Technical Note

Event Testing with Level TROLL® and Aqua TROLL® Instruments

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Introduction

In-Situ Inc. TROLL instruments utilize internal data logging to record measurements from on-board sensors. The Level TROLL collects pressure and temperature measurements according to a user-defined sampling schedule. The Aqua TROLL 200 measures the same parameters as the Level TROLL, as well as conductivity and its derived parameters. This note describes how to use Win-Situ® 5 software to set up an Event Test on either of these TROLL series instruments.

Many water monitoring applications attempt to capture events that are not easily predicted or may only occur for very brief periods of time. For example, a user may want to capture rapidly rising water level readings during a storm event, or determine periods of saltwater intrusion into a coastal aquifer. The Event Sampling Mode monitors parameters frequently, but only records data during user-defined events. This sampling mode conserves instrument memory storage and simplifies data analysis because it logs only readings of primary interest.

To define an event of interest, the user selects a parameter, sets tolerance limits for that parameter, and a comparison standard, if necessary. The tolerance limits may be any combination of increasing, decreasing, or changing values. The user then defines a default storage period during which baseline data is logged, regardless of whether event tolerance limits have been exceeded.

If a Linear Sampling Mode were used to capture infrequent events, the data file would likely contain excessive and unchanged readings. In contrast, the

Event Sampling Mode allows users to collect baseline data, while capturing detailed event data at more frequent sampling intervals.

> *Note: Rapid event sampling can quickly deplete the internal battery. Therefore, external power is required for Aqua TROLL 200 Event testing. External power is recommended for Level TROLL Event testing, but not required.*

Use Win-Situ 5 to Define an Event Log

Win-Situ 5 is the control software for the Level TROLL and Aqua TROLL instruments. Use Win-Situ 5 to communicate with the devices, define test schedules, extract data, and export data to spreadsheet or text format. The latest version of Win-Situ 5 is available for free download at *www.in-situ.com*. For more information about using Win-Situ 5, download and install the software, then click the **Help** menu and select **Win-Situ Help**.

To define an Event log:

1. Click the **Logging Tab**.

2. Click the **New Log** button.
3. On the next screen, select a **Site Name** from the drop-down list and enter a **Log Name**. The **Next** arrow is used to move forward through logging setup.

4. On the left side of the following screen, select the parameters to include in the log. On the right side of the screen, define the units and the order in which each parameter will be reported, and click the **Next** arrow.
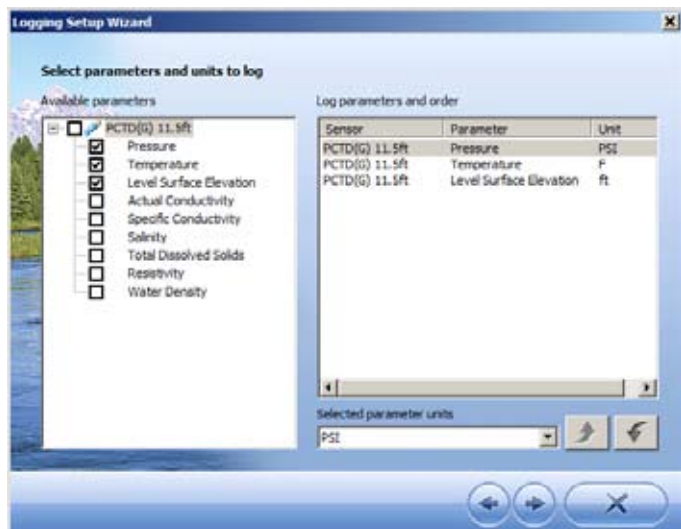
5. In the **Long-Term Monitoring** list, select **Event**, and click the **Next** arrow.
   Note: Rapid sampling quickly depletes the internal battery. Thus, external power is required for Aqua TROLL 200 Event testing, and recommended for Level TROLL Event testing.
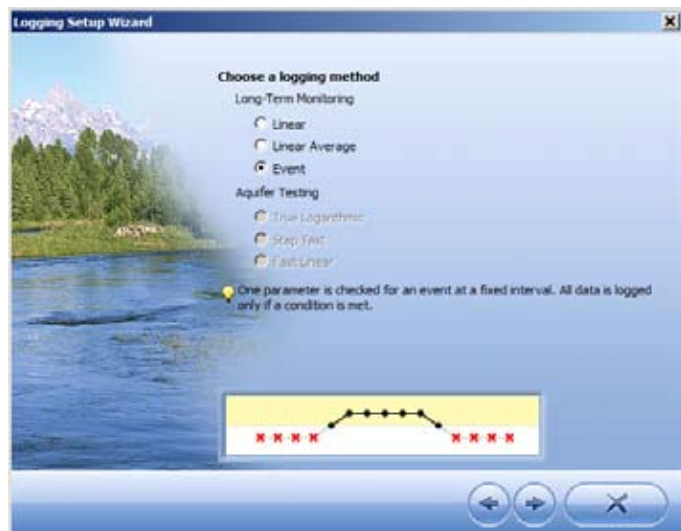
6. Select the Event Parameter and how frequently it will be checked. Define the tolerance limit or limits that will trigger an Event, and the default measurement logging value. The fastest possible sample interval is one second. The tolerance limits may be any combination of :

- **Is Greater Than**
- **Is Less Than**
- **Changes By**—When this check box is selected, two

additional options become available.

- **Compare to Last Sample**—Compares the current reading with the last reading that was not recorded. If the value is outside the tolerance limits set by the user, it will trigger the instrument to start logging data.
- **Compare to Last Logged Value**—Compares the current reading to the last recorded reading, which can be either the default measured value or the previously recorded event. If the value is outside the tolerance limits set by the user, it will trigger the instrument to start logging data.
- **Default measured value**—Use the up and down arrows to change the number of readings that the instrument will take before a measurement is recorded. The minimum value allowed is 2 measurements.

7. Click the **Next** arrow.

8. Define either a manual or scheduled start condition. If using a scheduled start, be sure to set the device time in the **Home Tab**. Event Testing Mode does not allow the user to define a stop condition or wrap condition.

9. Edit the level settings and define a level reference value. **Elevation** and **Depth to Water** settings require the user to set a reference on the instrument. In order to set the reference correctly, the pressure transducer **must** be at its permanent deployment location to set a correct Pressure Head at Reference. Many times, users accidentally set references incorrectly. Carefully read the following explanation of how to set a level reference.

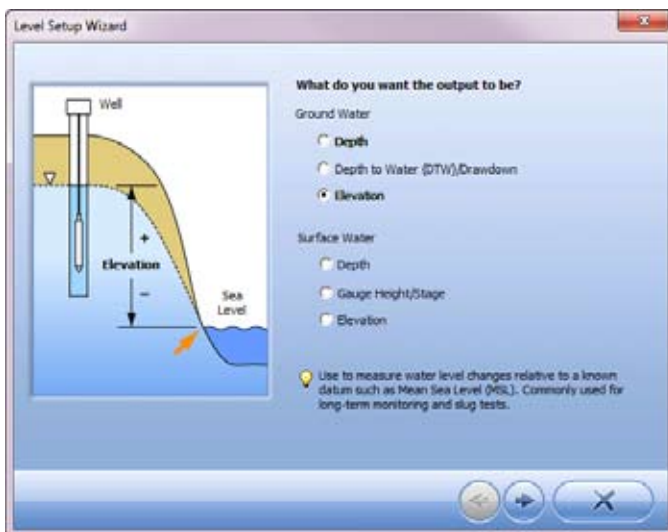## Depth (no reference required)
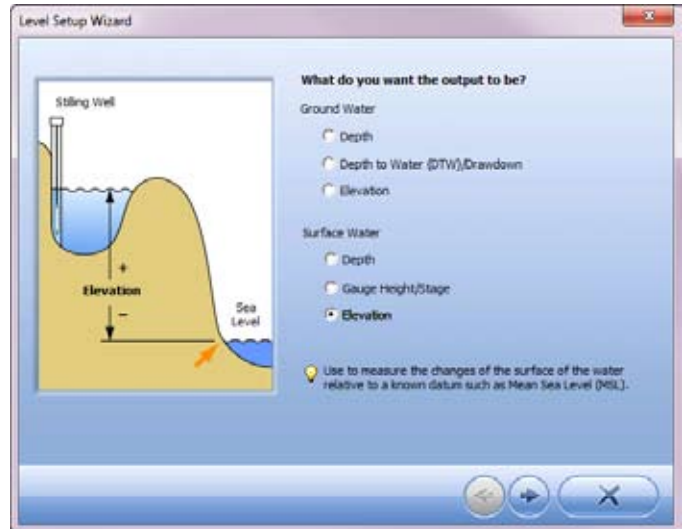a. Level Depth for groundwater
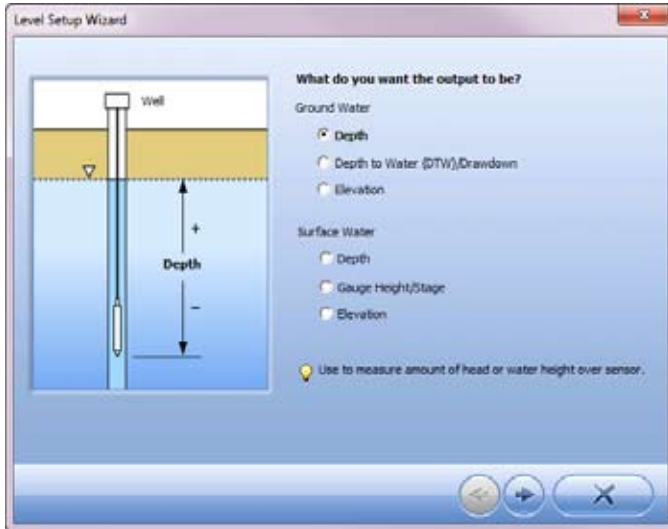
b. Level Depth for surface water
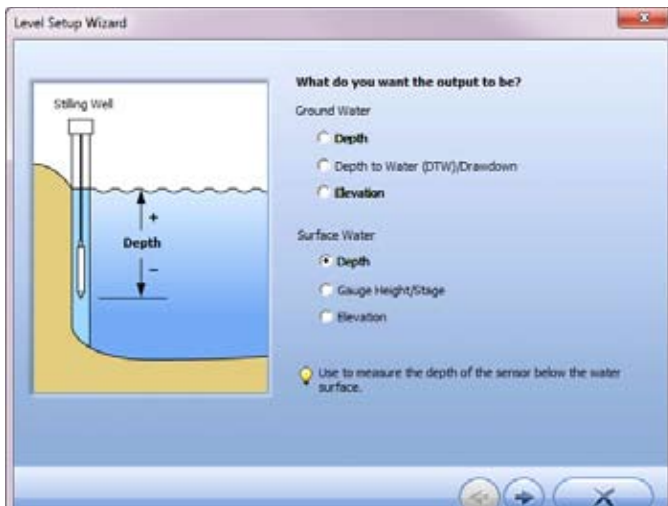
Level Elevation (requires a reference)
a. Level Elevation for groundwater
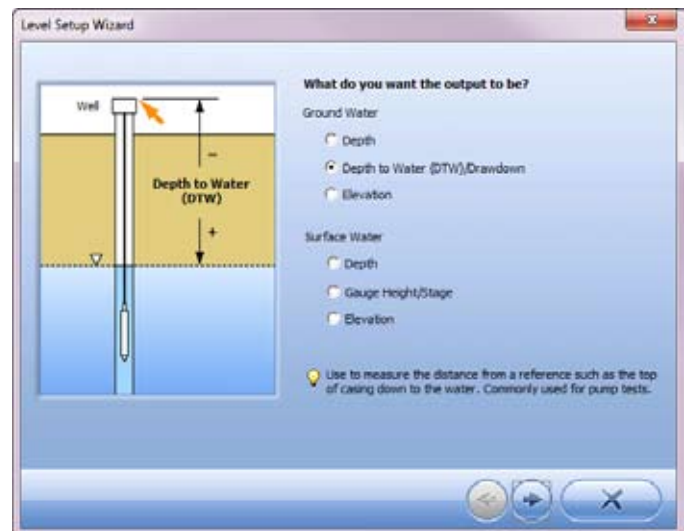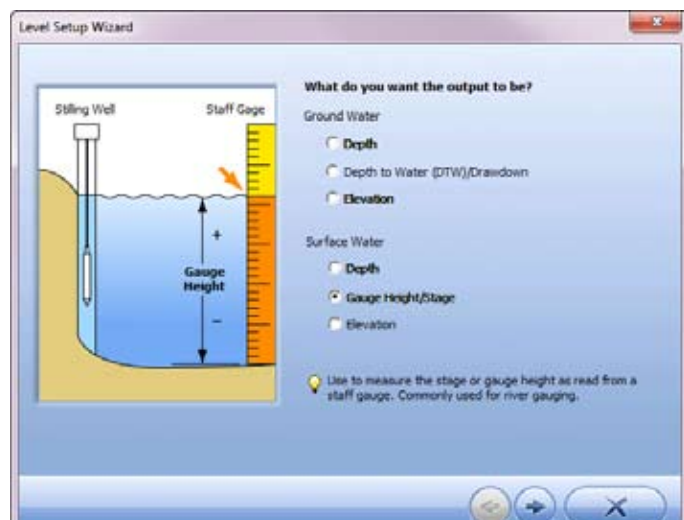

b. Level Elevation for surface water
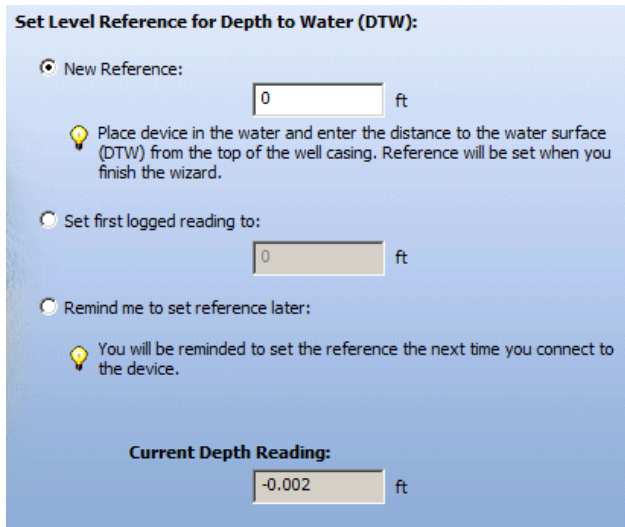

Level Elevation DTW (requires a reference)
a. Level Depth to Water for groundwater

Level Gauge Height/Stage (requires a reference)
a. Level gauge height for surface water

Set Level Reference Options

- **New Reference**—This value will be programmed in the transducer at the end of the wizard. Put the transducer in the water before completing the wizard.
- **Set first logged reading to**—This value will be programmed to the transducer when you start the log manually, or when the log starts via the scheduled start option. Ensure the transducer is in water before the log starts.
- **Remind me to set reference later**—This option will remind you to set a reference when you start the log. Make sure to place the transducer in water and set a correct level reference before the log starts.

Edit a Level Reference in an Active Log

An active log is a log that has been started or started and then paused. It is possible to edit the level reference in an active log with a transducer connected to a communication cable. However, the level reference is the only change that can be made after a log has been started. Adjusting a reference is not possible on a transducer deployed on a hanger.

1. Click the **Sensor Tab** and highlight the instrument.

2. Click the **Calibrate Sensor** button.
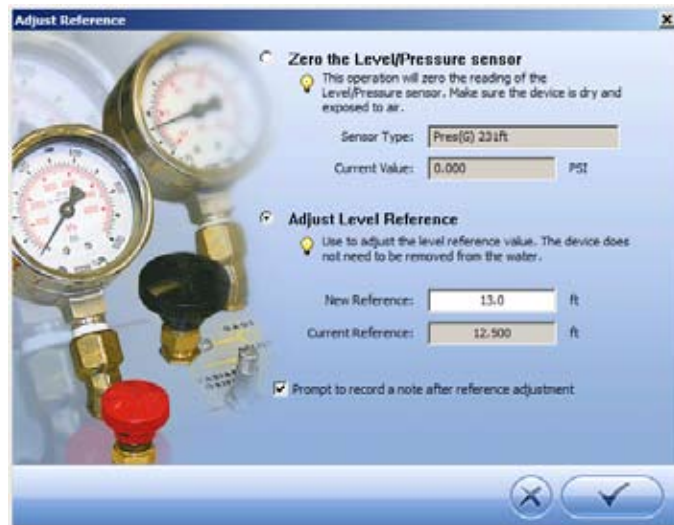
3. Select the **Adjust Level Reference** option.
4. With the transducer in place in the water, enter the correct reference value and click the check mark.

Conclusion

The Level TROLL and Aqua TROLL 200 instruments offer an Event Sampling Mode that can be used to log data during infrequent, short, or difficult-to-predict events. By setting one or more limits to trigger the event, the device conserves memory by logging only the data of interest. For more information regarding the instruments, refer to the appropriate Operator's Manuals. For more details on software, refer to the Help Menu in Win-Situ 5.