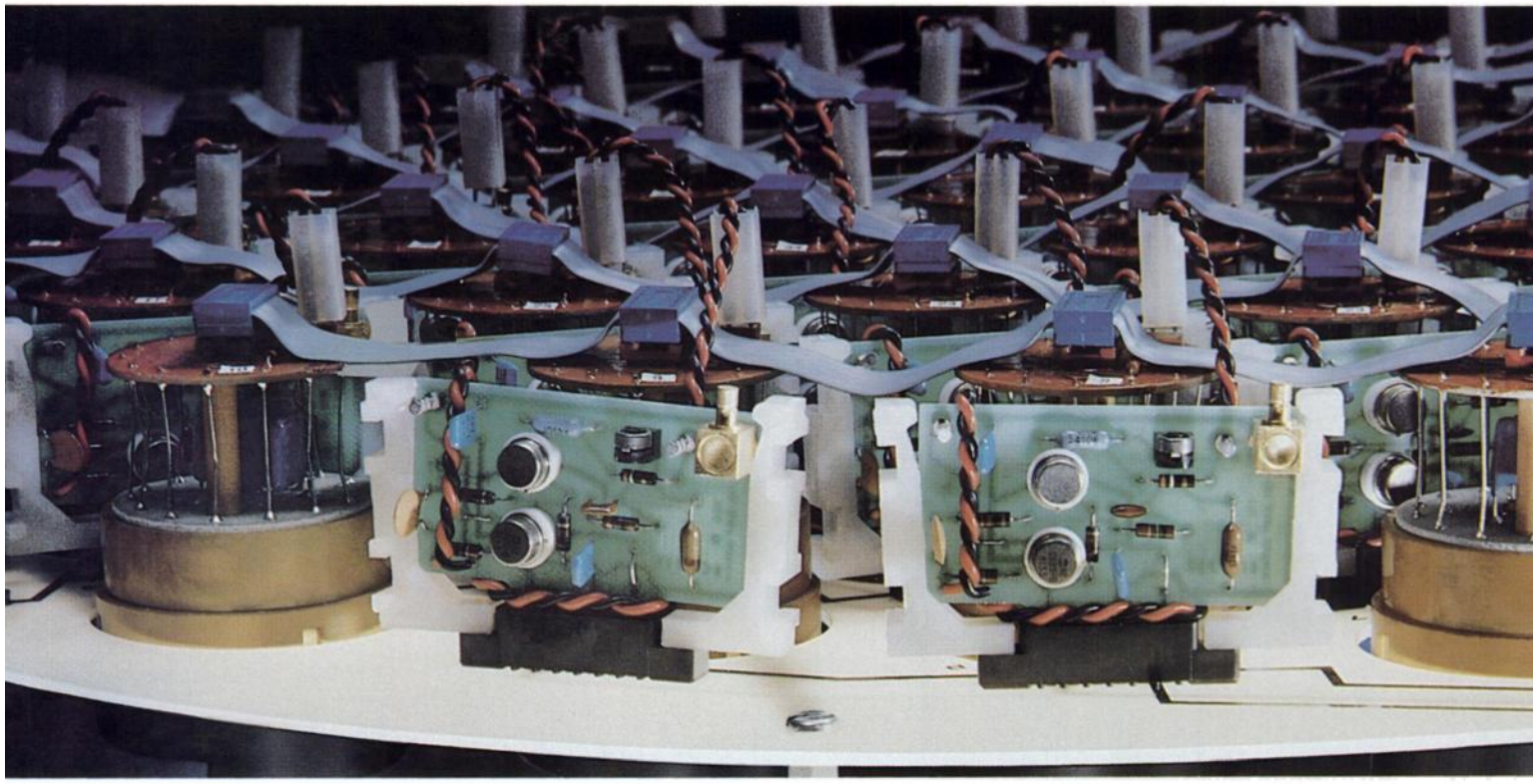
The RADX Isotron is the only control unit which qualifies as a nuclear medicine inventory control computer. It keeps track of up to 20 radio pharmaceuticals in different chemical forms — simultaneously and independently, and provides constant inventory information on each radio pharmaceutical. It also performs dose volume calculations in real and totally variable future time. Computer programming skills not required.

The RADX Isocord produces a hard copy print out in triplicate for all of your record keeping needs, by patient name, and selected isotope. Addition of the Isocord completes the most advanced dosecalibration system available from anyone. RADX is the first to offer anything like it at anywhere near its price.

The RADX dosecalibration system meets all radiopharmaceutical inventory control and NRC or State accountability requirements. To get the complete story on staying completely up-to-date, call RADX. 713/468-9628.

RADX
P.O. Box 19164
Houston, Texas 77024

Inside the 438HR gamma camera are some of our best ideas.

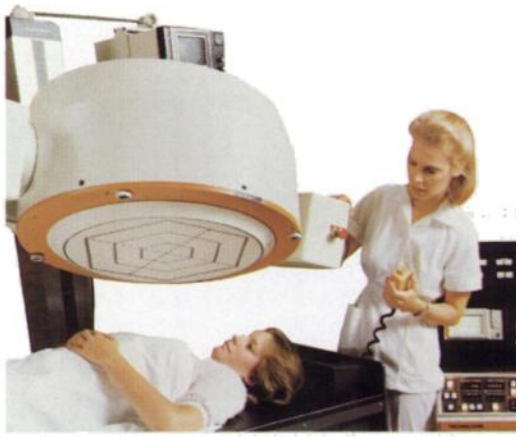


From enhanced Quantum Detection Efficiency (QDE) tubes to refined Z-CORR PLUS™ circuitry, Technicare's 438HR (High Resolution) gamma camera is the result of new design concepts leading to significantly improved performance.

The 438HR's detector circuitry, assisted by microprocessor control, results in a highly sensitive detection device. Aside from premium resolution, enhanced clarity and contrast differentiation, the 438HR maintains its uniformity and spatial linearity over the entire field of view.

As a result of these improvements in design technology, Technicare's 438HR is a cost effective, premium performance gamma camera.

The end result is more diagnostic confidence for you.



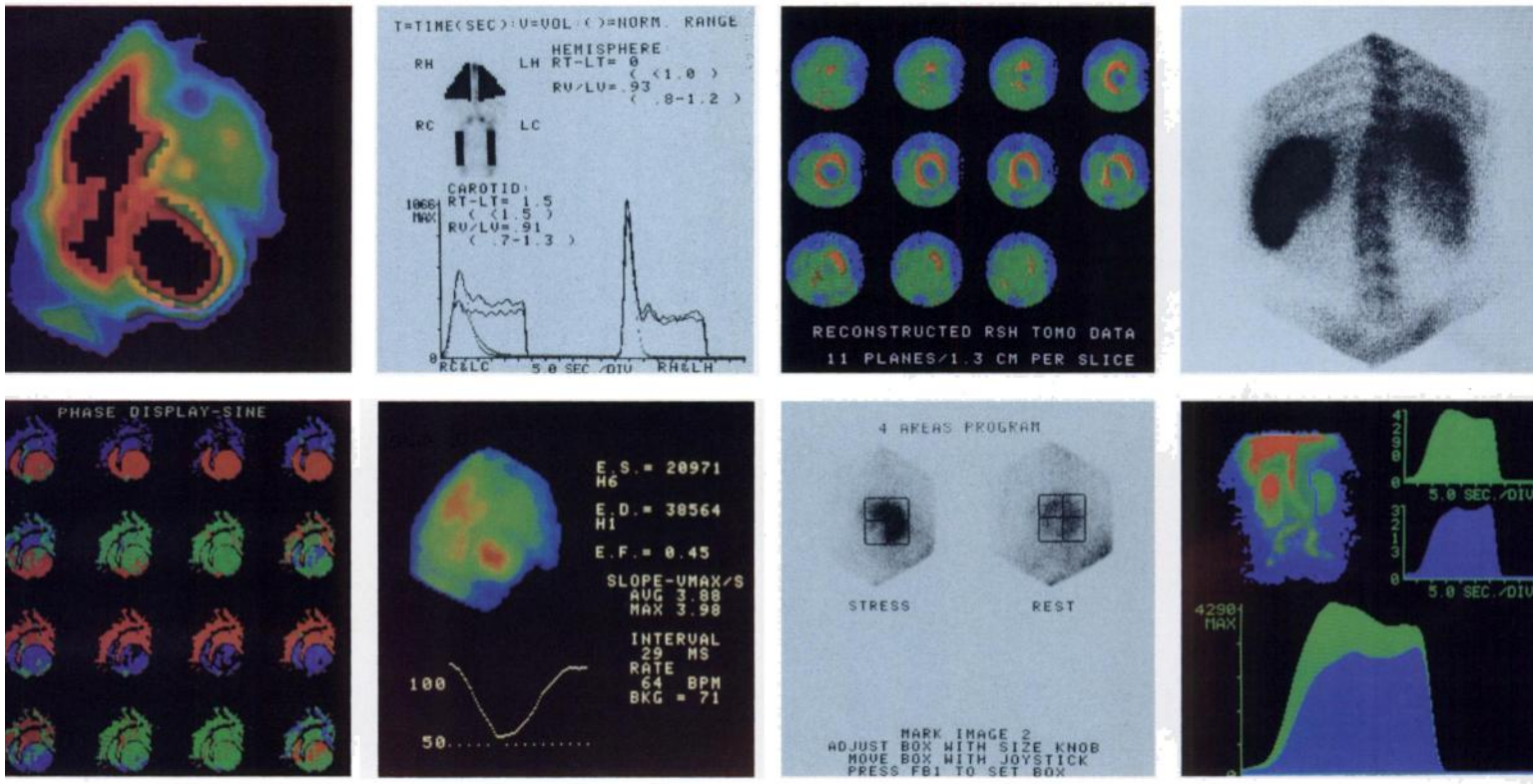
TECHNICARE

Exploring through digital imaging.

Technicare Corporation
29100 Aurora Road
Cleveland, Ohio 44139
(216) 248-1800

A Johnson & Johnson Company

The Technicare 560 computer only does one thing well.



That one thing is digital imaging.

Powerful, versatile, compatible, understandable; the 560 is the focal point of Technicare's nuclear family (Omega 500, 438HR, 420, 414). Its unique architecture allows functions to occur simultaneously. For example, acquiring and processing data at the same time facilitates patient throughput during peak work loads.

The 560's major assets are speed of operation, simplicity and fast frame rates. Software is abundant and includes clinical protocols, from renal function to cardiac phase analysis. The 560 will interface with any gamma camera. Furthermore, one 560 interfaces with another 560 to create a tandem operation comparable to multi-terminal systems—a tandem operation which is immune to central computer slowdown.

Technicare's 560 nuclear medicine computer, continuously upgradable through software and hardware options, manages the present as skillfully as it welcomes the future.

TECHNICARE

Exploring through digital imaging.

Technicare Corporation
29100 Aurora Road
Cleveland, Ohio 44139
(216) 248-1800

A Johnson & Johnson Company

AccuSync

The finest R-wave Triggering device available for computerized gated cardiac studies.

FEATURES	BENEFITS
• Exclusive **Double Discrimination** provides precise definition of R-wave.	• Computer is gated only on the R-Wave. High amplitude T-waves are ignored. No delay.
• ECG Strip Chart Recorder	• Provides permanent record of patient ECG. Insures proper lead placement.
• Four digit LED Display	• Indicates R-R Interval or Heart Rate during stress studies.
• Trigger Pulse LED	• Monitors presence of output signals to the computer.
• Unlimited Heart Rate Capability	• Both Heart Rate display and R-trigger pulses have unlimited tracking capability during stress studies.
• Trigger Control	• Provides desired setting of R-wave amplitude discrimination. Ease of lead placement.
• Digital CRT Monitor	• Visual monitoring of ECG and R-wave trigger.
• ONE YEAR WARRANTY	• ONE YEAR WARRANTY

MODEL	FEATURES	
AccuSync-V	R-Trigger pulse output, ECG output, Heart Rate/ R-R int., Strip Chart Recorder, Digital CRT Monitor and Isolation Amplifier for patient safety.	
AccuSync-I	All **AccuSync-V** features with the exception of Digital CRT Monitor.	
AccuSync-II	All **AccuSync-I** features incorporated into a Module designed to fit into certain Mobile cameras.	
AccuSync-III	All **AccuSync-I** features with the exception of the Strip Chart Recorder.	
AccuSync-IV	All **AccuSync-III** features with the exception of the Heart Rate/R-R int. display.	

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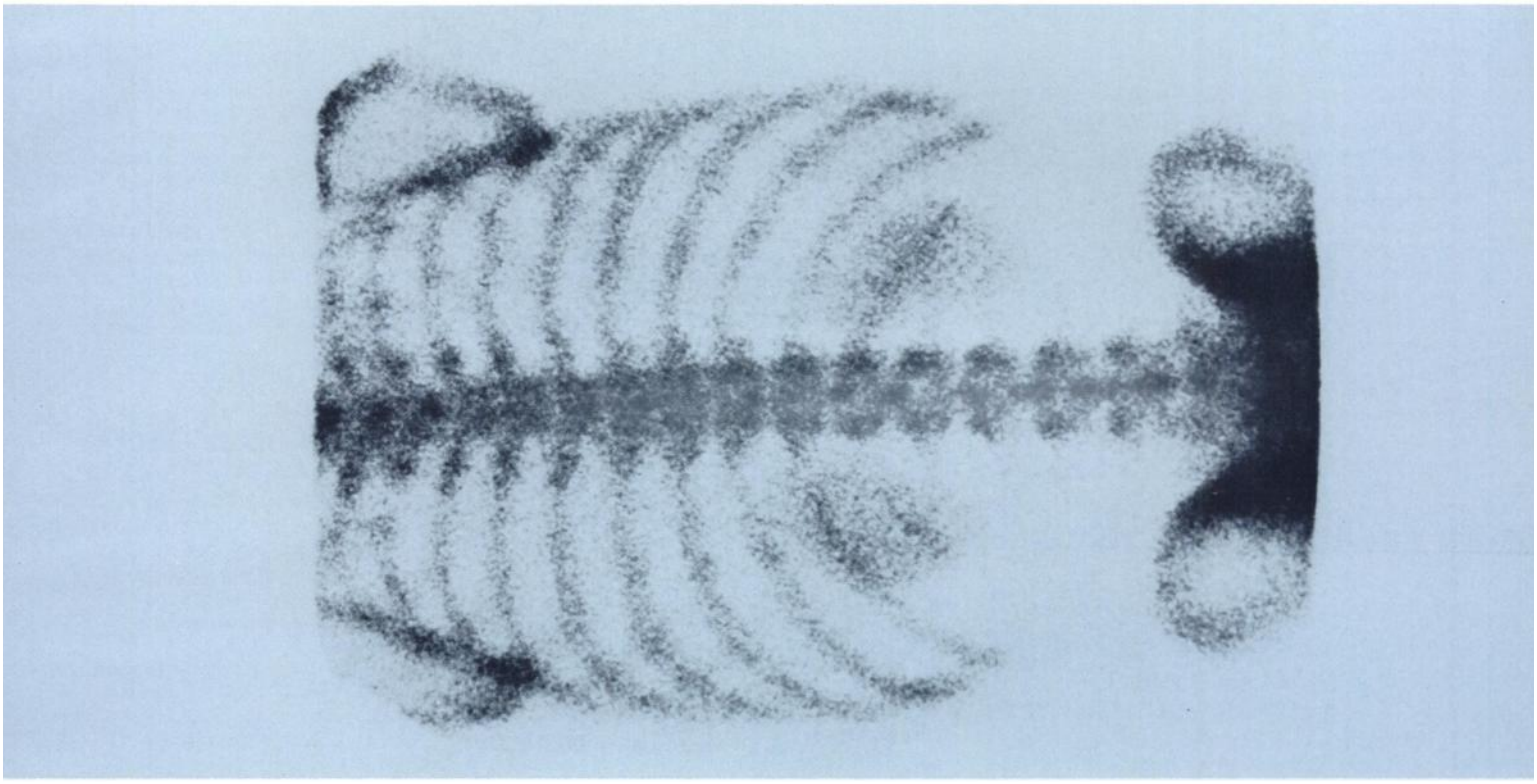

The 14.5" x 20" detector is the largest of any gamma camera available. The Omega 500's rectangular field of view is designed for maximum clinical versatility. Its far-reaching C-arm permits the curvilinear travel and full head rotation required in ECAT scanning. The arm is easily positioned and fully secured through fingertip control of magnetic disc brakes.

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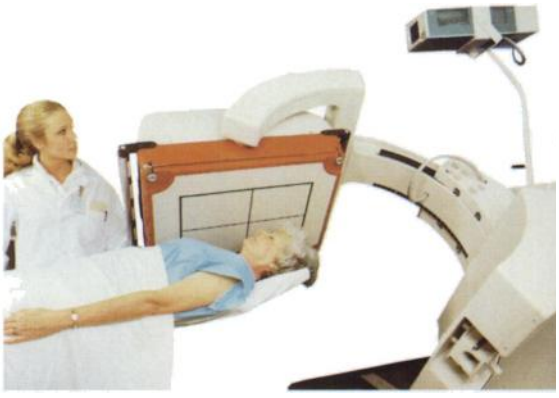

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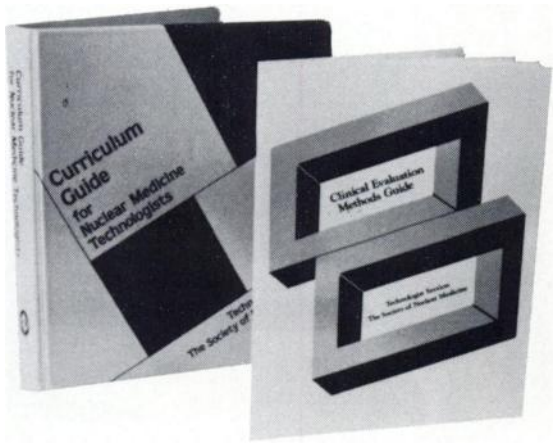

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This guide is designed to aid allied health and nuclear medicine technology educators in developing appropriate assessment instruments for evaluating student performance. The 6 assessment tools examined include: checklists, rating scales, anecdotal records, critical incident technique, questionnaires, and data forms. **Softcover; 8½×11, 72 pp; $15.00.**

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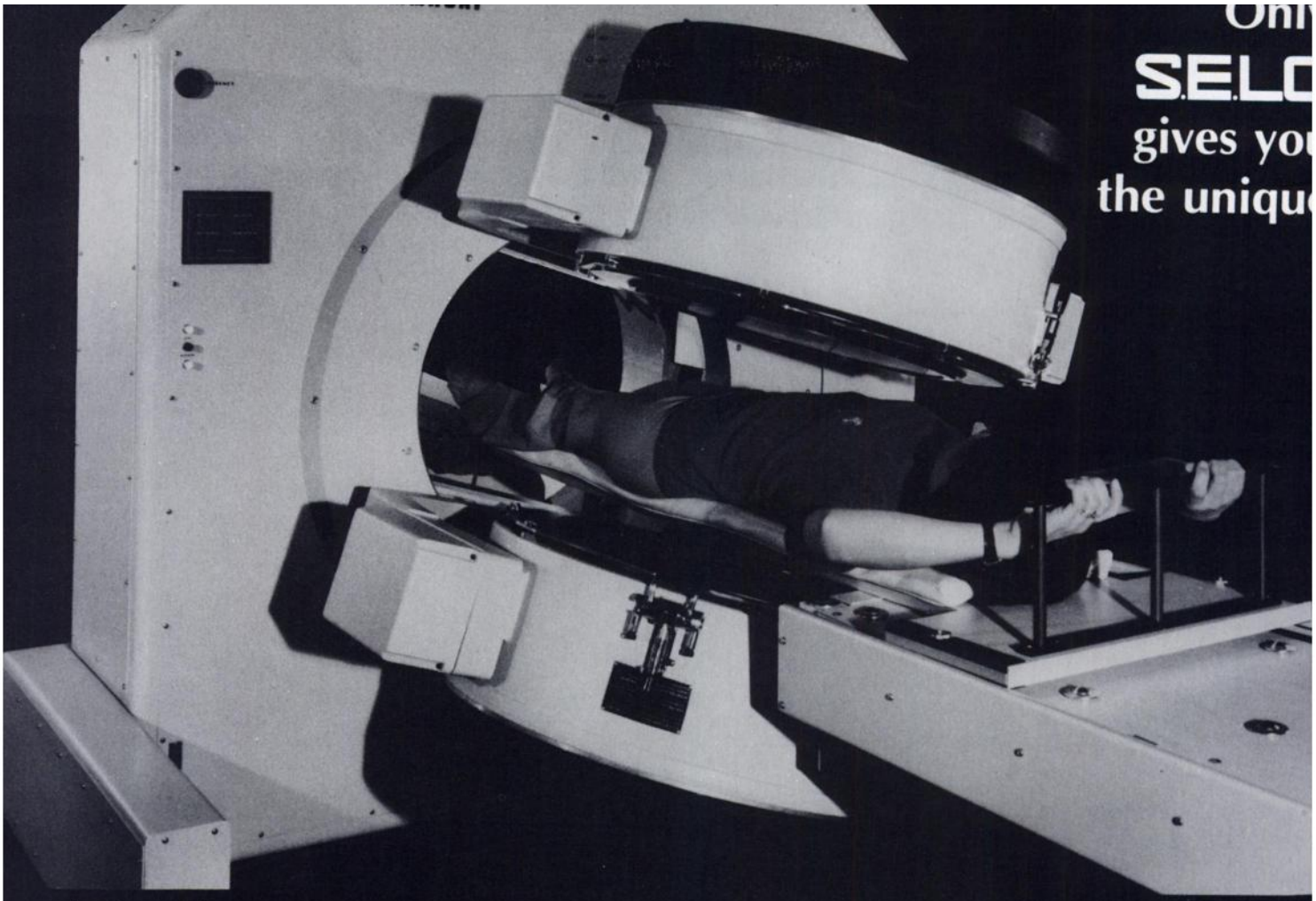

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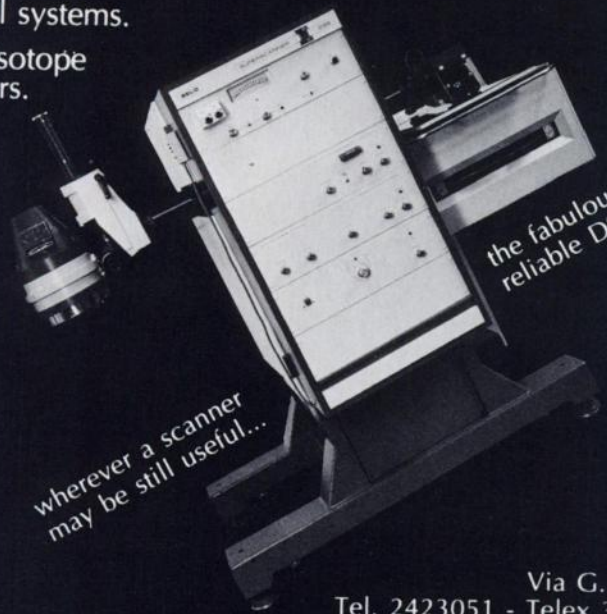

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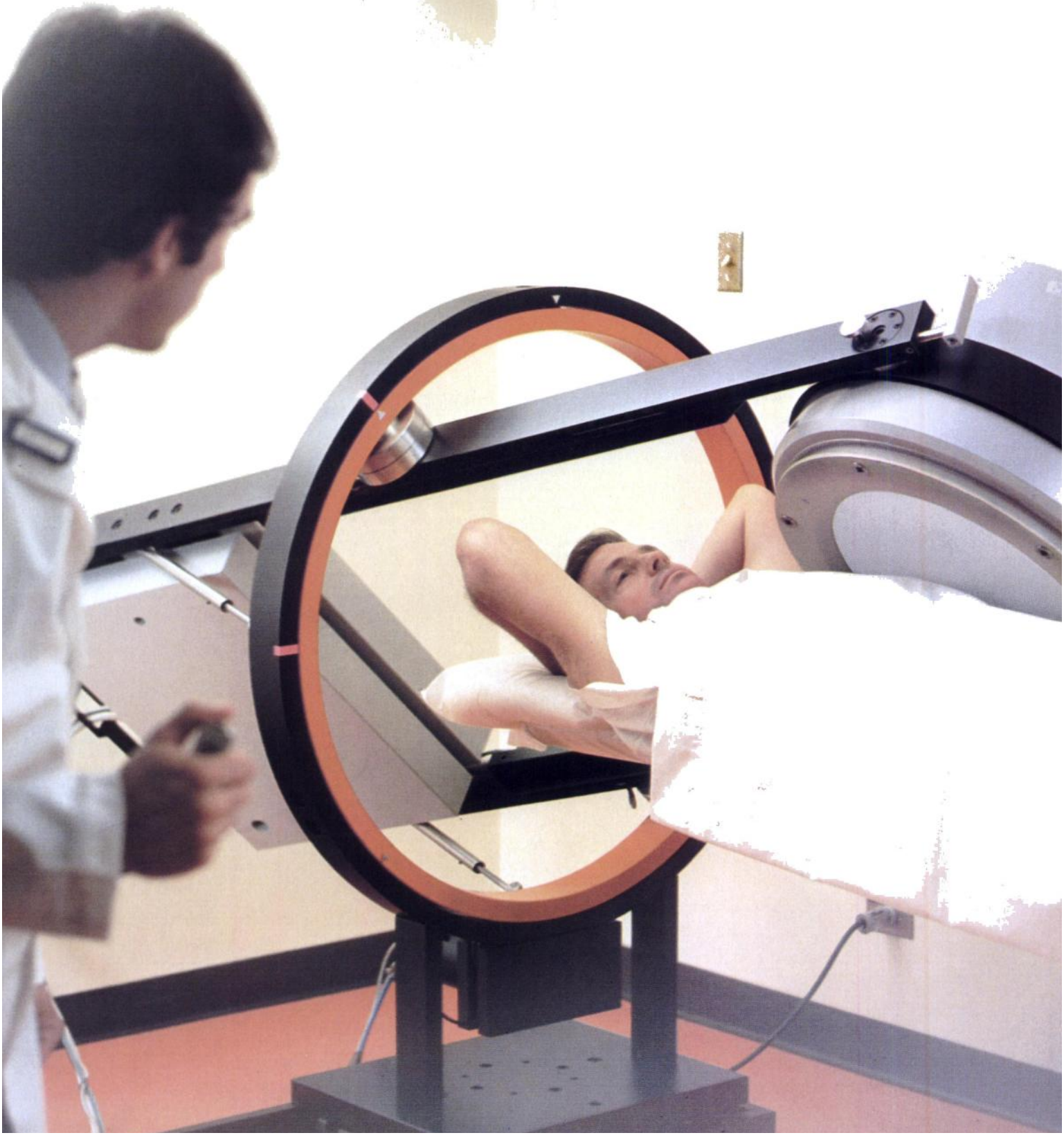

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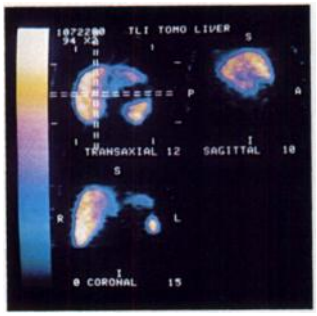
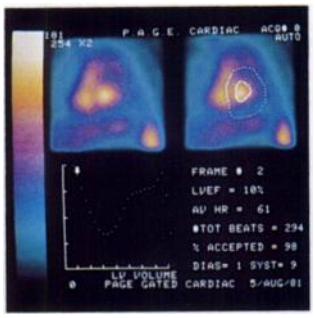


Liver data shown in a transaxial, sagittal and coronal view projection.



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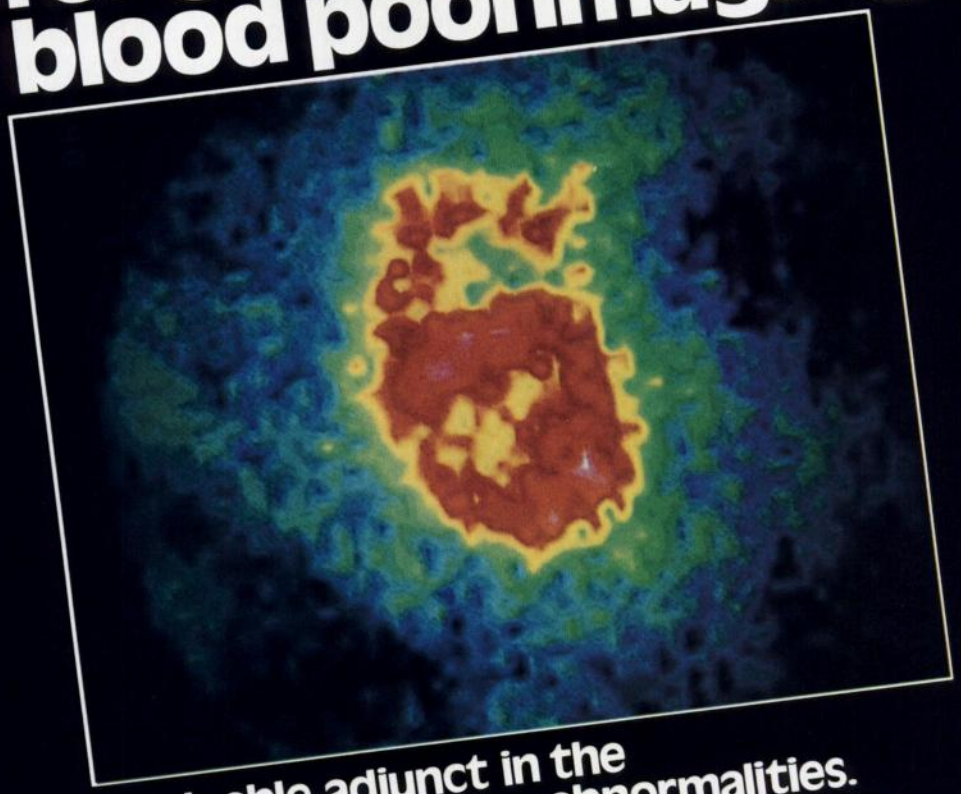

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See brief summary on following page.

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Technetium Tc 99m Pyrophosphate Kit

BRIEF SUMMARY

CLINICAL PHARMACOLOGY

When injected intravenously **TechneScan PYP Tc 99m** has a specific affinity for areas of altered osteogenesis. It is also concentrated in the injured myocardium, primarily in areas of irreversibly damaged myocardial cells.

One to two hours after intravenous injection of **TechneScan PYP Tc 99m,** an estimated 40 to 50 percent of the injected dose has been taken up by the skeleton and approximately 0.01 to 0.02 percent per gram by acutely infarcted myocardium. Within a period of one hour, 10 to 11 percent remains in the vascular system, declining to approximately 2 to 3 percent twenty-four hours post-injection. The average urinary excretion was observed to be about 40 percent of the administered dose after 24 hours.

TechneScan PYP also has an affinity for red blood cells. When administered 30 minutes prior to the intravenous administration of sodium pertechnetate Tc-99m approximately 76 percent of the injected activity remains in the blood pool providing excellent images of the cardiac chambers.

INDICATIONS AND USAGE

TechneScan PYP Tc 99m is a skeletal imaging agent used to demonstrate areas of altered osteogenesis, and a cardiac imaging agent used as an adjunct in the diagnosis of acute myocardial infarction.

As an adjunct in the diagnosis of confirmed myocardial infarction (ECG and serum enzymes positive), the incidence of false negative images has been found to be 6 percent. False negative images can also occur if made too early in the evolutionary phase of the infarct or too late in the resolution phase. In a limited study involving 22 patients in whom the ECG was positive and serum enzymes questionable or negative, but in whom the final diagnosis of acute myocardial infarction was made, the incidence of false negative images was 23 percent. The incidence of false positive images has been found to be 7 to 9 percent. False positive images have also been reported following coronary by-pass graft surgery, in unstable angina pectoris, old myocardial infarcts and in cardiac contusions.

TechneScan PYP is a blood pool imaging agent which may be used for gated cardiac blood pool imaging. When administered intravenously 30 minutes prior to the intravenous administration of sodium pertechnetate Tc-99m approximately 76 percent of the injected activity remains in the blood pool.

CONTRAINDICATIONS

None.

WARNINGS

This radiopharmaceutical should not be administered to patients who are pregnant or lactating unless the information to be gained outweighs the potential hazards.

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.

Warning: Preliminary reports indicate impairment of brain scans using pertechnetate Tc-99m which have been preceded by bone scan. The impairment may result in false positives or false negatives. It is recommended, where feasible, that brain scans precede bone imaging procedures.

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

The **TechneScan PYP Kit** must be maintained at refrigerator temperature until use.

The contents of the **TechneScan PYP** reaction vial are intended for use in the preparation of Technetium Tc 99m Stannous Pyrophosphate. **TechneScan PYP** may also be reconstituted with sterile, pyrogen-free normal saline containing no preservatives and injected intravenously prior to the administration of sodium pertechnetate Tc-99m.

Sodium pertechnetate Tc-99m solutions containing an oxidizing agent are not suitable for use with the **TechneScan PYP Kit**.

The contents of the kit are not radioactive. However, after the sodium pertechnetate Tc-99m is added, adequate shielding of the final preparation must be maintained.

TechneScan PYP Tc 99m should not be used more than six hours after preparation.

PRECAUTIONS

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

Bone Imaging

Both prior to and following **TechneScan PYP Tc 99m** administration, patients should be encouraged to drink fluids. Patients should void as often as possible after the **TechneScan PYP Tc 99m** injection to minimize background interference from accumulation in the bladder and unnecessary exposure to radiation.

Cardiac Imaging

Patient's cardiac condition should be stable before beginning the cardiac imaging procedure.

If not contraindicated by the cardiac status, patients should be encouraged to ingest fluids and to void frequently in order to reduce unnecessary radiation exposure.

Interference from chest wall lesions such as breast tumors and healing rib fractures can be minimized by employing the three recommended projections.

Blood Pool Imaging

TechneScan PYP should be injected by direct venipuncture. Heparinized catheter systems should be avoided.

ADVERSE REACTIONS

None.

HOW SUPPLIED

Catalog Number—*094* **TechneScan PYP**
Technetium Tc 99m Pyrophosphate Kit.

Kit Contains:

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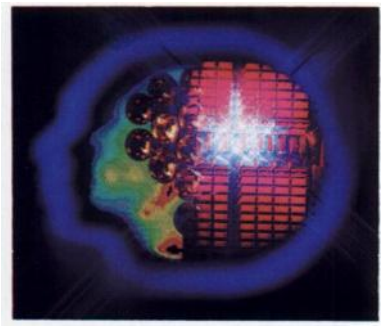

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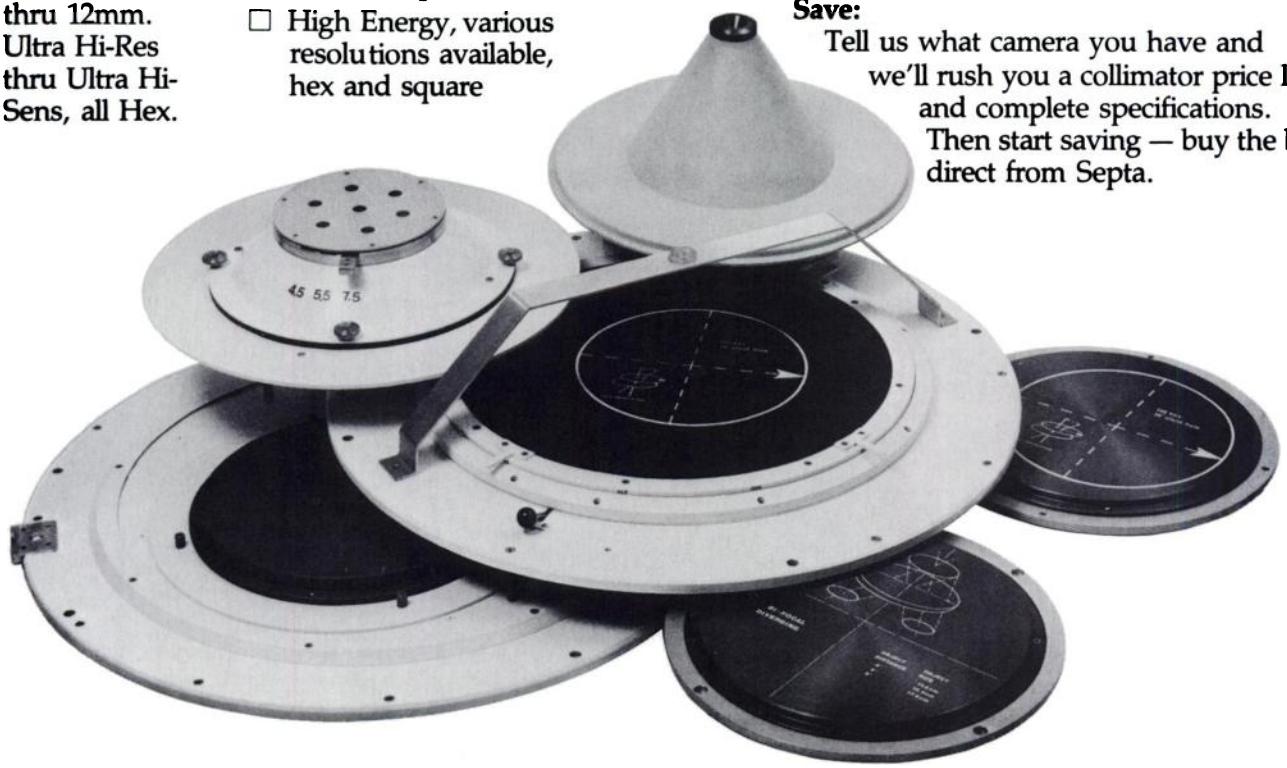

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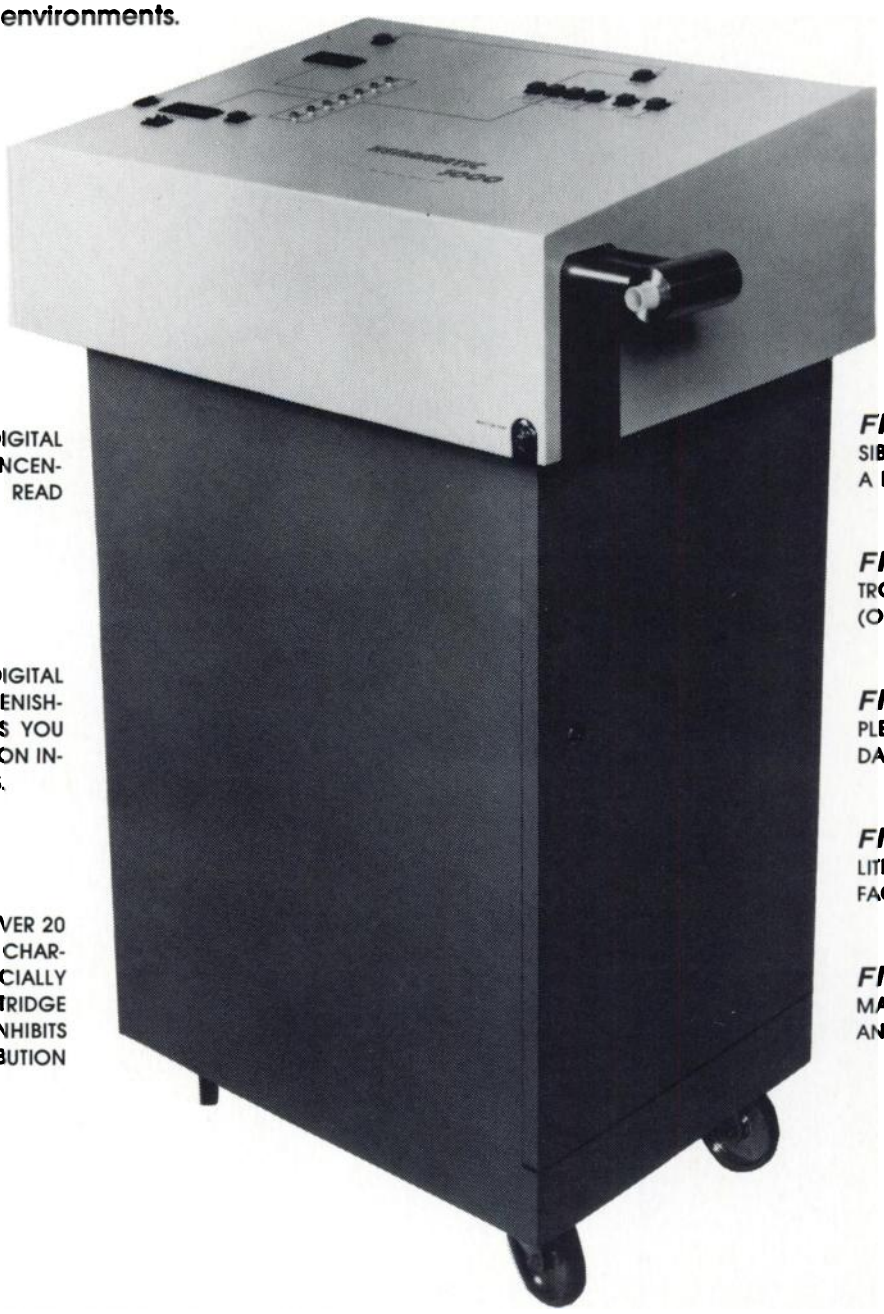

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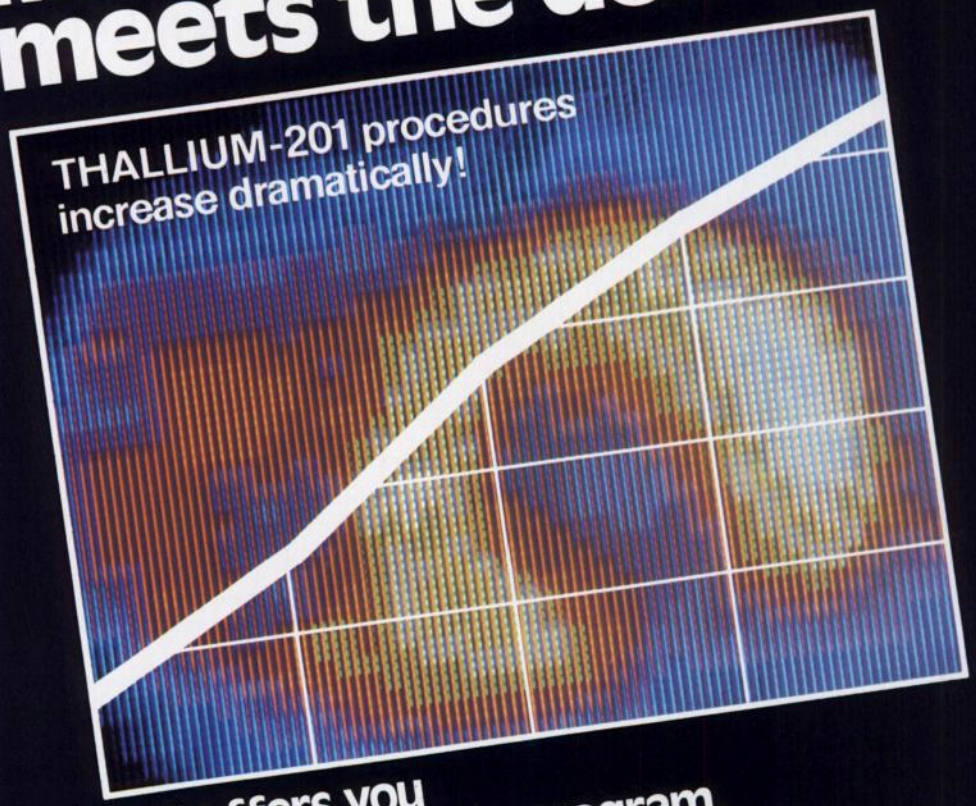

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Mallinckrodt, Inc., Diagnostic Products Division, Post Office Box 5840, St. Louis, MO 63134

*Diagnostic Imaging, June 1981.

See brief summary on following page.

THALLOUS CHLORIDE TI 201 INJECTION

Diagnostic—For Intravenous Use

Brief Summary—for full prescribing information consult package insert.

DESCRIPTION

Thallous Chloride TI 201 Injection is supplied in isotonic solution as a sterile, nonpyrogenic diagnostic radiopharmaceutical for intravenous administration. Each ml contains 1 mCi Thallous Chloride TI 201 at calibration time made isotonic with 9 mg sodium chloride and preserved with 0.9% (v/v) benzyl alcohol. The pH is adjusted to between 4.5-7.0 with hydrochloric acid and/or sodium hydroxide. Thallium TI 201 is cyclotron produced. It is essentially carrier-free and contains no more than 1.0% Thallium TI 200 and no more than 1.0% Thallium TI 202.

CLINICAL PHARMACOLOGY

Carrier-free **Thallous Chloride TI 201** has been found to accumulate in viable myocardium in a manner analogous to potassium. Experiments employing labeled microspheres in human volunteers have shown that the myocardial distribution of **Thallous Chloride TI 201** correlates well with regional perfusion.

In clinical studies, thallium images show areas of infarction as "cold" or nonlabeled regions which are confirmed by electrocardiographic and enzyme changes. Regions of transient myocardial ischemia corresponding to areas perfused by coronary arteries with partial stenoses have been visualized as cold spots when thallium was administered in conjunction with an exercise stress test.

After intravenous administration, **Thallous Chloride TI 201** clears rapidly from the blood with maximal concentration by normal myocardium occurring at about ten minutes.

Five minutes after intravenous administration only 5-8 percent of injected activity remained in the blood. A biexponential disappearance curve was obtained, with 91.5 percent of the blood radioactivity disappearing with a T½ of about 5 minutes. The remainder had a T½ of about 40 hours.

Approximately 4 to 8 percent of the injected dose was excreted in the urine in the first 24 hours. The whole body disappearance half-time was 9.8 ± 2.5 days. Kidney concentration was found to be about 3 percent of the injected activity and the testicular content was 0.15 percent. Net thyroid activity was determined to be only 0.2 percent of the injected dose, and the activity disappeared in 24 hours. From anterior and posterior whole-body scans, it was determined that about 45 percent of the injected dose was in the large intestines and contiguous structure (liver, kidneys, abdominal musculature)[1].

[1]Atkins, H. L., et al. Thallium-201 for Medical Use. Part 3: Human Distribution and Physical Imaging Properties, *Journal of Nuclear Medicine*, 18(2):133-140, Feb. 1977.

INDICATIONS AND USAGE

Thallous Chloride TI 201 may be useful in myocardial perfusion imaging and for the diagnosis and localization of myocardial infarction.

It may also be useful in conjunction with exercise stress testing as an adjunct in the diagnosis of ischemic heart disease (atherosclerotic coronary artery disease).

It is usually not possible to differentiate recent from old myocardial infarction, or to differentiate exactly between recent myocardial infarction and ischemia.

CONTRAINDICATIONS

None known.

WARNINGS

When studying patients suspected or known to have myocardial infarction or ischemia, care should be taken to assure continuous clinical monitoring and treatment in accordance with safe, accepted procedure. Exercise stress testing should be performed only under the supervision of a qualified physician and in a laboratory equipped with appropriate resuscitation and support apparatus.

PREGNANCY CATEGORY C

Adequate reproduction studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. **Thallous Chloride TI 201** should not be used in pregnant women except when benefits clearly outweigh the potential risks.

PRECAUTIONS

Ideally, examinations using radiopharmaceutical drug products—especially those elective in nature—of women of childbearing capability should be performed during the first ten days following the onset of menses.

NURSING MOTHERS

It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, as a general rule nursing should not be undertaken when a patient is administered radioactive material.

Safety and effectiveness in children have not been established.

CARCINOGENESIS

No long-term animal studies have been performed to evaluate carcinogenic potential.

Data are not available concerning the effect on the quality of Thallium TI 201 scans of marked alterations in blood glucose, insulin or pH (such as is found in diabetes mellitus). Attention is directed to the fact that thallium is a potassium analog, and since the transport of potassium is affected by these factors, the possibility exists that thallium may likewise be affected.

As in the use of any radioactive material, care should be taken to minimize radiation exposure to the patient consistent with proper 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 governmental agency authorized to license the use of radionuclides.

This drug should not be used six (6) days after the calibration date.

ADVERSE REACTIONS

Adverse reactions related to use of this agent have not been reported to date.

HOW SUPPLIED

Thallous Chloride TI 201 Injection is supplied in a sterile, nonpyrogenic solution for intravenous administration. Each ml contains 1 mCi Thallium TI 201 at calibration time, 9 mg sodium chloride and 0.9 percent (v/v) benzyl alcohol. The pH is adjusted to between 4.5-7.0 with hydrochloric acid and/or sodium hydroxide solution. Vials are available in the following quantities of radioactivity: 2.0, and 4.0 millicuries of Thallium TI 201.

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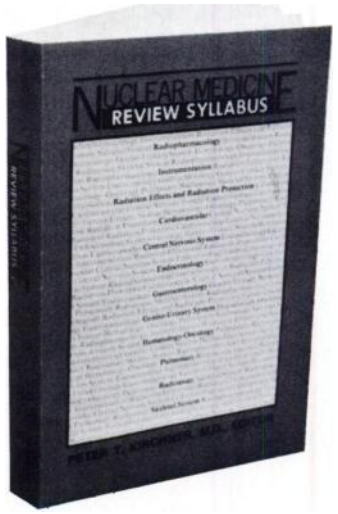

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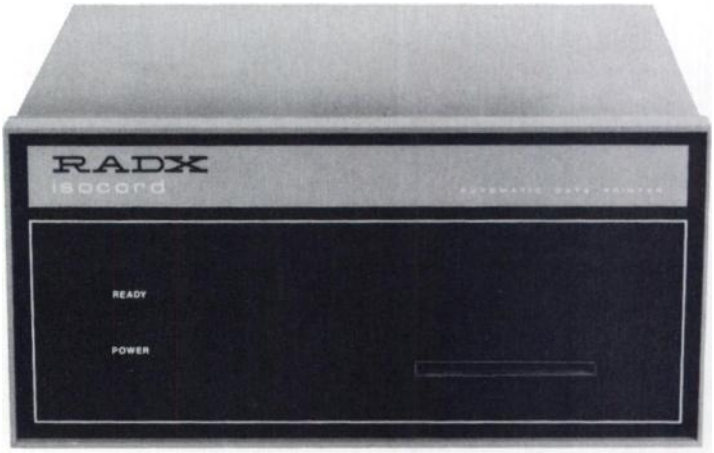

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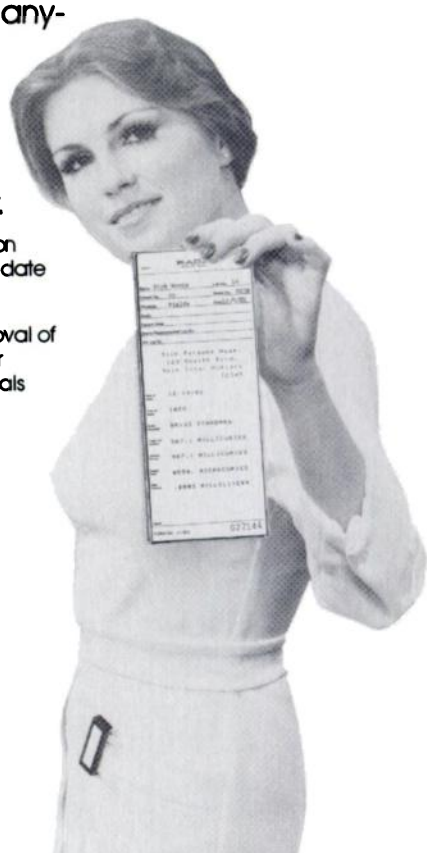

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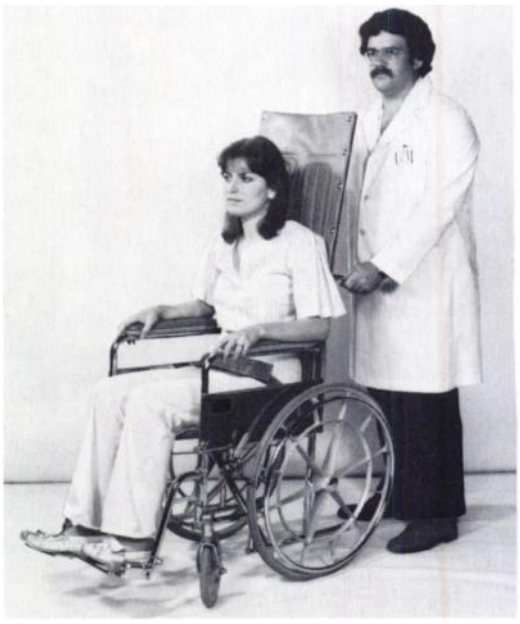

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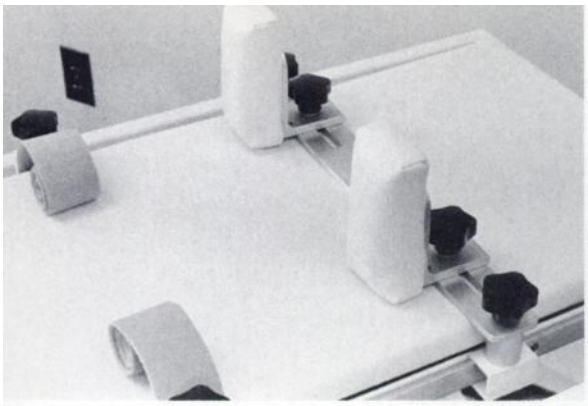

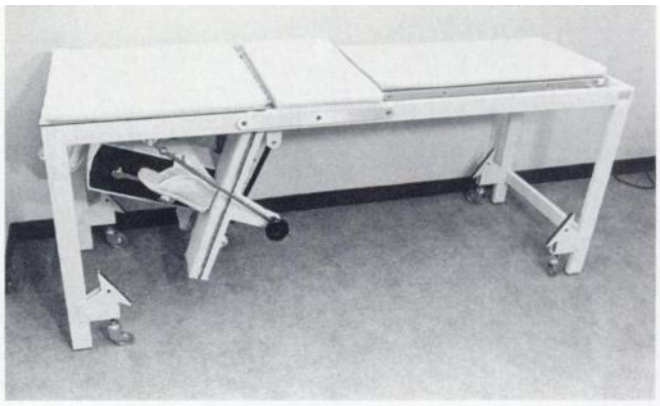

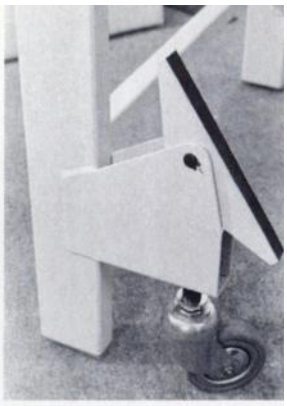

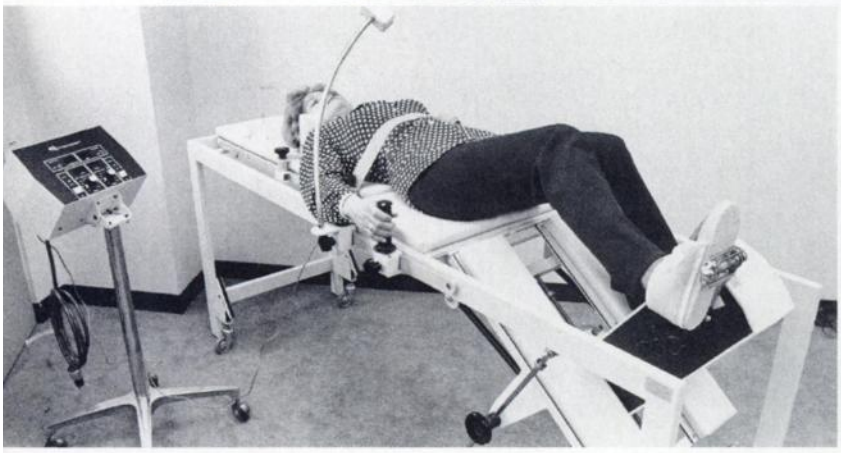

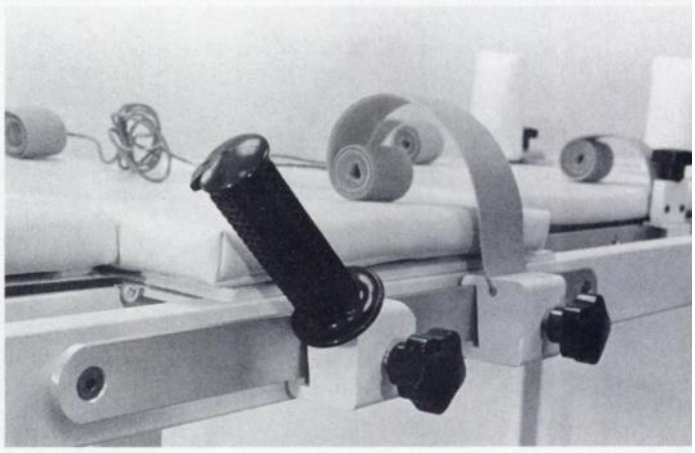

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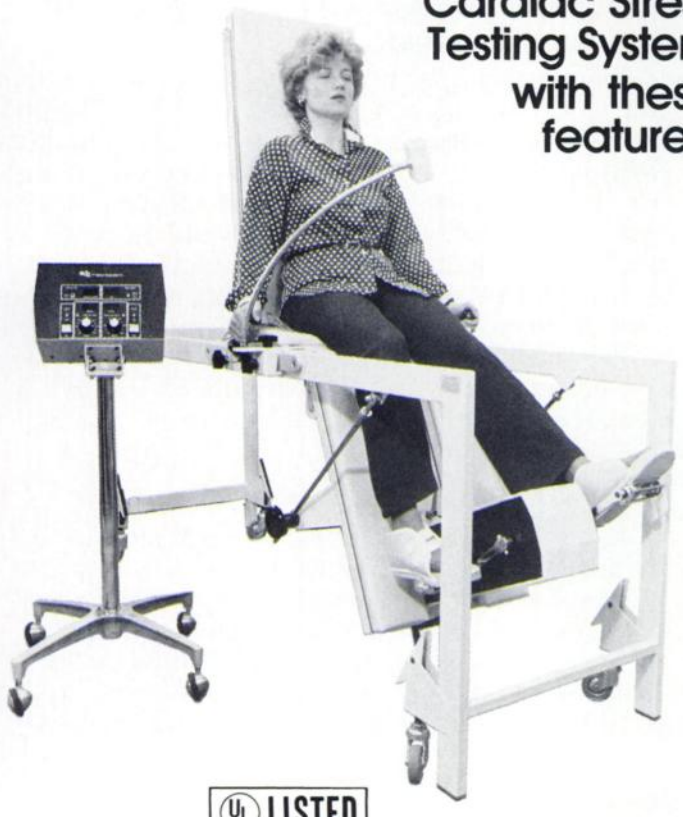

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Space/time quantitative thallium imaging

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At Cedars-Sinai Medical Center, we have developed a computerized technique for analyzing both the regional myocardial distribution and the washout of thallium-201. The technique combines some of the most useful aspects of previously described quantitative approaches to thallium imaging with certain unique display features. Our studies so far[1,2] have convinced us that the method yields objective, highly accurate results and, more important, provides valuable information that often cannot be obtained by visual inspection alone of thallium-201 scintigrams.

Space/time quantitation

The method we have developed for simultaneous spatial and temporal quantitation of myocardial thallium distribution uses a computer to

- perform interpolative background subtraction of the images. This approach to myocardial background subtraction—as first described by Goris and colleagues,[3] and modified by Watson et al[4]—appears to provide the most satisfactory approximation of the true background contribution.
- generate and display maximal circumferential profiles representing the myocardial distribution of thallium in the immediate-postexercise and 4-hour delayed images. Following the approach suggested by Burow et al[5] and Vogel and associates,[6] the profiles are constructed by the computer for the postexercise images from the maximal-count-per-pixel values along 60 radii spaced at 6° intervals.
- generate and display washout circumferential profiles. These profiles are computer-constructed by subtracting, point for point, the 4-hour distribution profile from the initial postexercise profile, and then dividing by the initial profile. This yields a percent washout rate for each region around the myocardium.
- compare both the initial distribution profile and the percent washout profile with previously established normal profiles. Our normal profiles are drawn from a population of patients with less than a 1% likelihood of coronary disease on the basis of Bayesian analysis. This approach avoids the pitfalls inherent in defining as normals either patients with normal coronary arteriography (who, in fact, may have nonatherosclerotic ischemic disease) or "normal volunteers" (who may have occult coronary disease).

Operator interaction is confined to selecting the ventricular region of interest for background subtraction; visual determination of the center of the ventricle (and thus the maximum radius to which the computer will search); and locating the apex. Of these three operator-dependent steps, location of the apex is most critical. The computer automatically assigns the selected apex to the 90° position for comparison of the curves for washout calculation and for comparison of patient results with our normal values.

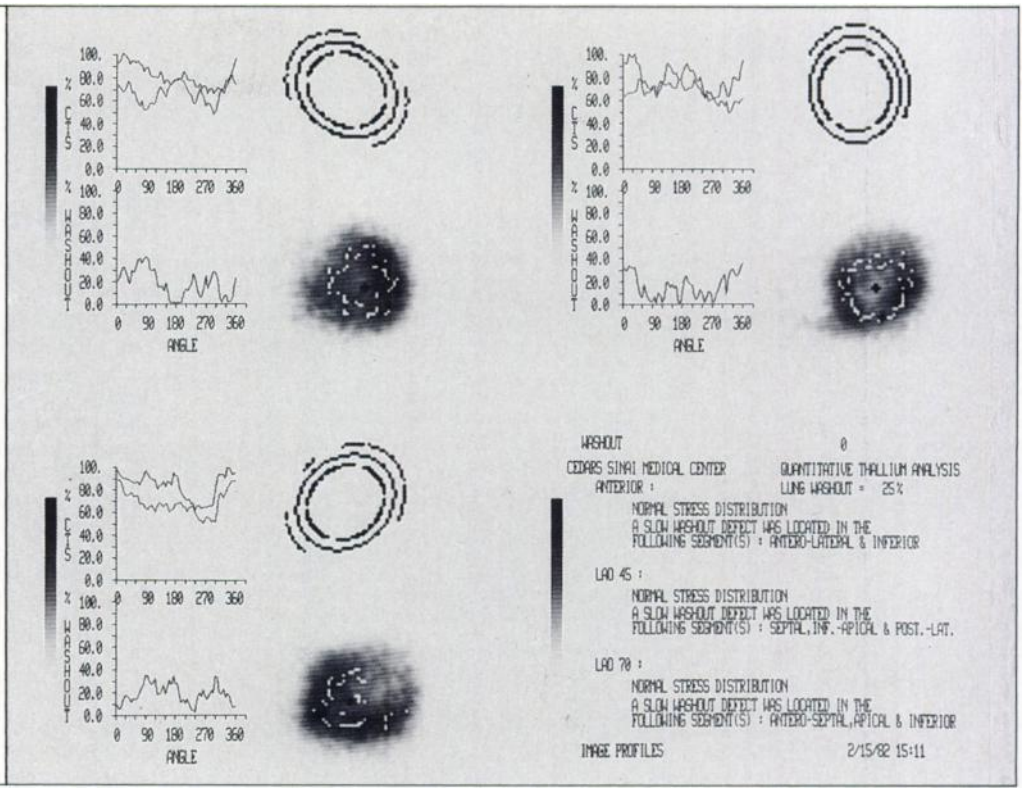
Displaying the data

Finally, the computer displays the quantitative data in a way that is very easy to comprehend and interpret. In addition to curves of initial distribution, 4-hour distribution and percent washout for the anterior, 45° LAO and 70° LAO views, the display shows a series of three concentric ellipses that permits immediate identification of segments with abnormal perfusion and/or washout.

The innermost of these three ellipses is a reference indicating the position of the myocardium. The middle ellipse corresponds to initial postexercise thallium distribution, and the outer ellipse to the percent washout for each region. Consecutive unbroken ellipses in each view suggest a normal study—with no regions of perfusion deficit or abnormal washout. Gaps in the middle ellipse represent abnormal regional perfusion; gaps in the outer ellipse represent abnormal regional washout. Regional abnormalities are determined by the computer by comparison with the lower limits of normal established for both perfusion and washout from our normal population.

Improved thallium imaging

We believe that our program overcomes some of the limitations associated with reliance on visual interpretation of thallium-201 images. The first of these, as most experienced observers would admit, is the *subjectivity* of visual analysis and the consequent variability of reported sensitivity and specificity values. In our recently reported study,[2] the sensitivity



Quantitative thallium study demonstrating significant three-vessel coronary disease. On visual inspection, the study was read as normal. The unbroken middle ellipses in all views suggest no perfusion defects—consistent with the visual interpretation. However, gaps in the outer ellipses indicate washout abnormalities in the distribution of each of the major coronary arteries. Angiography revealed 90% stenoses of each of the proximal arteries.

and specificity for detection of coronary artery disease were 93% and 90%, respectively—compared to 91% and 86% for visual interpretation. More important, interobserver agreement was 93% with the quantitative technique—higher than reported for visual interpretation, and suggesting that high sensitivity and specificity values could be routinely obtained in every nuclear cardiology laboratory.

Another reported problem is the relative insensitivity of visual analysis for identifying individual-vessel coronary lesions. Visual reading relies on the fact that the initial myocardial distribution of thallium reflects relative, not absolute, differences in uptake between ischemic and nonischemic regions. Thus, in a patient with multivessel disease, some areas with diminished perfusion may appear relatively normal compared with a more severely hypoperfused region. In the worst case, significant three-vessel disease with balanced reduction in blood flow may not be seen as abnormal by visual inspection of the images.

Our technique overcomes this limitation by quantifying regional thallium washout, thus permitting us to compare each region with itself over time rather than with other regions. Because ischemic regions demonstrate altered washout, we can thus identify areas supplied by stenosed vessels which might be undetected by visual region-to-region comparison alone.

How successful have we been in identifying individual diseased vessels? In our recent study,[2] we detected left anterior descending disease with a sensitivity of 80% (compared to 56% for visual inspection), left circumflex disease with a sensitivity of 63% (compared to 34%) and right coronary disease with a sensitivity of 94% (compared to 65%). In addition, our sensitivity for distinguishing coronary arteries with moderate disease was 70%, compared to 35% by visual inspection.

Clinical implications

The increased sensitivity and specificity of our program, and the enhanced interobserver agreement, have important implications not only for detection of coronary disease, but also for patient prognosis. We know from angiographic studies that the likelihood of major cardiac events may be related to the location and extent of a patient's coronary disease. The ability to identify individual-vessel disease—especially in patients with multiple-vessel involvement—that we have demonstrated with our quantitative approach to thallium imaging suggests that such potentially prognostic information can now be obtained noninvasively, with the attendant advantages of reduced patient inconvenience and lower cost.

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1. Garcia E, Maddahi J, Berman D, et al: *J Nucl Med* 22:309, 1981.
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3. Goris ML, Daspit SG, McLaughlin P, et al: *J Nucl Med* 17:744, 1976.
4. Watson DD, Beller GA, Berger BC, et al: *Software* 6:4, 1979.
5. Burow RD, Pond M, Schafer AW, et al: *J Nucl Med* 20:771, 1979.
6. Vogel RA, Kirch DL, LeFree MT, et al: *J Nucl Med* 19:730, 1978 (abst).

Please see following page for brief summary of prescribing information.

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INDICATIONS AND USAGE: Thallous Chloride Tl 201 may be useful in myocardial perfusion imaging for the diagnosis and localization of myocardial infarction.

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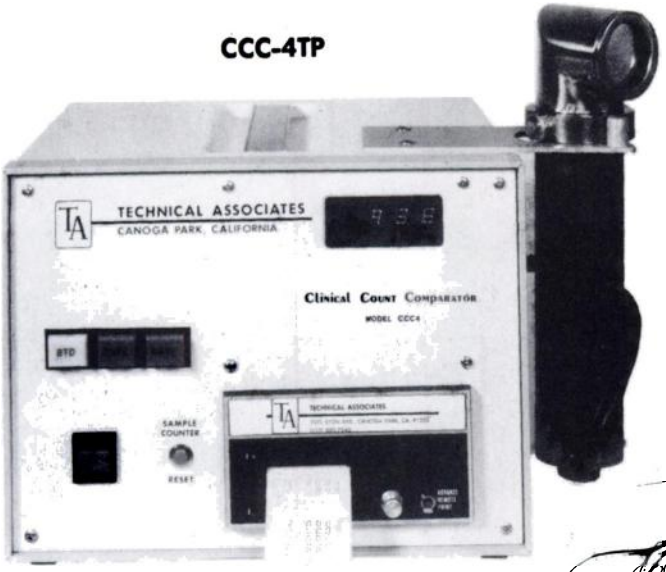

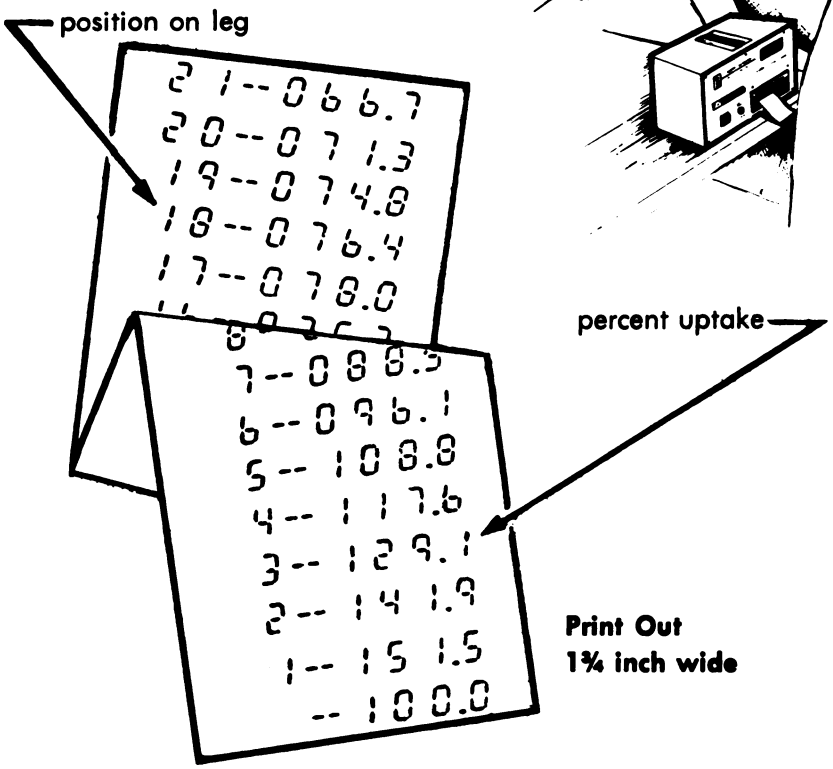

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ACADEMIC NUCLEAR MEDICINE SPECIALIST. Full-time position available. Board certification or eligibility in Nuclear Medicine and research experience in Nuclear Medicine or related disciplines required. Salary dependent on qualifications. Equal Opportunity Employer—Hispanics, other minorities and women encouraged to apply. Write Steven Larson, MD, Chief, Nuclear Medicine, VA Medical Center, 4435 Beacon Ave. S., Seattle, WA 98108.

NUCLEAR MEDICINE PHYSICIAN to join progressive, expanding, hospital-based private practice in desirable Northern California location. Academic affiliation is possible. ABNM certification is required and recent training, strong clinical experience and Internal Medicine background preferred. Salary negotiable but competitive. Send CV and particulars to Box 901, Society of Nuclear Medicine, 475 Park Avenue South, New York, NY 10016.

CHIEF NUCLEAR MEDICINE TECHNOLOGIST. Georgia's second largest hospital seeks a technologist with formal training and experience in Nuclear Chemistry and Physiology, including clinical applications in nuclear organ imaging. Computer experience is desirable. The chief technologist is responsible for the activities of 7 technologists and 3 assistants and serves as the section manager for Nuclear Medicine. University Hospital, in Augusta, GA, is a 700-bed nonprofit community hospital. Long known for its golf, Augusta is also noted for year-round mild climate, gracious southern surroundings and recreational and cultural opportunities. University offers a competitive salary and excellent benefits, including free life and health insurance. Contact: Joe Herzberg, Employment Manager, University Hospital, 1350 Walton Way (10), Augusta, GA 30910. (404)724-5436. E.O.E.

ASST. DIRECTOR, IMAGING SERVICES. Exciting opportunity for dynamic professional in our 363-bed acute care hospital expanding to 600 beds! Area of responsibility includes Nuclear Medicine, Ultrasound, and CT. You will need Nuclear Medicine registration and previous Ultrasound experience. CT experience helpful! Follow the sun to beautiful suburb of vibrant Houston! Attractive salary and benefits. Send resume to Professional Recruiter, Houston Northwest Medical Center, 710 FM 1960 West, Houston, TX 77090. (713)440-2464. EOE/M/F/H.

Position available for NUCLEAR MEDICINE TECNNOLOGIST in 145-bed community hospital located in NE Pennsylbania. Modern, well-equipped department provides scanning RIA procedures to area of approximately 50,000 people. Individual should be registered or eligible and will be in charge of the department. Ultrasound experience helpful but not required. Equipment includes Ohio Nuclear Camera, Picker 5'' scanner and automated RIA counter. Soldiers and Sailors Memorial Hospital is located in a rural area noted for many winter and summer recreational activities. Competitive salary and excellent benefits. For further information write or call: Soldiers and Sailors Memorial Hospital, Attention: Personnel Department, Central Avenue, Wellsboro, PA 16901. (717)724-1022.

Applications welcomed from BOARD-CERTIFIED GENERAL RADIOLOGISTS with speical interest in Nuclear Medicine at Saint Paul-Ramsey Medical Center. U of M teaching appointment. Salary negotiable. Start immediately. Contact P. L'Heureux, MD, Chief, Department of Radiology, Saint Paul-Ramsey Medical Center, 640 Jackson Street, Saint Paul, MN 55101. (612)221-3793.

RADIOLOGIST. Experienced with special training in Nuclear Medicine, Ultrasound and CT to join one other radiologist in growing hospital practice. Send complete CV with initial correspondence to: Barry S. Mayer, MD, French Hospital, 1911 Johnson Ave., Box AMI, San Luis Obispo, CA 93406.

NUCLEAR MEDICINE RESIDENCY. 699-bed VA general hospital offers AMA approved comprehensive two-year program. Two positions available July 1983. Located in the San Fernando Valley area of Los Angeles, 15 minutes from affiliated hospitals (UCLA) and Wadsworth VA). Program covers isotope and ultrasound imaging, in vivo and in vitro procedures, including RIA, isotope therapy and all recent computer and cardiology procedures. Prerequisite: two years post graduate training in medicine, radiology, or pathology. Minimum stipend: $27,103.00. Contact: Marvin B. Cohen, MD, Chief, Nuclear Medicine Service. Nondiscrimination in employment. VA Medical Center, 16111 Plummer Street, Sepulveda, CA 91343.

NUCLEAR MEDICINE TECHNOLOGIST. Immediate opening for a Registered Nuclear Medicine Technologist to work full-time days with some call. Maryview Hospital has a full service Radiology Dept. with Radiation Therapy and is situated in the center of Virginia's scenic Tidewater area. Excellent benefits and salary commensurate with experience. Contact Personnel Dept., Maryview Hospital, 3636 High Street, Portsmouth, VA 23707. (804)398-2241. EOE.

NUCLEAR MEDICINE TECHNOLOGISTS—Nation's largest health care delivery system has immediate openings. Salary commensurate with education and experience. Fringe benefits. Veterans Administration Medical Center, Allen Park, MI 48101. Phone: (313)562-6000, ext. 676. Equal Opportunity Employer.

NUCLEAR MEDICINE TECHNOLOGISTS needed nationwide! Attractive locations, excellent salaries, career opportunities. No cost to you. Contact Ruth Knight, Nationwide Recruiters, 3710 Landmark Dr., Suite 111, Columbia, SC 29204. (800)845-0992 or (803)738-1790.

FOR SALE

For Sale—brand new G.E. MED IV with color display. Will install and warranty system. Call (817)566-1936 (Ms. McCoig).

One (1) G.E. RADIOCAMERA 17 TUBE with whole body attachment, standard field of view. One (1) diverging collimator, one (1) high sensitivity collimator, one (1) whole body collimator. One (1) G.E. Elscint dual probe whole body rectilinear scanner with two (2) low energy collimators, two (2) medium energy collimators and one (1) thyroid collimator. Both systems maintained under G.E. factory service contract. For information contact: John C. Hales, Assistant Administrator, The Medical Center at Bowling Green, 250 Park St., Bowling Green, KY 42101, Tel: (502)781-2150, ext. 1602.

For the Love of Life

Nuclear Pharmacist Faculty Position

The Nuclear Medicine Division, Department of Radiology, at the Loyola University Medical Center, a private 500-bed Hospital located in a suburb of Chicago, has an immediate opening for a qualified individual in the field of Nuclear Pharmacy.

Responsibilities include the supervision of research and clinical duties within the Nuclear Medicine Department. Applicants should have an MS or PhD degree in the area of Nuclear Pharmacy, Bionucleonics or related area. Applicants may possess a Pharm.D. degree with adequate training. Faculty position at the Assistant/Associate level dependent upon training and experience.

Loyola University Medical Center is an equal opportunity employer offering excellent benefits. Salary commensurate with experience. Please send Curriculum Vitae to:

Robert E. Henkin, MD
Director, Nuclear Medicine
Loyola University Medical Center
2160 South First Avenue
Maywood, IL 60153

NUCLEAR MEDICINE PHYSICIAN

Mt. Sinai Medical Center
New York, NY

A position is available at the Instructor, Assistant or Associate Professor level for a nuclear physician (Board Eligible or Certified) with a demonstrated interest in clinical nuclear imaging, clinical investigation and teaching. The Department is well equipped (9 cameras) and well staffed (5 physicians, 2 PhD scientists) with an approved residency, and research programs in cardiology, radiopharmaceuticals, tumor imaging, orthopedics, hematology, positron imaging and computer applications.

Send statement of interests and curriculum vitae to: Stanley J. Goldsmith, MD, Director, Andre Meyer Department of Physics-Nuclear Medicine, Mt. Sinai Medical Center, New York, NY 10029.

An Equal Opportunity Employer

NUCLEAR MED TECH

Dynamic 150-bed acute care hospital located near Monterey Bay seeks Technologist with one year in vitro nuclear medicine experience; knowledge of imaging, computer applications and in vitro with focus on radioimmunoassays; and ARRT, ASCP or CNMT. We offer an excellent salary, outstanding benefits and an exceptional professional and off-duty environment. Please send resume in confidence to:

DOMINICAN SANTA CRUZ HOSPITAL
1555 Soquel Drive
Santa Cruz, CA 95065
(408)476-0220

An Equal Opportunity Employer

NUCLEAR MEDICINE TECHNOLOGISTS

The Cleveland Clinic Foundation, a renowned medical center comprised of a 1,000-bed hospital, outpatient clinic, education and research divisions, is currently looking for registered Nuclear Medicine Technologists. Due to departmental expansion, additional staff is needed to handle Nuclear Medicine and Nuclear Cardiology procedures. Our department is presently equipped with 7 Gamma cameras and 5 computer systems. Salary commensurate with experience; liberal benefits program including 33 days paid time off per year. Send resume in confidence or call to schedule an appointment.

Technical Recruiter
(216)444-2678

CLEVELAND CLINIC FOUNDATION
9500 Euclid Avenue
Cleveland, OH 44106

An Equal Opportunity Employer M/F/H/V

Educational Coordinator of Nuclear Medicine Technology

A twelve month faculty position to teach and coordinate a two-year A.A.S. program at Lexington Technical Institute a University of Kentucky Community College. Certification (NMTCB) or Registry (ARRT) in Nuclear Medicine Technology and one-to-two clinical lab experience required. Appropriate Bachelor's Degree preferred.

Letter of application, resume, transcripts, and three current letters of reference should be sent to Dr. Shay Jaggard, Associate Director Lexington Technical Institute, Oswald Bldg. Cooper Drive, Lex., KY 40506, before November 1, 1982.

The Lexington Technical Institute is an Equal Opportunity and Affirmative Action Employer.

NUCLEAR MEDICINE VACANCY

If you are a certified Nuclear Medicine Technologist and have 2 years of experience, Hurley Medical Center would like to consider you for a career position in our 600-bed, critical care teaching facility. We have an immediate opportunity for an experienced Technologist to supervise professional staff and to participate in in-service educational programs.

Our position offers a competitive salary range and exceptional fringe benefit package. Our Nuclear Medicine staff works a 4 day week with no weekend or holiday hours.

For more information, please contact:

HURLEY MEDICAL CENTER
Employment Office
Number One Hurley Plaza
Flint, MI 48502
(313)766-0140

HURLEY MEDICAL CENTER

An Equal Opportunity Employer M/F

REGISTERED NUCLEAR MEDICINE TECHNOLOGIST

Enjoy year-round, outdoor living in sunny Florida and have the challenge of being with an unusually progressive department in a modern 550-plus-bed hospital.

This is a permanent, full-time position and will provide excellent experience and opportunity for continued learning in ALL phases of in vivo and in vitro procedures... including computer applications.

Requests for further information should be directed to: Virginia Paine, Holy Cross Hospital, 4725 North Federal Highway, Ft. Lauderdale, FL 33308; or call her collect at: (305) 771-8000, ext. 5596.

Albert Einstein College of Medicine of Yeshiva University — **Montefiore Medical Center**

CHAIRPERSON
Department of Nuclear Medicine

A new unified academic Department of Nuclear Medicine has just been established at the Albert Einstein College of Medicine of Yeshiva University and the Montefiore Medical Center. A single Chairperson is being sought who will have the responsibilities for all of the activities in Nuclear Medicine at both institutions. A Search Committee has been appointed to recommend a candidate for this position.

Applications and nominations for the position of Chairperson of this Department of Nuclear Medicine are invited. The candidate must have demonstrated leadership and broad experience in the clinical practice of Nuclear Medicine, experience in research and teaching in the discipline, and a proficiency in administration. The candidate must be able to qualify for senior academic rank on the faculty of the Albert Einstein College of Medicine. Salary commensurate with experience and qualifications.

Please address correspondence to: Herbert Lukashok, Chairman, Search Committee for Chairperson of the Department of Nuclear Medicine, ALBERT EINSTEIN COLLEGE OF MEDICINE, 1300 Morris Park Avenue, Bronx, NY 10461.

an equal opportunity employer

NUCLEAR MEDICINE TECHNOLOGIST

We are seeking a registered nuclear medicine technologist for our 560-bed medical center located in Central Illinois. Proficiency required in Radio Pharmaceutical preparation, general imaging and therapeutic procedures including Nuclear Cardiology and computer applications. No IN-VITRO experience required.

This newly constructed Nuclear Medicine Department is equipped with the latest in stationary and mobile camera systems and computer capabilities. We offer excellent salary ($18,890-$23,115) and benefits with additional compensation for overtime hours and emergency call coverage. Send resume in confidence to:

Employment Manager
METHODIST MEDICAL
CENTER OF ILLINOIS
221 N.E. Glen Oak
Peoria, IL 61636

Equal Opportunity Employer M/F

International Cancer Treatment and Research Opportunities

SAUDI ARABIA

The King Faisal Specialist Hospital and Research Centre, an ultra modern 400-bed major acute care specialty and referral medical facility in Riyadh, Saudi Arabia, is currently seeking highly qualified professionals to bring on-line the *Cancer Therapy Institute*, the most modern and advanced facility in this area of the world for applying the benefits of Nuclear Science to medical treatment and research. When fully operational this fall, this facility will have the capabilities to manufacture and supply radionuclides (produced on a Model CS-30 Cyclotron) and other radiopharmaceuticals to hospitals and researchers in the Kingdom. It will also provide advanced forms of radiation treatment/therapy for cancer patients utilizing Isocentric Neutron Therapy, 14 Mev D-T Neutron Therapy, a Positron Camera and a Linear Accelerator.

Immediate employment opportunities are available for:

Head of Service, Radionuclide Development

Will organize/implement a program of developing clinical applications for radionuclides and radiopharmaceuticals to be utilized in patient treatment at the King Faisal Specialist Hospital and Research Centre. Requires a PhD in Chemistry, Radiochemistry, or Radiopharmaceuticals and a minimum of 10 years responsible experience in the clinical application of radioisotopes. Experience with Positron Camera and emission tomography is desirable. Starting Annual Salary: Approximately $88,000 (U.S.).

Radionuclide Production Scientist I

Organizes/directs the efforts of a research team investigating research problems of interest to the production of short-lived radionuclides. Requires a PhD in Chemistry, Radiochemistry, or Radiopharmaceuticals Research and a demonstrated work history spanning a minimum of 15 years experience in this field. Starting Annual Salary: Approximately $88,000 (U.S.).

Radiochemist I

Performs radiochemical separation, enriched target material recovery and target preparation of cyclotron produced radionuclides. Prepares radiopharmaceuticals for patient use. Requires a BS in Science and a minimum of 7 years relevant experience. Starting Annual Salary: Approximately $50,000 (U.S.).

Radiochemist II

Prepares radiopharmaceutical preparations under the supervision of a Sr. Radiochemist or Radiochemist I. Requires a BS in Science/Engineering and a minimum of 5 years relevant experience. Starting Annual Salary: Approximately $40,000 (U.S.).

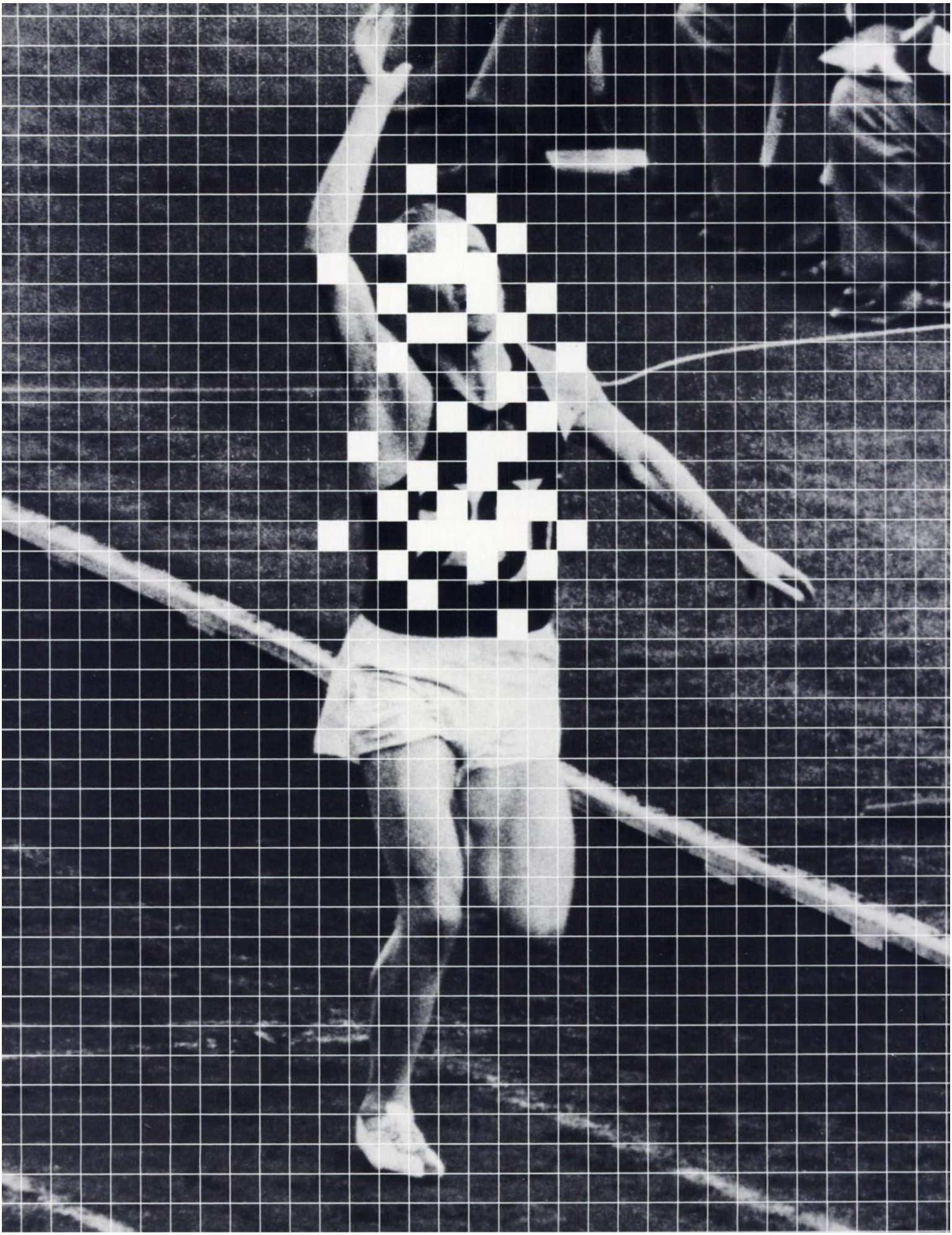
Quality Assurance Technician I

Analytical testing, evaluation and release of chemicals of pharmaceuticals for production and/or patient use. Requires a BS in Science and minimum of 5 years relevant experience in this field. Starting Annual Salary: Approximately $35,000 (U.S.).

Additional benefits for a 2-year contract include: free transportation; 30-day annual paid vacation; free furnished housing; educational tuition for eligible dependents; bonus pay and leave; and more. (Depending on available position, contract may be single status only.)

If you wish to become a member of this multinational Cancer Treatment and Research team, we would like to hear from you. Please call toll-free (800)251-2561 or indicate the position in which you are interested by sending your resume and salary history to: Steven H. Ludlam, Sr. International Representative, Hospital Corporation of America — International Division, P.O. Box 550, Nashville, TN 37202. An Equal Opportunity Employer.

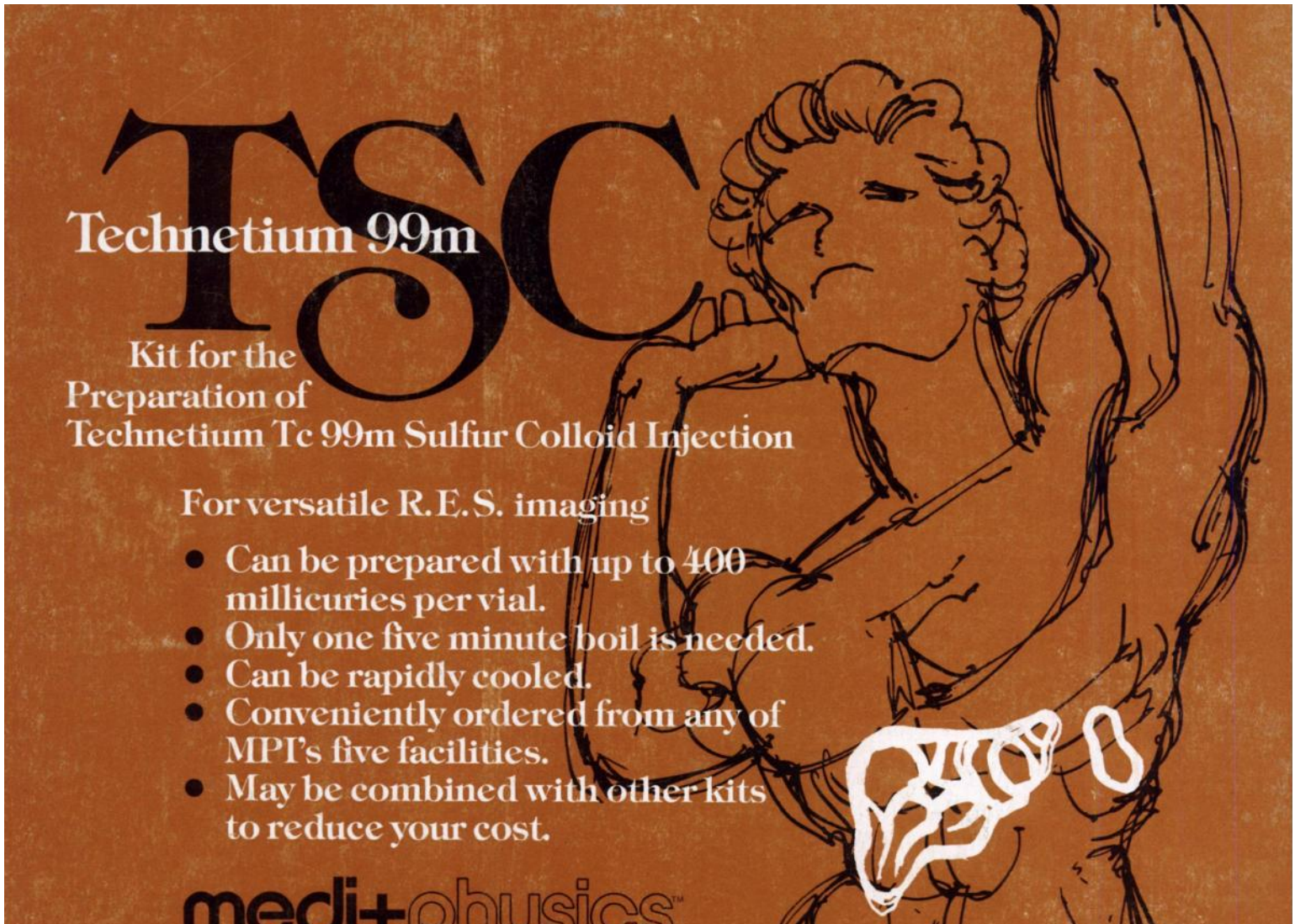
HCA International Division



TSC

Technetium 99m

Kit for the Preparation of Technetium Tc 99m Sulfur Colloid Injection



For versatile R.E.S. imaging

- Can be prepared with up to 400 millicuries per vial.
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TECHNETIUM 99m TSC KIT FOR THE PREPARATION OF TECHNETIUM Tc 99m SULFUR COLLOID INJECTION

For complete prescribing information consult package insert, a summary of which follows:

INDICATIONS AND USAGE: Technetium Tc 99m Sulfur Colloid Injection is used as an agent for imaging areas of functioning reticuloendothelial cells in the liver, spleen, and bone marrow.

CONTRAINDICATIONS: None known.

WARNINGS: The contents of the two syringes, one syringe containing the sodium thiosulfate solution and the second syringe containing the appropriate buffer solution, are intended *only* for use in the preparation of the Technetium Tc 99m Sulfur Colloid Injection and ***are not to be directly administered to the patient.***

The contents of the kit are not radioactive. However, after the Sodium Pertechnetate Tc 99m is added, adequate shielding of the final preparation must be maintained.

PRECAUTIONS: The components of the kit are sterile and pyrogen-free. It is essential that the user follows the directions carefully and adheres to strict aseptic procedures during preparation of the colloid.

The stability of the colloidal preparation may be decreased in the presence of polyvalent cations, thus resulting in the agglomeration of the individual colloidal particles. These larger particles are likely to be trapped by the pulmonary capillary bed following intravenous injection.

It is recommended that Sodium Pertechnetate Tc 99m solutions containing more than 10 micrograms/ml of aluminum ion not be used for formulation of the Technetium Tc 99m Sulfur Colloid Injection. The Sodium Pertechnetate Tc 99m solution must also be free of any traces of oxidizing agents such as peroxides and hypochlorites.

Technetium Tc 99m Sulfur Colloid Injection is physically unstable and as such the particles will settle with time. Failure to agitate the vial adequately before use may result in non-uniform distribution of radioactivity.

It is also recommended that because of the increasing probability of agglomeration with aging, a batch of Technetium Tc 99m Sulfur Colloid Injection not be used after *six* hours from the time of formulation.

The preparation contains no bacteriostatic preservative.

Pregnancy Category C. Animal reproduction studies have not been conducted with Technetium Tc 99m Sulfur Colloid. It is also not known whether Technetium Tc 99m Sulfur Colloid can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Technetium Tc 99m Sulfur Colloid 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.

It is not known whether this drug is excreted in human milk. As a general rule, nursing should not be undertaken while a patient is on a drug since many drugs are excreted in human milk.

Safety and effectiveness in children have not been established.

Technetium Tc 99m Sulfur Colloid Injection, as well as other radioactive drugs, must be handled with care and appropriate safety measures should be used to minimize external radiation exposure to clinical personnel. Also, care should be taken to minimize radiation exposure to patients, consistent with proper patient management.

ADVERSE REACTIONS: Hypersensitivity reactions, including anaphylaxis, have been reported in patients receiving sulfur colloid preparations.

One death and several cases of lung and soft tissue uptake other than RES have been reported in the association with the use of Technetium Tc 99m Sulfur Colloid Injection.

HOW SUPPLIED: The TECHNETIUM 99m SULFUR COLLOID KIT is supplied as a sterile pyrogen-free kit consisting of: five reaction vials, each containing 0.5 ml 1.0 N hydrochloric acid in water; five sterile syringes (labeled "A"), each containing 1.9 mg sodium thiosulfate anhydrous in 1.1 ml aqueous solution; five sterile syringes (labeled "B"), each containing 5.3 mg gelatin in 2.1 ml aqueous buffer solution containing 177 mg sodium acetate anhydrous.

STORAGE: Store finished drug at room temperature.