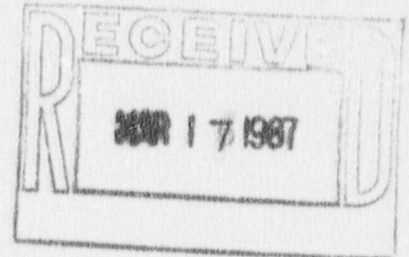


• TUBA DIAGNOSTIC •

IMAGING CENTER



March 16, 1987

United States Nuclear Regulatory Commissiop
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

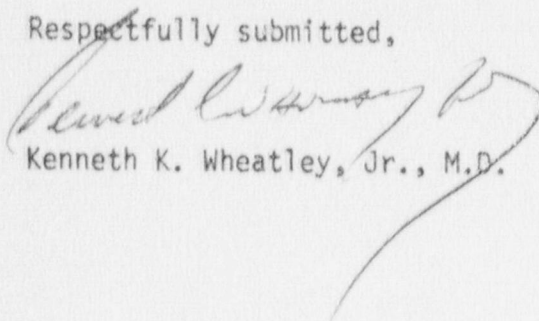
Control No. 461335

Gentlemen:

With reference to our phone conversation of March 16, 1987, I have enclosed the following information in regards to our procedure for leak tests on sealed sources. (Consultant Val Bricker, Technologist.) The center will be doing the leak tests and the samples will be counted in a well counter at the Center.

I hope this information will provide all materials needed for your review. If not, please contact me as soon as possible.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Kenneth K. Wheatley, Jr.".

Kenneth K. Wheatley, Jr., M.D.

B710200159 B70424
REQ4 LIC30
35-26864-01 PDR

461335

SEALED SOURCES LEAK TESTS

Leak tests will be performed semiannually on all sealed sources using these instructions:

1. Using a cotton swab, wipe all surface area of the sealed source.
2. Place the cotton swab in a counting vial and label appropriately.
3. Set the well detector lower level discriminator at 60 KeV and the upper level discriminator at 800 KeV.
4. Take a 1 minute background count, then count each vial for 1 minute.
5. Record results in the leak test log book.
6. Convert results to uCi amount results.
7. A positive leak test is indicated when the source count is 100 counts above background count.
8. If surface contamination is detected, remove the source from use and submit it for repair or disposal.

To convert results into uCi amounts, from counts per minutes, an aliquot of ^{99m}Tc which represents 1 uCi/ml will be counted in the well counter for 1 minute. Then the sample vial containing swabs is placed in the well and counted for 10 minutes.

Calculate the results in counts per minute and convert to microcuries with the following formula

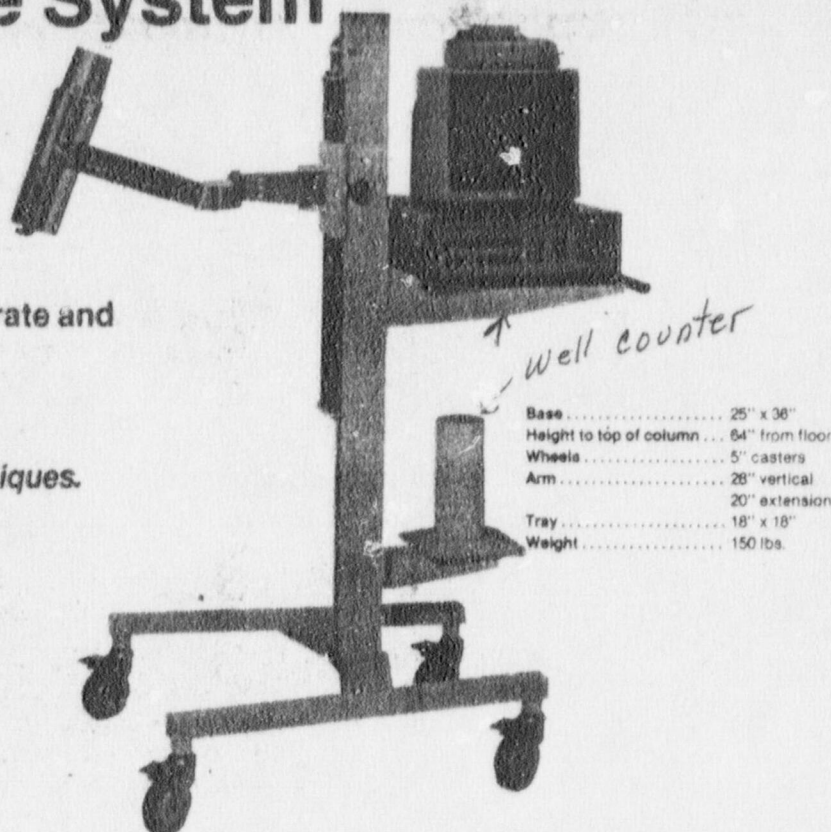
$$\frac{\text{CPM source}}{\text{Act. source}} = \frac{\text{CPM sample}}{\text{Act. sample (X)}}$$

Thyroid Uptake System

The Complete System for Fast, Accurate and Dependable Computerized Analysis.

Step by step analysis using menu techniques.

- Multi Channel Analyzer
- Push Button Isotope Selection
- Video Display ... Optional Printer
- Complete Compact System



The Thyroid Uptake System offers fast, accurate computerized analysis utilizing menu techniques. It takes the guesswork out of the procedure and permits standardization from test to test. Methodology is made easy. The step by step, straight forward procedure is outlined on an easy to read video monitor and the results are displayed on the video screen and (optional) printout.

SYSTEM COMPONENTS:

Tube Assembly & Base:

A 2" x 2" integral line Crystal-Photomultiplier tube assembly. An aluminum housing covers the entire assembly to form a complete plug-in detector.

Uptake Stand:

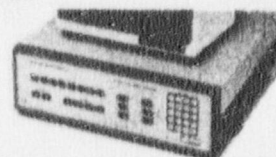
Designed to minimize the system's physical presence within a department and maximize its function as a positioning device. The stand and system are designed for portable use in any area and for storage when not in use. The counter-balanced arms moves 24 inches in its vertical position. The three-section arm extends out to 26" horizontally from the stand column. The shielded detector assembly swivels for precise positioning. The instrument shelf is 18" x 18". The design of the base is open for access to chair or stretcher. Wheels are 3" swivel with independent brakes.

Collimated Shield:

A flat field, leaded collimator which meets the current specifications of the International Atomic Energy Agency. The collimated shield attaches to the stand arm by means of a yoke device. The configuration allows movement in all axis for easy patient approaches.

Multi-Channel Analyzer:

The system utilizes a multi-channel Analyzer that measures the entire energy spectrum. A pre-selected menu of isotopes is conveniently arranged with push buttons. The technologist simply selects the desired isotope which will automatically set the window around the gamma photopeak selected. The photopeak will be displayed on the video monitor during the counting interval.



An additional feature is a manual switch, which enables the technologist to bypass the preselected isotope menu.

Operation is straight forward with a minimum of controls and adjustments. The instrument is designed to be "user friendly", taking full advantage of menu techniques for mode selection.

Most operations and calculations are handled by a high speed microprocessor. Data output is displayed graphically on the video monitor and patient uptake results are available with the touch of a button. An optional printer is available for hard copy.

Thyroid Uptake System: MULTI CHANNEL ANALYZER performance features.

MAIN MENU Guides the clinician through pre-study procedures. Simple step by step operation.



1. CALIBRATE STANDARD

This mode is used to perform routine calibration checks using a Cs-137 standard source.

2. LABORATORY BACKGROUND

This mode allows the operator to obtain a background count rate for each isotope.

3. SAMPLE

This mode is used to measure the sample (pill) activity before administering.

4. PATIENT PLUS THYROID

This mode allows a total count to be performed on a patient some time after administering the pill.

5. patient minus thyroid

Entering the main menu and selecting mode 5 will require full parameter entry.

- A) Select isotope
- B) Sample
- C) Sample activity
- D) Patient
- E) Background
- F) Patient & Thyroid
- G) Time
- H) Position patient and probe with thyroid shield

At the end of the counting period, the processor will calculate the net thyroid uptake and express it as a percentage of the original pill activity.

6. SET DATE & TIME-OF-DAY CLOCK

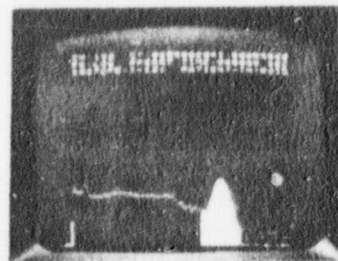
"set date: month/year"

"set time: hour/minutes/seconds (24 hour clock)"

187-292 MCA 220V w/Monitor.....	\$3950.00
187-407 Printer Paper.....	4.00
043-385 Neck Phantom.....	235.00

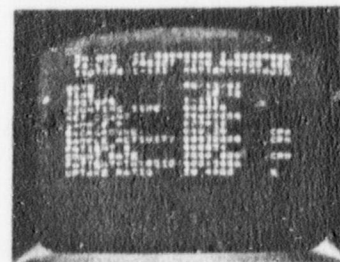
GRAPHIC DISPLAY

During the count interval the monitor displays the isotope used, elapsed time, menu mode, channel number, integral counts in the region of interest where marker is set, counts in channel where marker is set, and visual display of photo peak.



PATIENT RESULTS

At the end of the counting period the processor will calculate the net thyroid uptake and express it as a percentage of the original pill activity.



**Entire procedure is simple,
accurate and dependable.**

**Calculations appear on video screen and
on (optional) printout.**

SPECIFICATIONS:

TYPE: 256 channel MCA, AC line powered 100/120 or 220/240 VAC 50 or 60 HZ operation.

AMPLIFIER: Built-in preamplifier/amplifier for direct connection to NaI(Tl) tube base. Automatic gain switching with isotope selection and rear panel X1 to X10 gain control in manual mode. Thermally compensated for temperature drifts in detector.

HIGH VOLTAGE: Regulated built-in high voltage module, 1mA maximum current, 1 Watt maximum power, 0.05%/°c. Range from 800v to 1200v, internal adjustment for factory system setup and calibration.

ADC: 256 Channel, peak detecting Wilkinson 300,000 cpm maximum average count rate. Rear panel zero level and threshold controls for factory calibration.

REAR PANEL: 10-turn gain control, on-off switch, Signal Input: BNC connector, High voltage output: MHV Connector, Composite Video output: Shielded phono connector; zero, threshold and printer connector.

Price and ordering information:

187-290 Multi-Channel Analyzer	
with monitor.....	\$3950.00
187-786 Tube Assembly and Base.....	975.00
187-115 Stand (includes collimator).....	2900.00
Total.....	7825.00

Options:

187-246 Well Counter.....	\$1400.00
187-301 Transfer Switch.....	150.00
187-406 Printer.....	250.00

DATE
3.16.87

TELEPHONE OR VERBAL CONVERSATION RECORD

TIME 8:43 ☒ A.M.
☐ P.M.

☐ INCOMING CALL

☒ OUTGOING CALL

☐ VISIT

PERSON CALLING

OFFICE/ADDRESS

PHONE NUMBER

EXTENSION

PERSON CALLED

OFFICE/ADDRESS

PHONE NUMBER

EXTENSION

Tulsa Diagnostic & Imaging Center

Tulsa, Oklahoma

918-229-0863

CONVERSATION

SUBJECT

Deficiency Telephone Call

Docker No: 030 29694

SUMMARY

1. Leak test:

- a. equipment
- b. NBS standards
- c. calculations (exp)

REFERRED TO: Joy

ACTION REQUESTED

Milestone 15

☐ ADVISE ME OF
ACTION TAKEN.

INITIALS

DATE

3.16.87

ACTION TAKEN

INITIALS

DATE