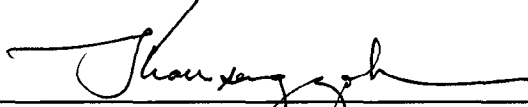


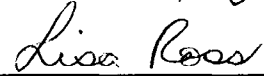
STANDARD OPERATING PROCEDURE
Instructions for using the Hobo®Temp Temperature Data Logger

KEY WORDS-

Temperature, data logger, Hobo®Temp

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Environmental Hazards Assessment Program (EHAP) organization and personnel such as management, senior scientist, quality assurance officer, project leader, etc. are defined and discussed in SOP ADMN002.

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1.0 INTRODUCTION

1.1 Purpose

A temperature recording device such as a Hobo®Temp data logger should be placed in ice chests carrying samples from the field to the warehouse to verify that proper temperature was maintained during transport. Data recorded by the data logger can then be downloaded to a personal computer (PC), examined, and stored with other information collected. This procedure must be followed for all studies requiring Good Laboratory Practices (GLP).

1.2 Scope

This document will provide specific instructions for recording temperature and downloading data to a PC using a Hobo®Temp data logger. This SOP will also describe the procedure for documenting sample temperatures out of range.

2.0 MATERIALS

- 2.1 Hobo®Temp data logger.
- 2.2 Computer, Boxcar® software, interface cable
- 2.3 Ice chest
- 2.4 Wet ice or dry ice
- 2.5 Small plastic bag
- 2.6 Tape
- 2.7 Check-in sheet
- 2.8 Chain of Custody (COC)
- 2.9 Mason Jar with lid

3.0 PROCEDURES

3.1 Launching the Hobo®Temp data logger

- 3.1.1 Connect the interface cable to the computer serial comm port. Then connect the other end of the cable to the jack on the data logger.
 - 3.1.2 Click on the BoxCar® application in the sample tracking menu on the PC. Then click on logger on the tool bar and select launch.
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3.1.3 Enter a study description for a file name, which could include a study number, a date or alphanumeric code. For example: for study 159, enter today's date (25feb98a) with an a, b, or c representing the forest to be sampled.

There is no need to add an extension since at this point the default extension will be .dtf. Next, select the time interval to be used between temperature readings. Five to six minutes should be adequate. Click on the advanced options, then remove the X in the wrap selection (to keep data from being overwritten), if it is present. Now click start.

3.1.4 When it is ready for use, the light on the logger will blink faintly.

3.2 Recording data in the field

Place the logger in the ice chest when leaving the West Sacramento warehouse. Keep the logger dry. When using dry ice, place the logger in a plastic bag and tape it to the inside top of the Freeze-safe or ice chest lid. When using wet ice, place the logger in a mason jar, close the lid, then place the jar along side of the samples, under the ice. If the logger becomes wet, open it, remove the battery and let the logger dry.

3.3 Note taking and record keeping

3.3.1 Note the identification number for the ice chest used to transport samples in the field notebook. If more than one logger is used during a sampling trip, mark each logger with the ice chest number so that they do not get mixed up when they are removed from the ice chest.

3.3.2 Also record the ice chest number on the check-in sheet, remarks section, so that each sample can be matched to an ice chest and transit temperature. If several ice chests were used, indicate which samples were transported in each ice chest. The pink portion of the check-in will be given to the project leader and the ice chest number will be recorded in the sample tracking database for each individual sample.

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3.4 Reading data from the Hobo®Temp data logger

- 3.4.1** Reconnect the logger with the cable to the computer serial comm port.
- 3.4.2** Click on the BoxCar® application, then click on logger on the tool bar and select readout. The logger will now download the data into the computer.
- 3.4.3** After the data is downloaded, the data will be plotted and save as will appear. Save the file under the same file name given when launched. However, the default extension may be changed to a description as well. Example: for study number 159, save the data in the C:\boxcar 3\ forest directory as the description already entered when launched, but add the extension .159 to the end (e.g., 25feb98a.159). Click okay.
- 3.4.4** Print a copy in landscape, not portrait mode. By drawing arrows or somehow marking the plot, note the time samples were added and removed from the ice chest. Note temperatures exceeding maximums as in 3.5, then write the ice chest number on the printout.

3.5 Recording out-of-range sample temperatures

Examine the plotted temperature recording. If the recorded maximum temperature after initial cooling in the ice chest exceeded 5°C for samples on wet ice or 0°C for samples that were to be frozen, mark the maximum temperature on the check-in sheet in the remarks section and the COCs for each sample stored in that ice chest. Also check the ice chest for cracks or damage that could cause the temperature to exceed maximums. Give the plotted temperature printout to the project leader.