METER
ENVIRONMENT

FIELD PORTABILITY FOR THE WP4C POTENTIAMETER

On occasion, a researcher may require water potential measurements in the field when sampling and returning to the lab is not feasible. The following is a procedure for powering the WP4C using a vehicle as a power source at sites where AC power is not readily available.

REQUIRED ADAPTER

Purchase a portable power inverter that plugs into the 12-volt output (cigarette lighter) of a car. METER strongly recommends that this inverter have a continuous output of at least 140 watts.

PROCEDURE

1. Place the WP4C on a secure, level surface. Care should be taken to minimize temperature gradients that will affect the instrument while in the field. A styrofoam box will help minimize temperature effects.

2. Plug the power inverter into the 12-volt output port of the vehicle, or connect the inverter directly to the 12-volt car battery.

3. Plug the WP4C into the power inverter, and then turn it on. When the instrument is on, it draws one amp. Check the car battery's rating to find the length of time it can power the instrument: for example, if the battery is rated to 60 amp-hours, then the battery will power the WP4C for 60 hours when the car is not running.

4. Allow 20 to 30 minutes for the WP4C to warm up before using it, as one would do in the lab. Check the calibration as outlined in chapter 5 of the WP4C user's manual.

5. Empty a vial of 0.5m KCl solution into a sample cup, and place it the WP4C's sample drawer. Turn the drawer knob to the READ position to take a reading. Take two readings. The second reading should be within ±0.1 of 2.19 MPa. If the WP4C is reading within 0.1 MPa of the 0.5m KCl solution, proceed with sampling. If the

reading is not within 0.1 MPa, a change in calibration may have occurred, or the sensor chamber may be contaminated. For cleaning instructions, see chapter 10 of the WP4C user's manual. After cleaning, repeat the calibration check.

6. Taking a reading:

- Prepare the sample, and place the sample in a disposable sample cup, completely covering the bottom of the cup, if possible.

- Turn the sample drawer knob to the OPEN/LOAD position, and pull the drawer open.

- Place the prepared sample in the drawer. Check the top lip of the cup to make sure it is free from sample residue. Remember: an overfilled sample cup may contaminate the chamber's sensors.

- Carefully slide the drawer closed, being especially careful if using a liquid sample that may splash or spill and contaminate the chamber. Note: To access the sample temperature menu, press the lower right-hand button. When the T_s and T_b are in the 0 to –0.5 range, the temperatures are close enough that the read time should not be long.

- Turn the sample drawer knob to the READ position to seal the sample cup with the chamber. This begins the read cycle. In about 40 seconds, the WP4C will display the first measurement. The WP4C will signal when the measurement is complete, and the final water potential and temperature will be displayed on the screen. Note: Never leave samples inside the chamber for extended periods of time, as this can contribute to contamination of the chamber.

METER strongly recommends careful packaging of the WP4C during travel to the field. The WP4C case helps keep the WP4C safe during transportation and storage of the instrument in the field. For help finding the appropriate type of power inverter, please contact a local sales representative or METER for assistance.