

**ENERGY LABORATORIES, INC.**

1105 WEST FIRST STREET • GILLETTE, WY 82716 • PHONE (307) 686-7175
P.O. BOX 3258 • 254 NO. CENTER ST. • CASPER, WY 82602 • PHONE (307) 235-0515

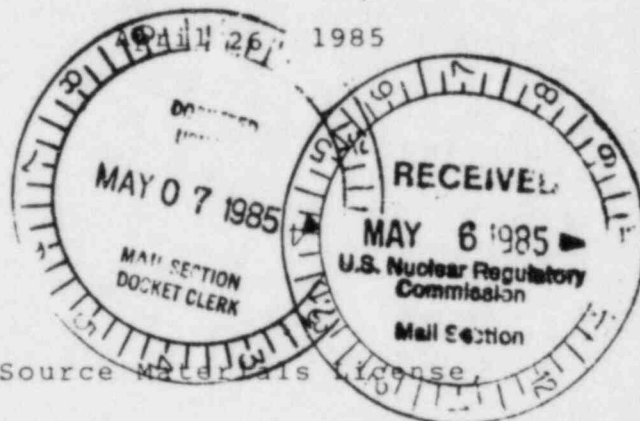
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RETURN TO ~~██████████~~, PDR

040044920315

US NRC Region IV
Uranium Recovery Field Office
Licensing Branch 2
P.O. Box 25325
Denver, CO 80225

ATTN: Pete Garcia, Project Manager

RE: American Nuclear Corporation's Source Materials License,
SUA-667



Dear Mr. Garcia:

As follow up to J. Ferguson's (ANC) introduction of Energy Laboratories, Inc.'s personnel to you 4/10/85, Energy Laboratories is hereby formally submitting the qualifications of Ms. S.A. McArt (Radiation Safety Officer Candidate) and the balance of the laboratory personnel and operations for your consideration.

It is the stated intent of ANC to utilize Ms. McArt as Radiation Safety Officer for their Gas Hills Project operation. Anticipated activities include:

- Radiation safety activities pertaining to ANC's continued environmental monitoring program; air and water quality sampling, soils sampling, vegetation sampling, TLD program maintenance, report preparation, liason with regulatory agencies.
- ALARA program maintenance
- Personnel radiation protection/training as required for any decontamination/decommissioning work at the project site

Highlights of Ms. S.A. McArt's background relative to Radiation Safety operation are summarized below:

- 1980-1983 Uranium Resources, Inc. - Benavides Mine (South Texas), North Platte Project (Converse County, Wyoming).
Position: Project Engineer/Manager - supervised and authorized work performed by contract RST during initial operations. During final operations of the North Platte Project, operated, calibrated, and maintained hi-vol air samples and sampling program; coordinated in-house and outside analytical program; low volume airborne uranium particulate sampling; removable alpha swipe surveys, radon daughter measurements; beta/gamma surveys and background gamma surveys related to decontamination and partial

DESIGNATED ORIGINAL

Certified By Mary C. Hood

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EXEMPT

Add Info
00581

April 26, 1985

page 2

decommissioning of the mine site.

1983 - Present: Consulting Engineer - responsible for the design of ventilation, sealing, plant layout, and sump systems intended to maintain personnel exposure to radiation as low as is reasonably achievable. (UNC Resources, Wyoming Fuel Company)
Continuing work as Radiation Safety Specialist for Energy Laboratories, Inc.; specific duties include research and application for a by-products material license for the laboratory operation, research and performance of residential radon-222 surveys, and anticipated Radiation Safety work for UNC Resources (Leuenberger project decommissioning) and Wyoming Fuel Company (contract RSO proposal for Crow Butte 100 gpm R & D facility).

Educational background and plan: Clarkson College of Technology
(Clarkson University-fall 1984) BSCE 1977.

MSHA - Radiation Monitoring Class (radon daughters)
11/15/82 - 11/17/82, Denver, CO

Eberline - Radiation Monitoring Course (all)
11/82, Albuquerque, NM

Continuing education course at RPI, May 1985
See attached

Although American Nuclear possesses adequate equipment for the performance of anticipated duties, Energy Laboratories, Inc.'s backup equipment is available and is listed as an attachment to this document.

ANC is also interested in utilizing Energy Laboratories, Inc. for performance of their environmental program analytical load. Accordingly, the Energy Lab's personnel qualifications, methods reference, equipment lists, and a brief summary of the quality assurance program have also been included for your consideration.

It is the intent of Energy Laboratories, Inc., through this submittal, to achieve approval for ANC to utilize Ms. S.A. McArt as contract

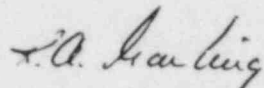
US NRC - ANC's Gas Hills Project
April 26, 1985
page 3

RSO for their Gas Hills Project and further to utilize Energy Laboratories, Inc. for the performance of the associated analytical load. If you require any further information concerning the laboratory or its personnel, please do not hesitate to call.

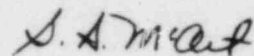
attachments

cc: J. Ferguson
ANC
314 Midwest
Casper, WY
82601

Sincerely,



R.A. Garling
Branch Manager



S.A. McArt
Radiation Safety
Coordinator/Consultant

RADIATION SAFETY EQUIPMENT

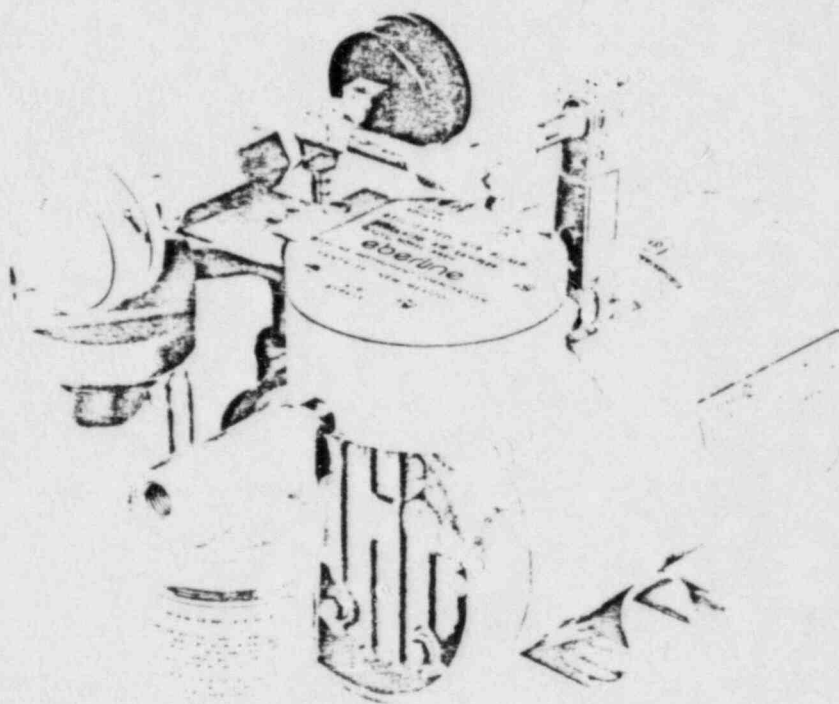
- 1.0 Description: Portable Rate-Meter Scaler, "Rascal" PRS-1
Manufacturer: Eberline
Function: Alpha/Beta/Gamma Counting
Calibration: 3/85
- 2.0 Description: Alpha Scintillation Counter, SAC-R5
Manufacturer: Eberline
Function: Alpha Counting/Scintillation Cell, or Swipe
Calibration: 3/85
- 3.0 Description: Beta/Gamma Probe, HP-270
Manufacturer: Eberline
Function: Beta/Gamma Counting
Calibration: 3/85
- 4.0 Description: Regulated Air Pump, RAS-1
Manufacturer: Eberline
Function: Low Volume Air Sampling
Calibration: At use
- 5.0 Description: Portable Pump, Model S (2 each)
Manufacturer: MSA
Function: Rn-222 and Radon Daughter Surveys
Calibration: At use
- 6.0 Description: Pulse Pump (4 each)
Manufacturer: Calibrated Instruments Inc.
Function: Timed Rn-222 Composites
Calibration: At use
- 7.0 Description: Alpha Scintillation Probe, AC-3, (3 each)
Manufacturer: Eberline
Function: Fixed/Removable Alpha Detection
Calibration: At use
- 8.0 Description: 20 Liter Air Bags (8 each)
Manufacturer: Calibrated Instruments Inc.
Function: Rn-222 Timed Samples, Composites
Calibrated: NA
- 9.0 Description: Gamma Ray Scintillometer μ R Meter, GR-101A
Manufacturer: Geometrics
Function: Background Gamma Determinations
Calibration: 4/85

Radiation Safety Equipment
April 51, 1985
page 2

10.0	Description:	Alpha Scintillation Cells (8 each)
	Manufacturer:	Eberline
	Function:	Rn-222 Counting
	Calibration:	3/85
11.0	Description:	Source, Th-230 (15310 DPM)
	Manufacturer:	Eberline
	Function:	Equipment Check
	Calibration:	3/85

Regulated Air Sampler

Model RAS-1



- PORTABLE AIR-PARTICULATE SAMPLER
- OPTIONAL IODINE CARTRIDGE HOLDER
- FLOWMETER AND VACUUM GAUGE
- 47mm FILTER HOLDER

Eberline

A DIVISION OF
**Thermo
Electron
CORPORATION**

RAS-1

Model RAS-1 Regulated Air Sampler

GENERAL DESCRIPTION

The Model RAS-1 is a compact, portable air particulate sampler containing an oil-less vacuum pump, motor, air flow regulator, flow-meter, vacuum gauge and filter holder.

The Eberline air flow regulator is designed to maintain a constant pressure drop across an in-line orifice by controlling a variable bypass valve into the pump. The orifice is adjustable, permitting flow rate adjustment from near zero up to the maximum pump flow capacity. This

flow control system permits the pump to operate at a minimum pressure drop at all times which provides cooler pump operation to extend the lifetime.

It should be noted that when pressure varies, the flow through an orifice with a constant pressure drop will vary as the square root of the ratio of the absolute pressure. Therefore, if filter loading creates a pressure drop of 50% of the original pressure, the flow referenced to atmosphere will decrease by 30%.

SPECIFICATIONS

Pump Type: Oil-less, carbon vane

Motor: 1/4 HP, 115 V, 60 Hz, 5 A
(220 V, 50 Hz optional)

Vacuum: 26 inches Hg at sea level

Flow Rates: See figure

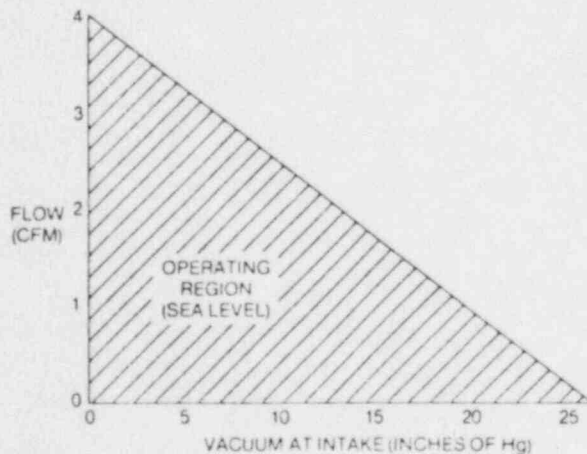
Filter Holder: Model FH-1, 47mm

Flow Meter: 0-100 liters per minute (0-3.5 cfm)

Vacuum Gauge: 0-30 inches Hg (0-760 mm Hg)

Size: 17.5 inches long, 7 inches wide, 10 inches high. (44.5 x 17.8 x 25.4cm)

Weight: 30 pounds (13.6 kg)



TYPICAL OPERATING FLOW RATES

ACCESSORIES

Model ICH-1 Iodine Cartridge Holder

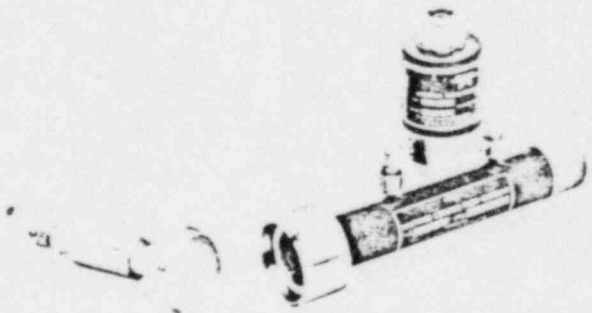
Model IC-1 Iodine Cartridge

Part No. 10758-B09 Calibration

Adapter (Mates FH-1 to 1 inch NPT)

Calibration

The unit is supplied with a three point flow calibration using a mass flow meter.



CALIBRATION ADAPTER Part No. 10758-B09

(Shown with Mass Flow Meter attached)

Mass Flow Meters are not sold by Eberline.

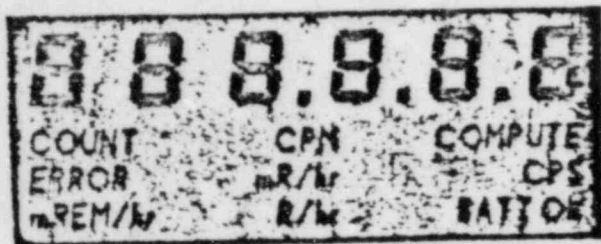
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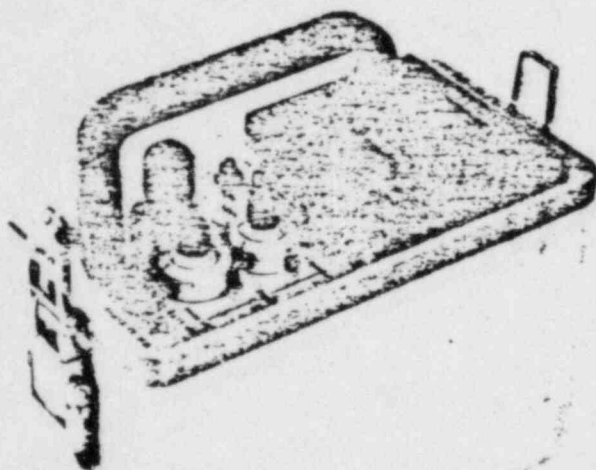
Post Office Box 2108
Santa Fe, New Mexico 87501
(505) 471-3232 TWX: 910-985-0678

"RASCAL"

Models PRS-1, PRS-2



PRS Legends, Digits and Decimal Point Placements



OPERATOR SELECTS DESIRED PRECISION
OF MEASUREMENT

RATEMETER OR SCALER OPERATION WITH
DIGITAL DISPLAY

EASY TO CALIBRATE IN DESIRED UNITS

SINGLE CHANNEL ANALYZER (PRS-1)

DIGITAL HIGH VOLTAGE DISPLAY

OPERATES WITH PROPORTIONAL, SCINTILLATION
AND GEIGER DETECTORS

BUILT-IN SPEAKER

LIGHTED LIQUID CRYSTAL DISPLAY HAS SIX DIGITS,
NINE LEGENDS AND THREE DECIMAL POINTS

USER SELECTS CALIBRATION CONSTANT, DECIMAL
POINT PLACEMENT AND READOUT UNITS

eberline

PRS-1

"RASCAL"

Models PRS-1, PRS-2

GENERAL DESCRIPTION

The RASCAL is a compact portable, digital display instrument with selectable ratemeter or scaler functions. The instrument is rugged and splashproof with its own internal battery power supply. Included in the PRS-1 is a variable high voltage power supply, pulse amplifier for single channel pulse height analysis, six-decade liquid crystal display, crystal-controlled time base, calibration functions, built-in speaker and a self-contained rechargeable battery pack. All circuits are solid-state with extensive use of CMOS integrated circuits for low power consumption and to enhance reliability.

The Model PRS-2 is similar to the PRS-1, except it does not have the pulse height analysis capability.

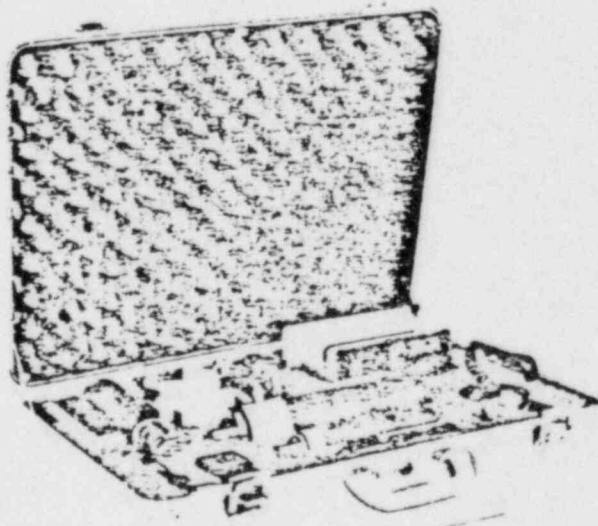
The PRS-1 and PRS-2 are designed to be used with all Eberline scintillation and G-M detectors. The PRS-1P and PRS-2P are designed for use with all Eberline scintillation and proportional detectors and with all 900V G-M detectors. The P version provides a high voltage suitable for proportional counting. All versions have a digital readout of the internal high voltage provided to the detector.

EMERGENCY KIT

The RASCAL is ideal for emergency kits because it can be used with so many different detectors and can be calibrated in advance for each detector. Digital display of the high voltage allows the user to interchange probes quickly, readjust the high voltage to the setting for the specific probe, make a change in the conversion factor and continue operating. These data can be predetermined for the individual detectors and attached to the instrument for ready access. The emergency kit contents should be tailored to the needs of each customer. Specify individual items needed when ordering.

SUGGESTED CONTENTS OF EMERGENCY KIT

PRS-1	Portable Rate Meter Scaler
HP-210	Pancake G-M Tube Detector
SH-4A	Sample Holder
SPA-3	High Energy Gamma Detector
LEG-1	Low Energy Gamma Detector
AC-3-7	Alpha Scintillation Probe
HP-270	Beta-Gamma Probe Energy Compensated
CA-5-36	Cable
CA-14-36	Cable
CS-7A	Gamma Check Source
CS-13	Beta Check Source
CC-113X	Carrying Case
CS-11	Alpha Check Source
HP-290	Gamma Probe



Continued on following page

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P.O. Box 2108, Santa Fe, New Mexico 87501 (505) 471-3232 TWX 910-985-0678

"RASCAL," MODELS PRS-1, PRS-2 (continued)

SPECIFICATIONS

HIGH VOLTAGE: Regulated, adjustable by a front panel control and can supply a 100 M Ω load. A volt-meter position on the range switch provides a digital indication of the voltage. The supply is a plug-in module for ease of maintenance. The PRS-1 and PRS-2 use an Eberline P-201A plug-in module that provides 500 to 1500 V. The PRS-1P and PRS-2P use an Eberline P-201AS plug-in module that provides 800 to 2400 V.

COUNT RATE: True digital computing circuitry is used to provide six decades of count rate information without any range changing necessary. A front panel switch selects a preset number of counts: 10, 100, 1k or 10k for computation. The least number of counts selected provides the fastest answer and the greatest number of counts selected provides the most accurate answer. The compute time is fixed at 3 seconds.

SCALER: Six decades of digital information with fixed timed positions of 0.5, 1, 2 and 5 minutes plus manual and stop. The display may indicate each increment of count or the display may be updated at the end of the count period as selected by an internal switch. A front panel control is provided for a variable reset rate of approximately 1 to 10 seconds or the control may be switched off.

CALIBRATION FUNCTION: The calibration function provides a means of converting the count rate information, in counts per minute, to useful units such as mR/hr, or to correct for probe efficiency. A rate multiplier board with selectable multiplication from 9.99 to 0.01 is provided as a standard item with the instrument. A rate divider board with selectable division from 00.1 to 99.9 is available as an option. All controls for the calibration function are internal. The placement of the decimal point and the measurement units displayed are preselected at the time of calibration.

DISPLAY: A liquid crystal display is used for low power consumption and continuous display of data. The display has six digits, nine legends and three decimal points. Five legends, "CPM," "CPS," "mR/hr," "mREM/hr" and "R/hr" plus the three decimal points are selected for display by internal switches. Other measurement units, e.g. dpm/100 cm², may be used with the units display left blank. The remaining legends, "Count," "Compute" and "Batt OK" are controlled by the circuit logic of the instrument. A light, controlled by a panel-mounted push button switch, is provided for instrument use in low ambient light.

AMPLIFIER: Charge sensitive type approximately 2×10^{-14} to 2×10^{-13} coulombs (approximately 1 – 10 mV equivalent on voltage sensitive input). The amplifier board (P-8B) is a plug-in module for ease of maintenance.

THRESHOLD: PRS-1 and PRS-1P: Adjustable by a 10-turn front panel control from 0 to 1.0 volt. PRS-2 and PRS-2P: Adjustable by a single-turn, screwdriver adjust, front panel control from 0 to 1.0 volt.

WINDOW (PRS-1 and PRS-1P): Adjustable by a 10-turn front panel control from 0 to 1.0 volt, always constant above threshold. A "PHA-GROSS" switch provides gross counting by disabling the window.

TIME BASE: Quartz crystal controlled for an accuracy of greater than 0.01% over wide temperature range and battery conditions. The time base provides all timing signals for the count rate and scaler functions of the instrument.

SPEAKER: The speaker and the speaker control switch are mounted on the front panel.

RESET: Resets both count rate and scaler functions.

Continued on the reverse page

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"RASCAL" MODELS FRS-1, PRS-2 (continued)

DETECTOR CONNECTOR: Eberline type CJ-1, waterproof connector mates with CP-1.

POWER: Rechargeable Gel-Cell® battery provides approximately 75 hours of continuous operation between charging. (An optional battery pack is available for five Ni-Cd rechargeable D-cell batteries, or five D-cell non-rechargeable batteries, for approximately 200 hours of continuous operation.)

BATTERY CHARGER CONNECTOR: Miniature phone jack.

BATTERY CHARGER: Recharges batteries in 14 hours.

MECHANICAL:

Size: 7-3/4 inches high x 9-1/2 inches long x 4 inches wide (19.7 x 24.1 x 10.2 cm).

Weight: Approximately 5 pounds (2.3 kg).

TEMPERATURE: Operational from 0°F to 140°F (-18°C to 60°C).

ACCESSORIES: Carrying strap.

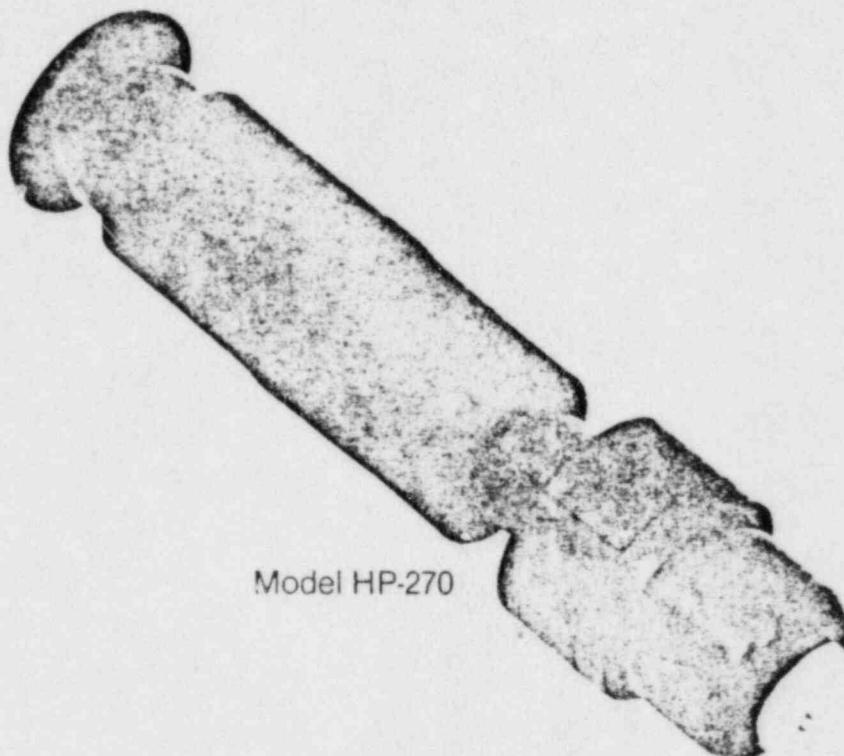
Gas can assembly for use with gas flow proportional detector and either PRS-1P or PRS-2P.

eberline

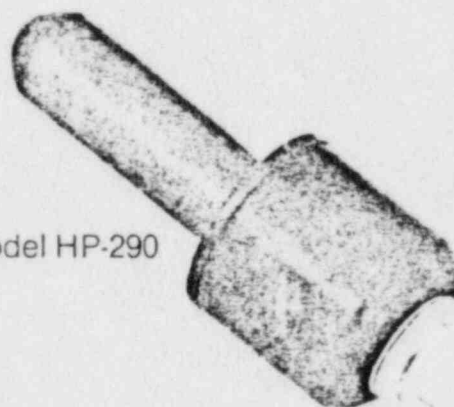
P.O. Box 2108, Santa Fe, New Mexico 87501 (505) 471-3232 TWX 910-985-0678

September 1980

Hand Probes Models HP-270 and HP-290



Model HP-270



Model HP-290

- ENERGY COMPENSATED FOR GAMMA EXPOSURE RATE MEASUREMENTS
- SLIDING BETA SHIELD (HP-270)

Eberline

A DIVISION OF
 **Thermo
Electron**
CORPORATION

**HP-270
HP-290**

Models HP-270 and HP-290 Hand Probes

GENERAL DESCRIPTION

The HP-270 is an excellent general purpose GM probe, with energy compensation and a beta shield, making it the choice for most health physics applications. The energy compensation permits reliable exposure rate measurement from background to 200 mR/h.

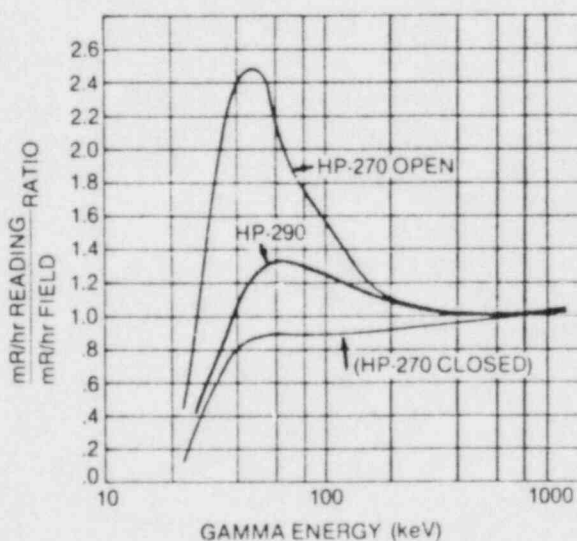
The HP-270 is compatible with any Eberline (+ 900V) count rate meter.

The HP-290 is a higher range GM probe with energy compensation, providing reliable exposure rate measurement from 0.1 mR/h to 10 R/h.

The HP-290 is designed to be used with the Eberline PRS series. It is also compatible with the PRM-5-3, PRM-6, RM-16, RM-19, RM-20 and RM-21.

SPECIFICATIONS

	HP-270	HP-290
Operating Voltage:	900 \pm 50V	550 \pm 50V
Plateau Length:	100V minimum	100V minimum
Plateau Slope:	0.1% per V maximum	0.2% per V maximum
Dead Time:	100 microseconds maximum	20 microseconds maximum
Temperature Range:	- 40°C to + 75°C	- 40°C to + 75°C
Wall Thickness:	30 mg/cm ² (tube only)	90 mg/cm ² (tube only)
Wall Material:	Stainless steel	Stainless steel
Gamma Sensitivity:	\cong 1200 cpm/mR/h (¹³⁷ Cs)	\cong 80 cpm/mR/h (¹³⁷ Cs)
Energy Response:	See curve	See curve
Housing:	ABS plastic	ABS plastic
Connector:	BNC series coaxial	BNC series coaxial
Size:	1 3/8 in. diameter x 6 in. long (3.5 x 15.2 cm)	1 1/8 in. diameter x 3 1/2 in. long (2.9 x 8.9 cm)
Weight:	5 ounces (142 g)	2 ounces (57 g)



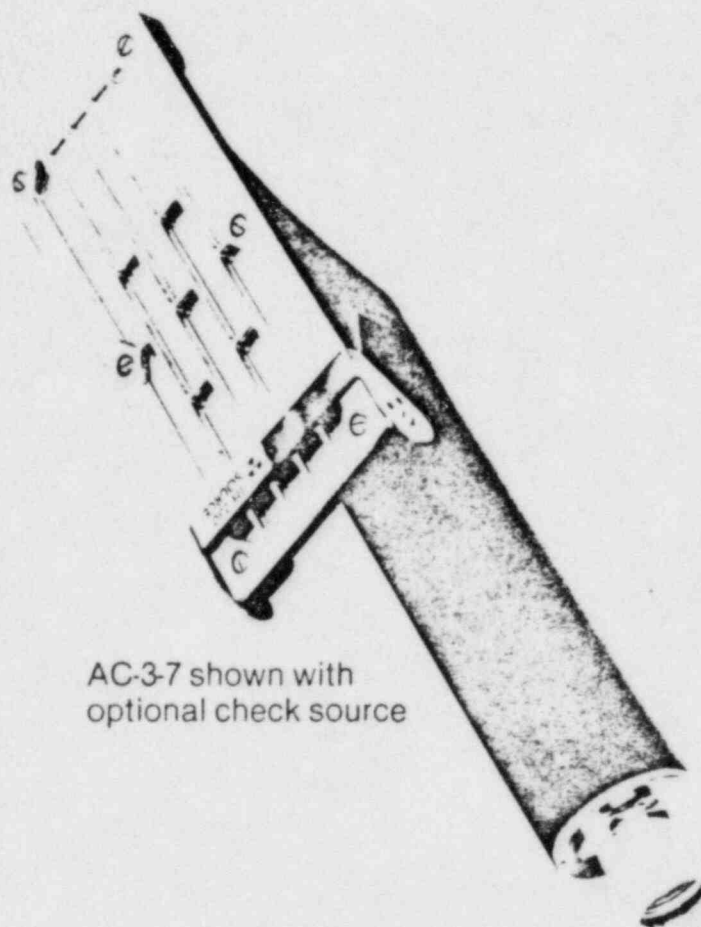
Energy Response of Models HP-270 and HP-290

Eberline A DIVISION OF
Thermo Electron CORPORATION

Post Office Box 2108
Santa Fe, New Mexico 87501
(505) 471-3232 TWX: 910-985-0678

Alpha Scintillation Probe

Model AC-3



AC-3-7 shown with
optional check source

- LARGE AREA COVERAGE
- SUBMERSIBLE FOR DECONTAMINATION
- FACE ASSEMBLY EASILY CHANGED

Eberline

A DIVISION OF
**Thermo
Electron**
CORPORATION

AC-3

Model AC-3 Alpha Scintillation Probe

GENERAL DESCRIPTION

To meet the various requirements in the field of alpha monitoring and the different types of instruments, the AC-3 Alpha Scintillation Probe has been designed for alpha surveys or for personnel monitoring. The AC-3 is a rugged alpha probe designed to work with several Eberline portable survey or radiation monitoring instruments.

There are two versions of the AC-3, differing only in the window assembly. The AC-3-7 designates a maximum open area window for alpha surveys, and the AC-3-8 designates a rugged window which has a fine mesh protector over the mylar for personnel monitoring.

The mylar window is a "sandwich" assembly which can be replaced by the removal of six screws. This window can also be used on older AC-3 probes without modification.

There is a clear plastic probe face cover supplied to protect the window when the probe is not in use.

SPECIFICATIONS

Active Area: 9.1 inch² (59 cm²) within 5.75 inch x 2 inch (14.6 x 5.1 cm) sampling area.

Window Thickness: 0.5 mg/cm² aluminized mylar.

Efficiency: From a 1 inch dia. source or from 59 cm² of a large distributed area ²³⁹Pu source (2 π).

AC-3-7 window: 28% minimum, 31% typical.

AC-3-8 window: 18% minimum, 20% typical.

Sensitivity: From a large area ²³⁹Pu source.

AC-3-7 window: Typically 2 x 10⁷ counts per minute per μ Ci/cm² (9 cpm per disintegrations per minute/cm²).

AC-3-8 window: Typically 1.3 x 10⁷ cpm per μ Ci/cm² (5.9 cpm per dpm/cm²).

Uniformity: No single reading from a 1 inch dia. ²³⁹Pu source deviates more than $\pm 12\%$ from the average reading.

Plateau: With 1 inch dia. ²³⁹Pu source, typically 200 V long.

Scintillator: ZnS(Ag) powder embedded in tape.

Operating Voltage: Optimum voltage depends on phototube characteristics, cable length, input impedance and sensitivity of counter.

Maximum Voltage: + 1600 V.

Operating Current: 110 M Ω dynode string yields nominal 10 μ A drain at 1100 V.

Temperature Range: - 40 °F to + 140 °F (- 40 °C to 60 °C).

Connector: Special Eberline waterproof connector (CJ-1). Mating connector is Eberline CP-1.

Size: 11.5 inches long x 2.75 inches wide x 3.25 inches high (29.2 x 7 x 8.3 cm).

Weight: 1 pound 6 ounces (0.62 kg).

Specify when ordering: AC-3-7 for alpha survey (open window)

AC-3-8 for personnel monitor (rugged window)

Optional: Check source

CS-15²³⁰Th check source (no license required).

Eberline

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Santa Fe, New Mexico 87501
(505) 471-3232 TWX 910-985-0678



ENERGY LABORATORIES, INC.

1105 WEST FIRST STREET • GILLETTE, WY 82716 • PHONE (307) 686-7175
P.O. BOX 3258 • 254 NO. CENTER ST. • CASPER, WY 82602 • PHONE (307) 235-0515

April 26, 1985

Office of Radiation & Nuclear Safety
RPI
Troy, NY 12181

ATTN: Professor Robert Ryan

Dear Professor Ryan:

Pursuant to our telephone conversation April 19, 1985, I have outlined, for your review, continuing education program requirements.

Presently, I am associated with Energy Laboratories, Inc. as a contract employee providing services in the areas of radiation safety/monitoring, laboratory analysis, and administrative activities. Our clientele consists of several uranium mill/mine operators on "stand by" status with license requirements for a combination of environmental analysis and radiological monitoring.

U.S.-NRC Regulatory Guide 8.31, Information Relevant To Ensure Occupational Radiation Exposure At Uranium Mills Will Be As Low As Is Reasonably Achievable, Section 2.4, Technical Qualifications of Health Physics Staff, outlines the requirements for a Radiation Officer (2.4.1). In accordance with the continuing education clause (# 3 & 4) and in order to satisfy our clients' permit stipulations the following outlines my desired scope of educational activities:

- A. Low Specific Activity site monitoring and equipment operation and calibration/license stipulated surveys for; air-borne particulate, radon daughters, radon gas, beta/gamma, background determinations.
- B. Research into appropriate regulatory limits and regulatory guideline identification, and action levels and corrective action procedures for the above.
- C. Decontamination/Decommissioning procedures for uranium mill and mine sites including background surveys, site-specific physical activities, and personnel monitoring.
- D. Information for obtaining a By-Products Material License for Energy Laboratories, Inc. (CFR-30) and maintenance of permit relative to personnel radiation safety.
- E. Operational information relative to Energy Laboratories, Inc.'s Series 80 Canberra-multi channel analyzer. Parameters of interest include radium 226/228, thorium 230/232, and uranium 234/235.

RPI-Professor Robert Ryan
April 26, 1985
page 2

I would like the time frame for this initial refresher course to extend from May 13, 1985 thru June 17, 1985 with the possibility of continuing the course work for some period during the fall semester.

The work-study concept to help defray tuition/course costs should provide hands on experience that will be useful in our field operations.

I appreciate your interest in providing this certification course and if there are any difficulties with the time frame or scope of work do not hesitate to notify me at the above address or:

9 Lehner Road
Albany, NY 12203

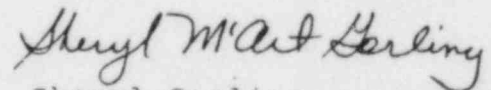
518 456-7876.

enclosures

cc: U.S.-NRC Region IV
Licensing Branch 2
P.O. Box 25325
Denver, CO 80225
Attn: Pete Garcia

American Nuclear Corporation
314 Midwest
Casper, WY 82601
Attn: Jack Ferguson

Sincerely,



Sheryl Garling
Radiation Safety
Coordinator

Sheryl A. McArt
P. O. Box 40152
Casper, Wyoming 82604

Areas of Specialization and Research

Hydrometallurgical process plant design and construction, environmental compliance program maintenance, radiation protection technology and process administration, project management and technical supervision, engineering and field management for oil and gas transportation systems, and analytical laboratory operations and office management.

Education

College: Clarkson College of Technology, Potsdam, New York
Graduated 1977, B.S. Civil Engineering
Other: University of Texas, Austin, Texas, School of Pipeline
Technology, October 1977
Eberline Inc./MSHA, Radiation Protection Courses,
October/November 1982
Continuing night school coursework to obtain MBA-50% complete
MSHA - Radiation Technology

Employment

April 1983 - Present - Consulting Mining Engineer/President SAMCO - ID No. 830265056, Casper, Wyoming. The privately held partnership was developed to provide engineering and environmental services primarily to the mining community. A combination of education and hands-on experience in oil and gas, uranium and laboratory operations provide significant background for the services offered.

- o Mine Engineering - Cost Studies, Process Plant Layout and Design, Purchasing and Expediting, Construction Supervision and Start-up Training.
- o Environmental Engineering and Compliance Program Cost Analysis, Regulatory Agency Requirements and Coordination, License Compliance Activities, Water Quality, Air and Vegetation Sampling, Revegetation.
- o Radiation Protection Program Maintenance Field Measurement of Alpha, Beta and Gamma Emitting Radionuclides, Maintenance of Passive Monitoring Systems, Operation and Calibration of Field and Laboratory Radiation Monitoring Equipment, Decontamination Procedures and Regulatory Limits, and Personnel Training and Protection.
- o The Company's client list includes: Wyoming Fuel Company - Process Plant Design, Lab Operations; UNC Teton Exploration Drilling, Inc. - Commercial ISL Process Plant Design, Mine Plan, Economic Feasibilities; UNC Environmental Services, Inc. - Analytical Program Data Management, Field Water Quality Sampling; Energy Laboratories Inc. - Analytical Program Coordination, Radiation Safety and Environmental Program Consulting.

October 1981 to April 1983 - Uranium Resources, Inc., Corpus Christi, Texas. Project Manager/Engineer - The position involved design, construction supervision, process control, license compliance and personnel supervision/management for a research and development in situ uranium operation located in Converse County, Wyoming. The isolated project location demand-end complicated interface with Texas support groups, joint venture partners, local suppliers and contractors, and various regulatory agencies. The mining phase was successfully completed and operations to establish aquifer restoration, water quality stability, and process equipment decontamination and decommissioning are continuing.

June 1980 to October 1981 - Uranium Resources, Inc., Corpus Christi, Texas. Project Engineer - The position involved various engineering related responsibilities including: hydrometallurgical process plant design and layout; material take-offs, construction and expediting; construction supervision; and plant start-up and personnel training. These were duties performed under a management contract for a major energy company located in south Texas. A 750 gpm in situ uranium process plant was constructed, debugged and is now a commercially viable operation.

August 1978 to June 1980 - Mobil Pipe Line Company, P. O. Box 1179, Corpus Christi, Texas. Area Engineer - Provided engineering guidance and assistance to field management in the study, design, construction, operation, and maintenance of the area pipeline facilities. Assisted support personnel in development of engineering data and performance of special activities within the area. Was directly responsible for major decreases in pipeline and facilities capital cost and reductions in scheduled maintenance frequency via improvements in corrosion protection specifications.

June 1977 to August 1978 - Mobil Pipe Line Company, P. O. Box 900, Dallas, Texas. A home office based engineering position which included responsibilities pertaining to general pipeline facility design and construction. Responsible for preparation of computer programs for the analysis of structural design of microwave towers.