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Fisheries and Oceans Canada
Sea Lamprey Control Centre
1219 Queen Street East
Sault Ste. Marie, Ontario P6A 2E5
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INSTRUMENT OPERATING PROCEDURE

INSTRUMENT:

Spectrophotometer

MODEL:

Genesys 20

MANUFACTURER:

Thermo Electron Corporation

PRECAUTIONS:

POTENTIAL INTERFERENCES

Suspended particulate matter in a sample produces an increased absorbance value.

SAFETY

No special safety procedures are required.

PROCEDURE:

I. Installation

A. Place unit on a flat, even surface away from sources of electrical interference.

B. Connect the female end of the power cord into the A/C power connector on the back of the instrument, and then plug the power cord into a power outlet.

C. *Check that the cell holder is empty before turning on the instrument*. Turn the *power* switch to **ON** (located next to the A/C power connector).

D. A power-on, self-check sequence begins automatically. The sequence takes about two minutes to complete. The instrument must be allowed 30 minutes to warm up before use.

II. Controls and indicators

A. Soft keys 1 and 2: Represented by empty circles and of varying functions, depending on the screen.

B. ▲and▼ keys: Scroll keys used to scroll through menus and enter numeric values.

C. nm ▲ and ▼ nm keys: Wavelength control keys used to increase and decrease the wavelength setting.

D. **0 ABS/100%T** key: Automatically sets instrument to zero absorbance.

E. **A/T/C** key: Used to switch among absorbance, percent transmittance, and concentration modes.

F. **Utility** key: Accesses instrument setup, diagnostics, and other functions.

G. **Print** key: Sends currently displayed data to a selected printer.

III. Operation

A. Press **A/T/C** to select the absorbance mode. The current mode appears on the display.

B. Press a *wavelength control key* **nm ▲** or **▼ nm** to set the wavelength at 395 nm.

C. Insert a blank and close the sample door. Position the cuvette so a clear wall is facing the front of the instrument.

D. Press **0 ABS/100% T** to set the blank to 0 A.

E. Match cuvettes that will be used in analysis. Fill a second cuvette with deionized water, wipe dry, and place in the cuvette holder. Close the sample compartment.

F. The display will indicate the sample absorbance. If the display is $\pm \leq 0.002$ units the cuvettes are matched suitably for analysis. If the difference is ≥ 0.002 units, repeat the process with additional cuvettes until a suitable match is found.

G. Reinsert the blank and press **0 ABS/100% T**.

H. Fill the matched cuvette with filtered, buffered standard and replace the blank cuvette in the cuvette holder.

I. The absorbance of the standard will be displayed on the LCD.

J. Conduct analyses for TFM according to TOP:018.x.

IV. Documentation

A. An instrument log book is assigned to each spectrophotometer (Attachment).

B. Each day of operation of the spectrophotometer is documented in the book.

1. Record the date, time, operator identity, and stream treatment during which the analyses will be conducted.

2. Record the identity of the set of pre-packaged TFM standards.

3. Absorbencies of the standards used for analysis are recorded.

4. The slope of the response curve is calculated and recorded.

5. The absorbance of a check standard is measured periodically during the day to confirm that instrument response has not changed this measurement is recorded.

MAINTENANCE:

Consult the **Maintenance and Troubleshooting** section in the manual (page 10).

I. Routine care

A. Do not use or store the instrument in a corrosive environment.

B. Gently wipe the outside of the instrument with a soft cloth to remove any dust or spills. Water, isopropyl alcohol and other common laboratory cleaning agents may be used if necessary.

C. Clean up spills immediately to prevent or minimize damage to the instrument.

D. Use water, isopropyl alcohol or other common laboratory cleaning agents to clean the keyboard. It is recommended that you clean spills off the keyboard as soon as they occur.

II. Changing the lamp.

A. Follow instructions on pages 10 – 12 of the operating manual to change the lamp.

B. Always turn off and unplug the instrument before performing any maintenance.

III. Changing the fuse.

A. Follow instructions on pages 12 – 13 of the operating manual to change the fuses.

B. Always turn off and unplug the instrument before performing any maintenance.

IV. Error messages

A. The instrument recognizes two types of errors. With the first type, the instrument is still functional; with the second, the instrument is not functional until the condition is resolved.

B. A listing of messages is found on pages 13 – 14 of the operating manual.

REFERENCES:

Genesys 20 spectrophotometer instruction/maintenance manual.

This procedure has been reviewed and approved by the undersigned representatives of the U.S. Fish and Wildlife Service and Fisheries and Oceans Canada.

REVIEWED/APPROVED Jessica M. Barber Digitally signed by JESSICA BARBER Date: 2020.03.10 11:07:41 -04'00' DATE_____
Field Supervisor (U.S.)

REVIEWED/APPROVED Luke Shives DATE 05 MAR 2020
Program Manager (Canada)