Calibration and maintenance of Orion 3 Star pH meter Entered by Kevin Janes
Janes Lab Protocols 12/9/10

1. Before starting, check the status of the pH meter storage solution (Orion #810001) and the pH meter reference solution (Orion #810007) inside the probe
   - *If there is a visible precipitate in the storage solution at the bottom of the 50 ml conical tube, the storage solution must be replaced*
   - ***Replacing storage solution:***
     a. *Fill a fresh 50 ml conical tube halfway with storage solution*
     b. *Stretch a square of parafilm over the top of the tube*
     c. *Cut a small hole of the parafilm for the probe to slip in snugly*
     d. *Fill out the storage solution log on the freezer door*
     e. *Proceed to Step 2 and recalibrate the pH meter*
   - *It is recommended that the storage solution be replaced <u>weekly</u>*
   - *If the level of the reference solution inside the probe is below 2 cm from the rubber stopper, the reference solution must be replaced:*
   - ***Replacing reference solution:***
     a. *With a disposable transfer pipet, carefully remove as much of the reference solution from inside the probe as possible*
     b. *Fill the inside of the probe with fresh reference solution up to ~1 cm below the rubber stopper*
     c. *Fill out the reference solution log on the freezer door*
     d. *Proceed to Step 2 and recalibrate the pH meter*
   - *It is recommended that the reference solution be replaced <u>at least monthly</u>*
2. Remove the rubber stopper from the probe, turn on the power, and press the “Calibrate” button.
   - *“Cal.1” should show up on the display*
3. Put the probe in the pH 4.01 standard solution (Orion #910104), agitate the probe back and forth briefly, and then allow the pH meter to autoread the standard solution.
   - *The “pH” icon on the display will stop blinking and the pH reading will reset to 4.01 when the autoread has finished*
   - *You must wait until the autoread has completed before continuing to Step 4*
4. Press the “Calibrate” button
   - *“Cal.2” should show up on the display*
5. Put the probe in the pH 7.00 standard solution (Orion #910107), agitate the probe back and forth briefly, and then allow the pH meter to autoread the standard solution
   - *The “pH” icon on the display will stop blinking and the pH reading will reset to 7.00 when the autoread has finished*
   - *You must wait until the autoread has completed before continuing to Step 6*
6. Press the “Calibrate” button
   - *“Cal.3” should show up on the display*
7. Put the probe in the pH 10.01 standard solution (Orion #910110), agitate the probe back and forth briefly, and then allow the pH meter to autoread the standard solution
   - *The “pH” icon on the display will stop blinking and the pH reading will reset to 10.01 when the autoread has finished*
   - *You must wait until the autoread has completed before continuing to Step 8*
8. Press the “Measure” button
   - *At this point, the display should give the slope of the three-point calibration and then the “4”, “7”, and “10” icons should appear on the display above the pH reading*
9. The pH meter is now calibrated to read an unknown sample.
   - *Remember to reseal the rubber stopper on the probe when finished*
10. Fill out the calibration log on the freezer door.
    - *The pH meter should be calibrated <u>at least weekly</u>*
    - *For situations where the accuracy of the pH is particularly critical, the instrument should be recalibrated immediately before use*