Nguyen, Janice

From: [redacted]
Sent: Friday, August 26, 2011 5:42 AM
To: Nguyen, Janice
Subject: Fwd: NRC
Attachments: LMP_Model14C_Survey_Meter_with_44-9_Pancake_Probe.pdf; Ludlum_14-C_Detection_Limits.pdf

Here is the survey meter efficiency information. I hope you have a great weekend!

I will be working in one of the doctors office today so if you have any questions, please feel free to use my cell phone [redacted]

Regards,
Curtis

-----Original Message-----
From: Norweck, Jim <jnorweck@radiology-inc.com>
To: [redacted]
Sent: Fri, Aug 26, 2011 1:57 am
Subject: NRC and ACR

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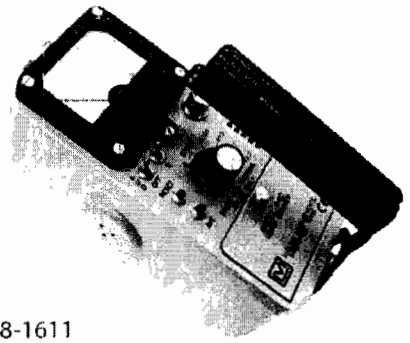
09/13/11
Rec'd in DNMS

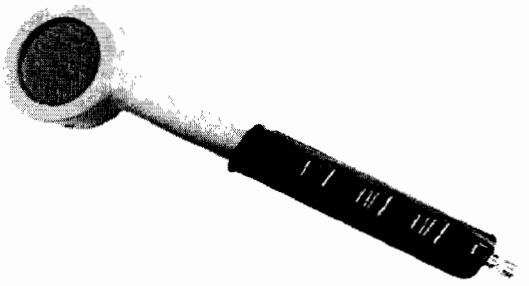
Survey Meters (GM / Scintillation)

Model 14C



Part Number: 48-1611

Model 44-9



Part Number: 47-1539

Model 14C Survey Ratemeter with Pancake Probe

Introduction

This general purpose, handheld analog ratemeter supports operating two separate radiation detectors. A switch on the front panel allows the user to select between the internally mounted GM detector for detecting gamma exposure over a range of 0 - 2000 mR/hr or the external Model 44-9 GM pancake detector. The pancake detector is sensitive to alpha, beta and gamma and is the industry standard for detecting contamination. This survey meter additionally supports externally connected scintillation detectors in lieu of GM's. The Model 14C can be used in a wide range of Medical and Health Physics applications. With the addition of the Model 180-2 sample holder, it can be utilized to make a quick evaluation of wipe test surveys in the Nuclear Medicine department.

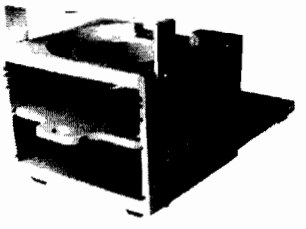
Specifications

Model 14C, Survey Meter

MULTIPLIERS: X0.1, X1, X10, X100, X1000
LINEARITY: Reading within ±10% of true value with detector connected
ENERGY RESPONSE: Within ± 15% of true value between 60 keV - 3 MeV (internal detector only)
CONNECTOR: Series "C" (others available)
AUDIO: Built in unimorph speaker with ON/OFF switch (greater than 60 dB at 2 feet)
HIGH VOLTAGE: 900 V (setting can be checked on meter); THRESHOLD: 30 mV ± 10 mV
RESPONSE: Toggle switch for FAST (4 seconds) or SLOW (22 seconds) from 10% to 90% of final reading
POWER: 2 each "D" cell batteries (housed in sealed compartment that is externally accessible)
BATTERY LIFE: Typically greater than 2000 hours with alkaline batteries
TEMPERATURE RANGE: -4°F to 122°F (-20° to 50° C)
SIZE: 6.5" H x 3.5" W x 8.5" L (16.5 x 8.9 x 21.6 cm)
WEIGHT: 3.5 lbs (1.6 kg) including batteries

Model 44-9, GM Pancake Detector

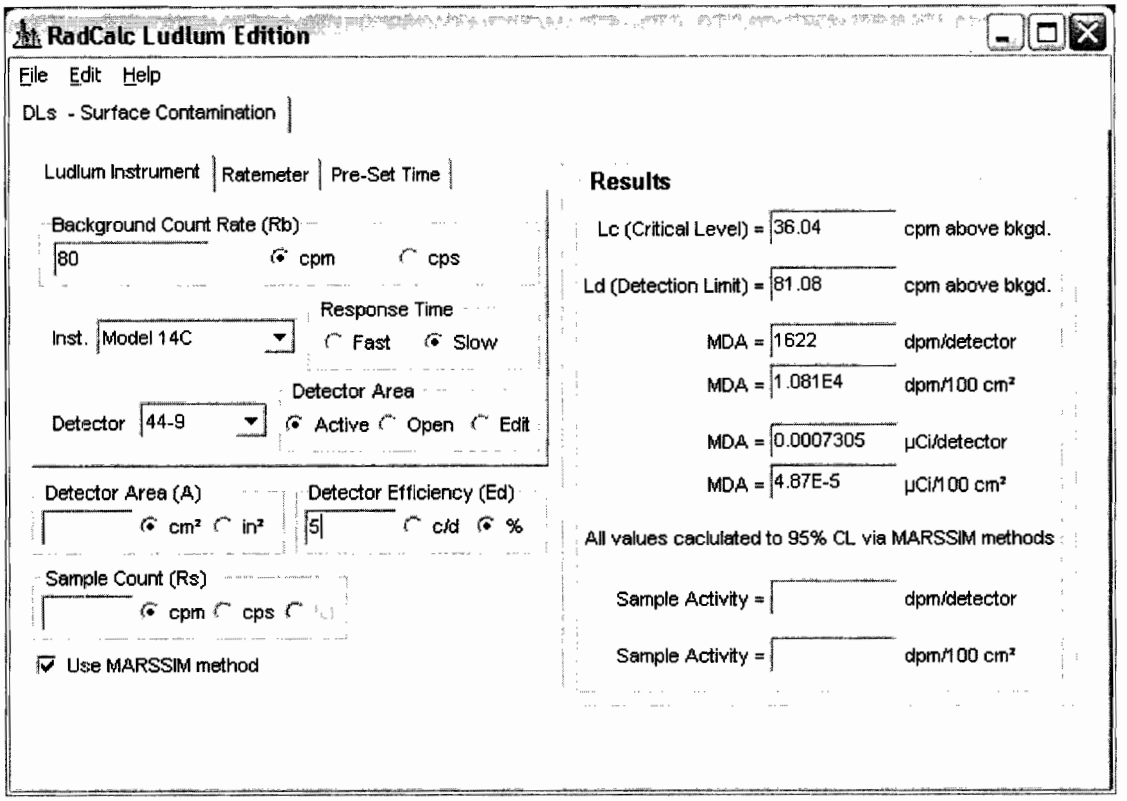
WINDOW: 1.7 ± 0.3 mg/cm² mica
WINDOW AREA: Active - 15 cm²; Open - 12 cm²
EFFICIENCY(2pi): Typically 5% α-^{14}C; 22% α-^{90}Sr-^{90}Y; 19% α-^{99}Tc; 32% α-^{32}P; 15% α-^{239}Pu
SENSITIVITY: Typically 3300 cpm/mR/hr (^{137}Cs gamma)
ENERGY RESPONSE: Energy dependent
DEAD TIME: Typically 80 µs



Model 180-2
Sample Holder

Options:

Model 44-2, 1" x 1" NaI Gamma Detector: PN: 47-1532
1 uCi ^{137}Cs Check Source: PN: 01-5196
Check Source Holder: PN: 4062-166



DETECTION LIMITS--SURFACE CONTAMINATION

INPUT DATA:
Background Count = 80 cpm
Detector used: Ludlum Model 44-9
Instrument used: Ludlum Model 14C on slow response
Detector Area = 15 cm²
Detector Efficiency = 5 % (worst case assumed)

RESULTS:
Critical Level (Lc) = 36.04 cpm above bkgd.
Detection Limit (Ld) = 81.08 cpm above bkgd.
Minimum Detectable Activity (MDA) = 1622 dpm/detector
Minimum Detectable Activity (MDA) = 10,810 dpm/100 cm²
Minimum Detectable Activity (MDA) = 0.0007305 µCi/detector
Minimum Detectable Activity (MDA) = 4.87E-5 µCi/100 cm²

All values caclulated to 95% CL via MARSSIM methods

Caclulated by RadCalc Ludlum Edition version 1.0