

HOUSTON LIGHTING AND POWER COMPANY
SOUTH TEXAS PROJECT
ELECTRIC GENERATING STATION
PLANT PROCEDURES MANUAL

FOR INFORMATION ONLY

NON SAFETY-RELATED

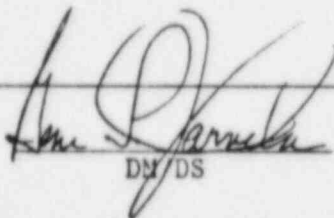
Spectra Acquisition Using the WBC-6000

PRP5-ZO-45

Rev. 0

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APPROVED:


DM/DS

NA
DATE APPROVED

10-25-83
DATE EFFECTIVE

Field changes to this procedure must be approved by Radiological Services.
This procedure is not described in the FSAR.

1.0 Purpose and Scope

- 1.1 This procedure gives the methods and guidelines used to acquire a spectrum from the WBC-6000 Body Chair (GI Tract, Lung, and Thyroid).
- 1.2 These methods include electronic setup, chair-detector positioning, and MCA operation.

2.0 Prerequisites

- 2.1 Only individuals authorized by the Radiological Services Division Manager may perform whole body counting.
- 2.2 Before a count can be performed on an individual which will be used as part of an internal dosimetry record:
 - 2.2.1 The calibration on the WBC-6000 must be current as per PRP5-ZI-45 (WBC-6000 Organ Burden Calibration).
 - 2.2.2 All routine performance checks for the WBC-6000 must have been performed as per PRP5-ZO-54 (Routine Performance Checks for the WBC-6000).
- 2.3 Equipment Required
 - 2.3.1 APT WBC-6000 Whole Body Chair System
 - 2.3.2 APT WBC-6000 Electronics
 - 2.3.3 Nuclear Data ND-66 Multichannel Analyzer

3.0 Precautions

- 3.1 Ensure that no surface contamination (that could be present on the individual's clothes) gets counted by having the individual remove all clothes and jewelry and don a paper suit before the count is performed.
- 3.2 When accumulating a spectrum for a person, ALWAYS position the individual in the chair with the key switch in the normal mode.

4.0 Procedure

- 4.1 Ensure that the equipment is set up according to Addendum 1 and Addendum 2.
- 4.2 Set the live time (normally 500 seconds) by typing the following command on the MCA: L1 500 Return.
- 4.3 Erase the current spectrum by typing the following command keys on the MCA's small keyboard:

Erase

INIT (Initialize)

- 4.4 The spectrum will be acquired and the accumulation will automatically end after the preset Live Time by typing the following command keys on the MCA's small keyboard:

ACQ (Acquire)

INIT (Initialize)

- 4.5 Record all pertinent information in the WBC-6000 Log Book.
- 4.6 The spectrum is now ready to be transferred to the HP9845 computer for permanent storage and analysis by the appropriate procedure.

5.0 Acceptance Criteria

None

6.0 Documentation

- 6.1 WBC-6000 Log Book must have an entry for every official count performed on the WBC-6000 Whole Body Counter. (This includes calibration, QA, and Whole Body Counts.)

- 6.2 Log Book entries include: date, time, description, chair positioning, counting time, where the spectrum is stored for retrieval, and person performing count.

7.0 References

- 7.1 Whole Body Counter Data Analysis Package, Applied Physical Technology, Inc., January, 1980
- 7.2 PRP5-ZI-45 (WBC-6000 Organ Burden Calibration)
- 7.3 PRP5-ZO-54 (Routine Performance Checks for the WBC-6000)

8.0 Support Documents

- 8.1 Addendum 1 - Electronic Setup for WBC-6000
- 8.2 Addendum 2 - Chair-Detector Positioning for WBC-6000

ADDENDUM 1

ELECTRONIC SETUP FOR WBC-6000

- 1.0 Turn the Rim Bin ON.
- 2.0 Turn the High Voltage ON.
 - 2.1 Coarse Setting to 1,000 volts
 - 2.2 Medium Setting to 0 volts
 - 2.3 Fine Setting to 0 volts.
- 3.0 ORTEC High Voltage fan-out
 - 3.1 A - clockwise full
 - B - clockwise full
 - C - clockwise full
 - D - counterclockwise full.
- 4.0 ORTEC 475 Amplifier (GI)
 - 4.1 Coarse Gain - 4
 - 4.2 Fine Gain - 4
 - 4.3 Pos-neg Switch - Neg
 - 4.4 Unipolar - ON.
- 5.0 ORTEC 485 Amplifier (Lung)
 - 5.1 Coarse Gain - 32
 - 5.2 Fine Gain - 5.3
 - 5.3 Pos-neg Switch - Neg
 - 5.4 Unipolar - ON.
- 6.0 ORTEC 485 Amplifier (Thyroid)
 - 6.1 Coarse - 4

ADDENDUM 1 (CONT.)

ELECTRONIC SETUP FOR WBC-6000

6.2 Fine Gain - 4

6.3 Pos-neg Switch - Neg

6.4 Unipolar - ON.

7.0 ND 568 GAR

7.1 Groups - 4

7.2 Data field - 1K

7.3	<u>AC-off-DC</u>	<u>Input</u>
1	DC	GI
2	DC	Lung
3	DC	Thyroid
4	off	-

8.0 ND 575 ADC

8.1 Conv Gain - 256

8.2 Coin Anti-off

8.3 ACQ

8.4 Signal Input

9.0 Pre-Amp Input Capacitance

9.1 Lung - 0

9.2 GI - 0

9.3 Thyroid - 100

10.0 MCA

10.1 Turn MCA ON.

10.2 Set the date.

10.3 Set the time.

ADDENDUM 1 (CONT.)

ELECTRONIC SETUP FOR WBC-6000

10.4 Enter the following commands using the keyboard and by pressing the key marked "RETURN" after each entry.

SP 1/1

CH 10 24

GR 4

DI 0

OV 1/1

CF LOG

ADDENDUM 2

CHAIR-DETECTOR POSITIONING FOR WBC-6000

1.0 Position the chair in the following manner:

- 1.1 To move the chair, the key switch must be either in the calibrate mode or the normal mode.

- 1.1.1 The normal mode is used when positioning people and cannot operate unless the individual being counted holds the switch on the right hand handle.

- 1.1.2 The calibrate mode is used when no one is in the chair, and the chair needs to be positioned.

- 1.2 Position the chair using the:

- 1.2.1 Vertical - up, down switch

- 1.2.2 Horizontal - forward, reverse switch.

- 1.3 Position the thyroid detector appropriately using the:

- 1.3.1 Vertical - up, down handle

- 1.3.2 Horizontally - forward, reverse slide with set screw.

- 1.4 Organ burden calibration

- 1.4.1 Position the individual as close as possible yet comfortable to all three detectors (ideally at contact).

- 1.4.2 Position the chair vertically such that the lung detector is centered on the lung area.

- 1.4.3 Adjust the thyroid detector as close as possible to the neck area where the thyroid is located (ideally at contact).