

RECON Procedure: REC-WP-2-10

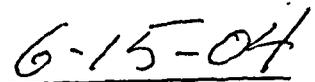
**Ludlum Model 2221 Portable Scaler Ratemeter
with Model 44-10 Probe
Thorium Remediation Project
Tulsa, Oklahoma**

REVISION: 00

EFFECTIVE DATE: JUNE 2004



Approved by: J. W. (Bill) Vinzant
Kaiser Aluminum & Chemical Corporation



Date:

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Danny P. Brown - Project Manager / Date

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Richard Lewis - Quality Control Supervisor / Date

RECON Work Plan & Procedures Manual

RECON Procedure REC-WP-2-10

Title: Ludlum Model 2221 Portable Scaler
Ratemeter with 44-10 Probe

1.0 PURPOSE

The purpose of this procedure is to provide basic operational instructions for the Ludlum Model 2221 Portable Scaler Ratemeter when accompanied with a 44-10 Probe.

2.0 DEFINITIONS

NA

3.0 PREREQUISITES/PRECAUTIONS/LIMITATIONS

3.1 RECON Procedure REC-WP-2-01, "Basic Instrument Operation" Current Version

4.0 EQUIPMENT

- 44-10 Probe or Equivalent
- Ludlum Model 2221 Portable Scaler Ratemeter
- Batteries

5.0 PROCEDURE

5.1 Installing Batteries

5.1.1 Unscrew battery door latch.

5.1.2 Install four "D" size batteries in the battery holder. The correct position of the batteries is indicated on the bottom of the battery door.

5.2 Instrument Settings for the 44-10 Probe

5.2.1 For scanning area with the 44-10 Probe, the audio divide on the meter is recommended to be set at 10. However, in areas of elevated activity, it may be necessary to increase the audio divide to 100.

5.2.2 The response switch should be selected for fast (F) response when performing scans of the areas.

5.2.3 The window selection should be in the "out" position.

5.2.4 Dig. Rate is used with performing gamma scans and the scaler mode is used when performing fixed counts.

5.3 Operating the Instrument

5.3.1 Switch the Power ON/OFF switch to the ON position. A random number will first be observed in the display, then 8.8:8.8:8.8. The third displayed number will be the program version.

5.3.2 Press COUNT button. The display should zero. Two colons should appear on the display.

RECON Work Plan & Procedures Manual

RECON Procedure REC-WP-2-10

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- 5.3.3 Press HOLD button. The colons should disappear.
- 5.3.4 Switch Lamp toggle switch to the ON position. LCD display backlighting and two lamps at the bottom on the analog meter should be illuminated.

NOTE: If the Lamp switch is left in the ON position for extended periods of time, battery life will decrease rapidly.

5.4 Preoperational Checks

- 5.4.1 Ensure that the cables are in good condition. Cables can be checked by gently wriggling the cable and listening for changes to the inflections in the audible response.
- 5.4.2 Ensure that the connections are in their locked position and in proper contact. This can be checked by gently wriggling the ends of the connections and listening for changes to the inflections in the audible response.
- 5.4.3 If changes in the audible response are noted, the cable may be damaged. Replace the cable and perform the above steps again.
- 5.4.4 Depress the BAT button on the meter face. The reading will show up as a number between 1 and 6. It is suggested that the batteries be replaced when the reading falls below 5.2.

5.5 Operational Checks

- 5.5.1 Prior to using the counting system, the performance check value of the average response will be determined. If the instrument is recalibrated at any point, the performance check value will need to be re-established in accordance with RECON Procedure REC-WP-2-1.
- 5.5.2 Each day the instrument is used, determine the ambient background and record on Form REC-WP-2-10-1.
- 5.5.3 Each day that a counting system is used, the response will be checked using an appropriate check source as follows:
 - 5.5.3.1 The source is placed under the detector and counted for one minute. Ensure the count geometry is consistent with the geometry used to establish acceptance criteria.
 - 5.5.3.2 The net counts per minute value is compared to the performance check value to determine a pass or fail status.
 - 5.5.3.3 Record the result on Form REC-WP-2-10-1.
- 5.5.4 Failed source checks will be repeated. Consecutive failures will result in additional testing of the instrument. Refer to the meter/detector manuals.
- 5.5.5 Survey data acquired prior to an instrument failing a source check will be reviewed to determine the validity of the data. This review will be documented.

RECON Work Plan & Procedures Manual

RECON Procedure REC-WP-2-10

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6.0 REFERENCES

- 6.1 Instruction Manual - Ludlum Measurements, Inc., Sweetwater, TX, for Ludlum Model 2221 Portable Scaler Ratemeter.

7.0 ATTACHMENTS

7.1 Forms

- Form REC-WP-2-10-1 Daily Check Log for Ludlum Model 2221 with 44-10 Detector

Form REC-WP-2-10-1

