

# Eberline

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A DIVISION OF  
**Thermo  
Electron**  
CORPORATION

BUCKET NUMBER PR-30 (2)  
PROPOSED RULE (46 FR 14019)

July 24, 1981



Secretary of the Commission  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Attn: Docketing and Service Branch

Ref: 10CFR Part 30 Amendment of Exemption for Ionizing  
Radiation Measuring Instruments

Gentlemen:

As a major supplier of radiation measuring instruments,  
Eberline requests that the proposed amendment be changed to  
include the following.

1. Scintillation detectors containing up to 0.03  $\mu\text{Ci}$  of  $^{241}\text{Am}$  for gain stabilization purposes (See Eberline catalog sheet on SAM Detectors, copy attached).
2. Electroplated  $^{241}\text{Am}$  calibration sources used with an instrument, not just those mounted inside the instrument.

Sincerely,

Eric L. Geiger, Manager  
Marketing Division

ELG:lm

encl:

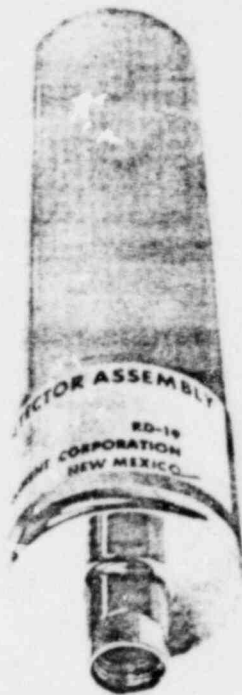
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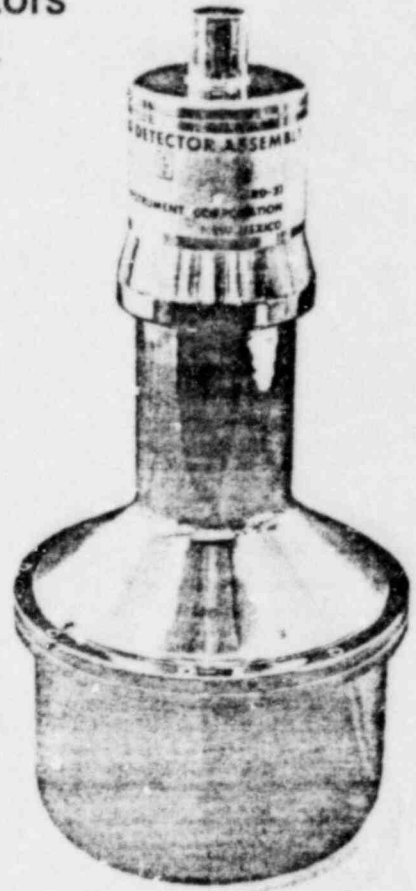
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# SAM\* Detectors

\*Stabilized Assry Meter

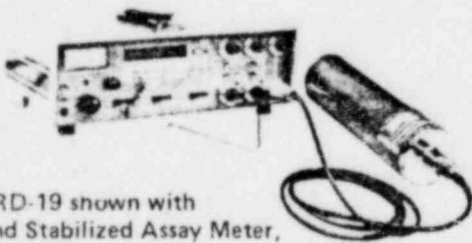


RD-19

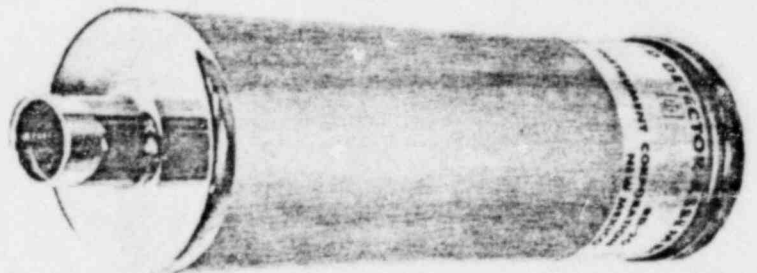


RD-21

## ACCESSORIES



Model RD-19 shown with cable and Stabilized Assay Meter, Model SAM-2



RD-20



Model RD-19 shown with lead shield



RD-22

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SAM-2

# SAM Detectors

## GENERAL DESCRIPTION

Radiation Detectors, Models RD-19 through RD-22, are for use with Eberline Stabilized Assay Meter (SAM). Each contains a  $^{241}\text{Am}$  doped crystal (0.027  $\mu\text{Ci}$ , nominal) which provides a stabilization signal for the SAM.

Models RD-19 and RD-22 are intended for use with gamma energies above 100 keV. They differ in the thickness of the NaI(Tl) crystal (1/2 inch [1.3 cm] for the RD-19 and 2 inches [5.1 cm] for the RD-22).

Models RD-20 and RD-21 are thin NaI(Tl) crystal types intended for use with gamma energies less than 100 keV. They differ in the diameter of the crystal and phototube (2 inches [5.1 cm] for the RD-20 and 5 inches [12.7 cm] for the RD-21).

## SPECIFICATIONS

MAXIMUM VOLTAGE (all units): 1600V.

CURRENT DRAIN (all units): Approximately 10  $\mu\text{A}$  at 1200V.

CONNECTOR (all units): Waterproof, mating connector is EIC Model CP-1.

### CRYSTAL

RD-19: 2 inch dia. x 1/2 inch thick (5.1 cm x 1.3 cm) NaI(Tl) surrounded by 1/16 inch thick (1.6 mm) aluminum.

RD-20: 2 inch dia. x .079 inch thick (5.1 cm x 2 mm) NaI(Tl) with .001 inch thick (0.025 mm) aluminum window.

RD-21: 5 inch dia. x .063 inch thick (12.7 cm x 1.6 mm) NaI(Tl) with .010 inch (0.25 mm) beryllium window.

RD-22: 2 inch dia. x 2 inch thick (5.1 cm x 5.1 cm) NaI(Tl) surrounded by 1/16 inch thick (1.6 mm) aluminum.

### RESOLUTION (FWHM)

RD-19: Typically 15% for  $^{235}\text{U}$  (185 keV).

RD-20: Typically 25% for  $^{241}\text{Am}$  (60 keV).

RD-21: Typically 22% for  $^{241}\text{Am}$  (60 keV).

RD-22: Typically 13% for  $^{131}\text{I}$  (364 keV).

### STABILIZATION SOURCE

Gamma Equivalent Energy: RD-19 and RD-22 -  $3.5 \pm 0.5$  MeV; RD-20 and RD-21 -  $1 \pm 0.2$  MeV.

Count Rate:  $1\text{k} \pm 200$  pulses per second.

Curie Content:  $0.027 \pm 20\%$   $\mu\text{Ci}$   $^{241}\text{Am}$ .

### SIZE AND WEIGHT

RD-19: 2-5/8 inch dia. x 9-9/16 inch long (6.7 cm x 24.3 cm); 2-1/2 pounds (1.1 kg).

RD-20: 2-5/8 inch dia. x 9-9/16 inch long (6.7 cm x 24.3 cm); 2-1/4 pounds (1.0 kg).

RD-21: 6-1/8 inch dia. x 12-1/2 inch long (15.6 cm x 31.8 cm); 9-3/4 pounds (4.4 kg).

RD-22: 2-5/8 inch dia. x 11-1/8 inch long (6.7 cm x 28.3 cm); 3-1/4 pounds (1.5 kg).

### ACCESSORIES

Lead Shield for RD-19: 3/16 inch thick (0.48 cm) aluminum encased lead shield with collet-type retention of the detector. Has easily interchangeable end plates for varying collimation and a .032 inch cadmium disc for low energy filtering. Weight 5-1/2 pounds (2.5 kg).

Detector Cables (all units): Eberline CA-12-60.

\*License required to possess  $^{241}\text{Am}$  in the U. S. A.

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