Calibration of YSI XL and QS 600 Series Sonde w/ 650 MDS Handheld

Getting Ready To Calibrate – Calibration Tips:

1. If you use the calibration cup for dissolved oxygen (DO) calibration, make certain to loosen the seal to allow pressure equilibration before calibration. The DO calibration is a water-saturated air calibration.

2. The key to successful calibration is to insure that the sensors are completely submersed when calibration values are entered. Set calibration standards out ahead of time in room where calibration is to occur for temperature stability.

3. You may use previously used calibration solution to pre-rinse the sonde. You may wish to save recently used or expired calibration standards for this purpose.

4. Fill a bucket or sink with ambient temperature tap water to rinse the sonde between calibration solutions or rinse with room temp tap water in sink between calibration solutions.

5. Shake excess rinse water off the sonde, especially when the probe guard is installed. May use clean, absorbent paper towels or cotton cloths to dry off the outside of the sonde and probe guard between rinses and calibration solutions. Drying the sonde reduces carry-over contamination of calibrator solutions and increases calibration accuracy.

6. Remove the stainless steel weight from the sonde bottom by turning the weight counterclockwise. When the weight is removed, the calibration solutions have access to the sensors without displacing a lot of fluid. This also reduces the amount of liquid that is carried between calibrations.

7. Make certain that port plugs are installed in all ports where probes are not installed. It is extremely important to keep these electrical connectors dry.

YSI handheld and sonde equipment set-up prior to calibration and sampling

Once this set-up is initially done, it will not be necessary to go through these set-up procedures each time calibration is done:

1. Press the **Power** (Green **"⏻**") button to turn the YSI 650 MDS handheld on.
2. From the "650 Main Menu" select **Sonde menu**.
3. From the "Main" menu screen scroll down and select **Advanced**.
4. From the "Advanced Menu" scroll down and select **Setup**.
5. From the "Advanced Setup" menu ensure that **Auto sleep RS232** and **Auto sleep SD112** are not enabled. It is also suggested that **Power up to Run** be selected in this screen.
6. Press **Escape** twice to return to "Main" menu and select **Report**.
7. From the "Report setup" menu scroll through and minimally enable by selecting the following: Temp C; SpCond uS/cm; DOsat %; DO mg/l; DO Charge; pH; and pH mV. Enable other options as per your instrument capabilities and your monitoring program reporting needs.
8. While selecting **SpCond** in the "Report setup" menu, select "SpCond uS/cm" as the unit to display.
9. Press **Escape** and turn power off or begin calibration process. The sonde is now set up for calibration and sampling.

CALIBRATION TIPS - CONDUCTIVITY

Calibrate conductivity first to avoid contamination of the standard.

For maximum accuracy, the conductivity standard you choose should be within the same conductivity range as the water you are preparing to sample. However, it is not recommended to calibrate with conductivity standards that are less than 1.0 millisiemens/cm (mS/cm) [which is equal to 1,000 microsiemens (µS/cm)]. These low standards are easily contaminated and can be interfered with by outside noise sources (RF, etc.)

TIP: During calibration for conductivity and pH, you may remove the stainless steel weight (600QS model) from the bottom of the sonde by unscrewing the weight counterclockwise. When the weight is removed, the calibration solutions have access to the sensors while displacing less fluid. This also reduces the amount of liquid that is potentially carried between calibrations.

1. Remove the sponge from the calibration bottle and pour 1-2 inches of conductivity calibration solution into the bottle. If you have used conductivity solution saved from your last calibration, you can use it for this rinsing process.
   Put the sonde in the bottle, screw the cap on firmly and shake the solution around to rinse the sonde and bottle. Unscrew the bottle and pour out the solution. Repeat this rinse process once more and then do a third rinse with fresh conductivity calibration solution.

2. Fill the calibration bottle about ¾ full with fresh conductivity calibration solution. Insert the sonde back in the bottle. Gently rotate and/or move the sonde up and down to remove any bubbles from the conductivity cell. The conductivity port in the side of the sonde must be completely submerged in calibration solution and not have any trapped bubbles in the opening.

3. Allow at least one minute for temperature equilibrium before proceeding.

4. With the YSI 650 MDS Handheld on, scroll to "**Sonde menu"** and press the **Enter** key.

5. The handheld will make a sound that indicates you are actively connected to the sonde and its menus. From the displayed screen, scroll to "**Calibrate"** and press the **Enter** key.

6. Scroll to "**Conductivity"** and press **Enter** to access the Conductivity calibration procedure.

7. From the next "Cond Calibration" screen scroll to **SpCond** and press **Enter** to access the specific conductance calibration procedure. Then enter the calibration value of the standard you are using. **Note:** The sonde requires the input in milliSiemens (mS/cm). 1,000 microsiemens (µS/cm) = 1 millisiemen thus when using a 1,000 microSiemen/cm standard, enter **1.000.** Record the conductivity of the standard being used on the calibration work sheet. Press **Enter**. The current value of all enabled sensors will appear on the screen and will change with time as they stabilize.

8. If the sonde should report **"Out Of Range"**, investigate the cause. Never override a calibration error message without fully understanding the cause. Typical causes for error messages are incorrect entries, for example, entering 1000 microSiemens instead of 1.0 milliSiemens. Low fluid level and/or air bubbles in the sonde conductivity port are other error causes.

9. Observe the readings under Specific Conductance or Conductivity and when they show no significant change for approximately 30 seconds, record the temperature and conductivity value being displayed as the "pre-calibration conductivity" on the calibration work sheet, then press **Enter**. The top of the screen will show "Calibrated" which indicates that the calibration has been accepted. Record the conductivity value being displayed as the "post-calibration conductivity" on the calibration worksheet, then press **Enter** again to continue and return to the Calibrate menu.

10. When the calibration has been accepted check the conductivity cell constant which can be found by pressing **Escape** three times to return to the sonde's "Main Menu." Scroll to **Advanced** at the bottom and press **Enter**. Press **"Cal Constants"** and record the conductivity cell constant value on the calibration work sheet. The acceptable range is 5.0 +/- 0.5. Numbers outside of this range usually indicate a problem in the calibration process or a contaminated standard was used. If cell constant is out of range or is significantly different than its historic range, clean and recalibrate.

At this point rinse the sonde with tap water and turn the **Power** off or press **Escape** two times to return to the "Main" menu and select "**Calibrate**" to proceed with calibration for other variables as needed or replace sponge and silver weight and screw on calibration bottle for transport or storage.

Note: Recommend using small brush from YSI maintenance kit to clean sensors in conductivity ports at the end of each sampling day, especially in high turbidity waters.

CALIBRATION TIPS - pH

If initial set-up has not been done, go to the sondes report menu and turn on the pH mv output. This will allow the sonde to display the millivolts or the probes raw output, as well as the pH units during the calibration process.

Note: In most cases, a two point calibration using pH buffers 7 and 10 will be used to cover conditions generally found in the Red River Basin.

1. If not already done, remove the sponge from the calibration bottle and the silver weight from the bottom of the sonde (600QS model). Pour 1-2 inches of pH 7 buffer solution into the bottle. If you have used pH 7 buffer solution saved from your last calibration, you can use it for this rinsing process.
   Put the sonde in the bottle, screw the cap on firmly and shake the solution around to rinse the sonde and bottle. Unscrew the bottle and pour out the solution. Repeat this rinse process once more and then do a **third rinse with fresh pH 7 buffer solution**.

2. Fill the calibration bottle about ½ full with fresh pH 7 buffer solution. Place the sonde in the bottle and screw the cap back on. Gently rotate and/or move the sonde up and down to remove any bubbles from the sensors. Ensure that the pH reference and glass sensor as well as the temperature sensor are completely submerged in solution.

3. With the YSI 650 MDS Handheld on, scroll to "**Sonde menu"** and press the **Enter** key.

4. From the displayed "Main" menu screen, scroll to "**Calibrate"** and press **Enter**.

5. Scroll to "**ISE1 pH"** and press **Enter** to access the pH calibration menu.

6. From the "pH calibration" screen scroll to **2 point** and press **Enter** to access the screen to enter your first pH buffer value. Enter **7.00** (or the proper pH value adjusted to the temperature of the calibration standard if other than 25°C—see side of pH buffer solution bottle for temperature adjustments) and press **Enter**. Record the temperature and pH value of the pH Buffer 7 that you entered on the calibration worksheet in the "Cal. Standard" section.

7. Watch for the pH value and temperature to stabilize. When stable, record the pH and mV meter readings as the pH Buffer 7 "Pre-Calibration" values on the calibration worksheet.

8. Press **Enter** and record the pH and mV meter readings as the pH Buffer 7 "Post-Calibration" values on the calibration worksheet.. Press **Enter** again and screen will prompt you to "Enter 2nd pH." At this time, remove sonde from calibration bottle and pour out the pH 7 buffer. [Note: Consider pouring into a container marked "used pH 7 buffer" which can be used as the pre-rinse for the next time pH calibration is done.]

9. Enter **10.00** for the 2nd pH value (or the proper pH value adjusted to the temperature of the calibration standard if other than 25°C—see side of pH buffer solution bottle for temperature adjustments) and press **Enter**. Pre-rinse the calibration bottle and sonde with used and fresh pH 10 buffer as you did for the pH 7 buffer. When you put the pH 10 buffer in for the first rinse, watch the pH display to see if it responds and rises quickly to near the pH 10 level which is an indicator

that the pH sensors are in good condition. Discard the first three rinses and then pour enough fresh pH 10 buffer into the pre-rinsed calibration cup to cover the pH sensors.

10. Fill the calibration bottle about ½ full with fresh pH 10 buffer solution. Place the sonde in the bottle and screw the cap back on. Gently rotate and/or move the sonde up and down to remove any bubbles from the sensors. Insure that the pH reference and glass sensor as well as the temperature sensor are completely submerged in solution.

11. Record the temperature and pH value of the pH Buffer 10 that you entered on the calibration worksheet in the "Cal. Standard" section.

12. Watch for the pH value and temperature to stabilize. When stable, record the pH and mV meter readings as the pH Buffer 10 "Pre-Calibration" values on the calibration worksheet.

13. Press **Enter** and record the pH and mV meter readings as the pH Buffer 10 "Post-Calibration" values on the calibration worksheet.

Remove sonde from calibration bottle and pour out pH 10 buffer. [Note: Consider pouring into a container marked "used pH 10 buffer" which can be used as the pre-rinse for the next time pH calibration is done.] Rinse calibration bottle and sonde with tap water, replace sponge and silver weight and store sonde in bottle with wet sponge or place sonde in wet towel for short-term storage and transport. Assess slope as per discussion below.

After recording the pH millivolts for the calibration points, you must determine the slope of the sensor. This is done by determining the difference between the two calibration points that were used, for example, if buffer 7 was +3 mV and buffer 10 was –177mV, the slope would be 180.
The millivolts help tell us the present status of the probe; a good set of numbers to use are as follows:

Buffer 4 = + 180 +/- 50 mv
Buffer 7 = 0 +/- 50 mv
Buffer 10 = - 180 +/- 50 mv

The ideal numbers when a probe is new are between 0 and 180, but as the probe begins to age, the numbers will move and shift to the higher side of the tolerance. The acceptable range for the slope is 165 to 180. Once the slope drops below a span of 165, the sensor should be taken out of service. Recondition the probe if a slow response in the field has been reported. The procedure can be found in the YSI sonde manual under the "**Sonde Care and Maintenance Section**".

Never override any calibration errors or warnings without fully understanding the reason for the message. Proper storage of the sensor when not in service will greatly extend the life of the probe.

CALIBRATION TIPS - DISSOLVED OXYGEN

DISCRETE MONITORING (Spot Sampling) PREPARATION

Preparing to calibrate Dissolved Oxygen:

Inspect the DO probe anodes, recondition using the 6035 reconditioning kit if they are darkened or gray in color. (see instructions on pg. 90 of YSI Environmental Operations Manual). If you have resurfaced your DO sensor, it is recommended to run the probe continuously for 15-30 minutes or until good stability is realized. After a membrane change only, allow the sonde to run (burn in) for 10 minutes.

It is recommended to change the DO membranes every 30 days. Also inspect O-ring and replace if not providing a tight seal. (See DO membrane installation procedure) After installing a new membrane, make sure that it is tightly stretched, wrinkle free, and has no trapped air bubbles. Note: DO membranes will be slightly unstable during the first 3 to 6 hours after they are installed; it is suggested that the final calibration of the DO sensor take place after this time period.

BAROMETRIC PRESSURE (BP) NOTE: If your YSI handheld does not have BP built into it you will need to obtain a local BP reading from a local source. If you get BP from a weather service it is often in inches Hg and also corrected to sea level. First you need to convert it to mm Hg by multiplying the inches Hg by 25.4. Then to "uncorrect" for sea level use the following formula:

True BP in mm Hg = [BP in mm Hg] – [2.5 * (Local Altitude/100)]

Example: (using BP from www.weatherunderground.com)
-BP and elevation from website for Fosston is reported as 30.14 inches and 1,276 feet respectively.
1.) convert inches to mm: 30.14 in HG x 25.4 mm/in = 765.6 mm Hg
2.) sea level correction factor: 2.5 x (1,276/100) = 2.5 x 12.76 = 31.9
3.) calculate True BP = 765.6 - 31.9 = 733.7 mm Hg (value to enter in handpad for D.O. calibration)

Dissolved Oxygen Calibration:

1. **Note:** Calibration should occur on-site in the atmospheric conditions which sampling will occur. Carefully remove the sensor guard and inspect the membrane to **ensure that no water droplets are on the membrane**—as needed, wash off with wash bottle or gently dab with Kimwipe or other lens tissue to absorb the water droplets. Also **dry the silver thermistor (temperature sensor)** for accurate temperature measurements. Carefully replace the sensor guard and place the sonde in the calibration bottle with the wet sponge and approximately 1/8 inch of water or you may use the wet towel method if you prefer. Do not allow water to touch the membrane and make sure no water droplets are on the membrane. If using the calibration bottle, unscrew the cap slightly to relieve pressure, allowing equilibrium to be reached with atmospheric pressure. The sonde must now sit in this saturated environment for at least 10 minutes before the DO calibration can begin—both the DO reading and the temperature need to stabilize before starting the calibration sequence.

2. From the "Main" menu, scroll to and select **Sonde menu.**

3. From the "Sonde Main" menu scroll to and select **Calibrate**.

4. From the "Calibrate" menu scroll to and select **Dissolved Oxy**.

5. The next "DO calibration" menu will offer the option of calibrating in % saturation or mg/l—calibrating either of the choices will automatically calibrate the other. Select **DO %** saturation.

6. The next "DO Calibration" menu will require barometric pressure to be entered. If your handheld does not have barometric pressure built into it, be sure to enter your local barometric pressure in mm Hg as explained above. If your handheld does have barometric pressure built in, it will be displayed. Record the barometric pressure on your calibration worksheet. Press **Enter**. Then monitor the stabilization of the DO % readings. After no changes occur for approximately 30-60 seconds, record the Pre-Calibration DO% on the calibration worksheet.

7. Press **Enter** to complete the calibration. Then record the Post-Calibration DO% value and the DO Charge on the calibration worksheet. Press **Enter** again to return to the "DO calibration" menu. Press **Escape** twice to return to the "Main" menu.

8. From the "Main" menu scroll down to the bottom and select **Advanced**.

9. From the "Advanced" menu select "**Cal constants**" and record the DO Gain on the calibration worksheet. The gain should be 1.0 with a Range of -0.3 to +0.5. The probe should now be successfully calibrated and ready for discrete sampling. Press **Escape** twice to get back to the "Main" menu or turn the power off until ready to use. As with the other parameters any warning messages displayed by the sonde during the calibration are a cause for concern and must be investigated before deploying the sonde.

10. **DO output sensor check:** After calibration, turn the power off and wait several minutes. Then turn the power on and from the sonde run mode, start the probe in the "Discrete Run" mode. Immediately watch the DO% display to check the DO sensor output performance. Observe and/or write down the first 10 DO % numbers. The numbers must start at a high number and drop with each four second sample, example: 110, 105, 102, 101.5, 101.1, 101.0, 100.8, 100.4, 100.3, 100.1. It does not matter if the numbers do not reach 100% or they are below 100%, or that they do not drop each time—it is only important that they have a high to low trend. (**Note**: Initial power-up can make the first two DO % samples read low, disregard low numbers in this position.) Should the output display a negative value or start at a low number and climb up to the calibration point, check Reject on the calibration worksheet and examine the probe anodes, membrane, or other possible errors—do not deploy the probe. If the display declines as it should, check Accept on the calibration worksheet.

11. **End of Day Calibration Check:** It is recommended that at the end of your sample run to perform a DO calibration check (or mid-day if out for a long sample day or weather conditions change). Remove the sensor guard and inspect the DO membrane to ensure that no water droplets are on the membrane—as needed, wash off with wash bottle or gently dab with lens tissue to absorb the water droplets. Also dry the silver thermistor (temperature sensor). Carefully replace the sensor guard and place the sonde in the calibration bottle with the wet sponge or wrap in the wet towel if using this method. If using the calibration bottle, unscrew the cap slightly to allow equilibrium to be reached with atmospheric pressure. Allow 10 minutes for dissolved oxygen saturation and temperature to stabilize. Put in **Run** mode and when readings stabilize, record the DO% on your calibration worksheet as "End of Day D.O. calibration check." This result should be within 2% of your post-calibration value from your calibration at the start of the day.

Dissolved Oxygen Discrete Sampling Tips:

1. Always prepare the equipment the day before the expected field study. Membrane changes should be done the day prior to the study to minimize any drift.

2. For YSI Model 6820 or similar sondes that have a separate sensor guard, the transfer of the sonde from the storage/calibration cup to the sensor guard puts the sonde and sensors at risk during the process. Usually, this is when most accidents occur, so it is best to avoid removing the protective sensor guard when in the field. A recommended procedure is to carry the sonde in a 5 gallon pail with the sonde wrapped in a wet towel that covers the entire unit. The towel being wrapped around the sonde will protect it during transport from shock and vibration and will keep the sonde in the perfect saturated environment for pre and post calibration checks as needed.

3. When arriving on site, turn on the sonde and allow it to warm up for approximately 4 to 5 minutes. Next, check the DO output. It should measure saturation in your local environment or barometric pressure setting, plus or minus the instrument's tolerance of 2 percent. If you should find that the DO has drifted, then simply recalibrate on the spot and record the amount of drift that was witnessed.

4. The sonde will then be deployed and the measurements automatically taken. Remember to allow the sonde a few minutes to equilibrate to the water temperature before taking the reading. Once the data has been collected, wrap the sonde again in the wet towel and perform a dissolved oxygen post calibration. Again, the sonde should return to saturation, plus or minus the tolerance of 2 percent, within a few minutes.

5. If you are logging the information, it is recommended that you store this pre- and post-calibration data in the actual site datafile. Otherwise, if you are manually recording the data, record the information in your log sheet. This assures anyone who might look at the records at a later time that the sonde was indeed calibrated and working correctly. The additions of these steps add very little time to the collection process and can actually save time when unexpected results are witnessed.

CALIBRATION WORK SHEET **Date of Calibration: _____**

Sonde SN: _____ Handpad SN: _____ Technician: _____

Conductivity Calibration: Date: _____ Technician: _____ Sonde SN: _____ Handpad SN: _____

Conductivity Std. Being Used:	Cal. Standard °C	Cal. Standard Adj. Cond (µS/cm)	Pre-Calibration Conductivity (µS/cm)	Post-Calibration Conductivity (µS/cm)	Conductivity Cell Constant (Range 5.0 +/- .5)
1,000 µS/cm	NA	NA			

NOTES:

pH Calibration: Date: _____ Technician: _____ Sonde SN: _____ Handpad SN: _____

	Cal. Standard °C	Cal. Standard Adj. pH	Pre-Calibration pH	Pre-Calibration mV	Post-Calibration pH	Post-Calibration mV	
pH Buffer 7							Range 0 MV ± 50 MV
pH Buffer 10							Range -180 ± 50 MV

Milli-volt span between pH 7 and 10 should be ≈ 165 to 180 MV _____

The ideal numbers when a probe is new are between 0 and 180, but as the probe begins to age, the numbers will move and shift to the higher side of the tolerance. The acceptable range for the slope is a span of 165 to 180. Once the slope drops below a span of 165, the sensor should be taken out of service if maintenance cannot bring it back into range.

NOTES:

Cal. Constants (optional)
pH offset: _____
pH gain:

Dis. Oxygen Calib: Date: _____ Technician: _____ Sonde SN: _____ Handpad SN: _____

DO membrane changed? Y N Note: After membrane change, should wait 6 to 8 hours before final DO calibration, run sensor for 15 minutes in Discrete Run to accelerate burn-in.

Corrected* Barometric Pressure (Inches/Hg)	x 25.4 =	Barometric Pressure mm/Hg	- [Sea level correction] [2.5*(Altitude/100)]	= **True Bar.Pres.**	Pre-Calib. D.O. %	Post-Calib D.O.%	DO Charge Range: 50 +/-25	DO Gain = 1 (Range: .7 to 1.5)
_____	x 25.4 = _____		- _____	= _____	_____	_____	_____	_____

DISSOLVED OXYGEN SENSOR OUTPUT TEST (after DO calibration probe in saturated air)

After calibration, did the DO % output display the proper declining high to low trend? If so, check ACCEPT. Should the output display a negative number or start at a low number and climb up to the calibration point, check REJECT and do not deploy the probe.

_____ **ACCEPT**

_____ **REJECT**

NOTES: (End of Day D.O. calibration check: _____)

*Generally weather service barometric pressure readings are corrected to sea level, and cannot be used until they are "uncorrected."

Turbidity Calibration: Date: _____ Technician: _____ Sonde SN: _____ Handpad SN: _____

Turbidity Wiper Changed? Y N
Wiper Parks ~180° from optics? Y N

NOTES:

Cal. Standard Entered Value (FNUs)	Pre-Calibration Turbidity (FNUs)	Post-Calibration Turbidity (FNUs)	Cal Constants (optional):
0.0			Turb offset: _____
			Turb A1: _____
			Turb M1: _____
123			Turb A2: _____

CALIBRATION WORK SHEET – DISSOLVED OXYGEN

Dis. Oxygen Calib: Date: _____ Technician: _____ Sonde SN: _____
Handpad SN: _____

DO membrane changed? Y N Note: After membrane change, should wait 6 to 8 hours before final DO calibration, run sensor for 15 minutes in Discrete Run to accelerate burn-in.

Corrected* Barometric Pressure (Inches/Hg)	x 25.4 =	Barometric Pressure mm/Hg	- [Sea level correction] [2.5*(Altitude/100)]	= **True Bar.Pres.**	Pre-Calib. D.O. %	Post-Calib D.O.%	DO Charge (Range: 50 +/- 25)	DO Gain = 1 (Range: .7 to 1.5)
_____	x 25.4 = _____		- _____	= _____	_____	_____	_____	_____

DISSOLVED OXYGEN SENSOR OUTPUT TEST (after DO calibration probe in saturated air)

After calibration, did the DO % output display the proper declining high to low trend? If so, check ACCEPT. Should the output display a negative number or start at a low number and climb up to the calibration point, check REJECT and do not deploy the probe.

_____ **ACCEPT**

_____ **REJECT**

NOTES: (End of Day D.O. calibration check: _____)

Dis. Oxygen Calib: Date: _____ Technician: _____ Sonde SN: _____
Handpad SN: _____

DO membrane changed? Y N Note: After membrane change, should wait 6 to 8 hours before final DO calibration, run sensor for 15 minutes in Discrete Run to accelerate burn-in.

Corrected* Barometric Pressure (Inches/Hg)	x 25.4 =	Barometric Pressure mm/Hg	- [Sea level correction] [2.5*(Altitude/100)]	= **True Bar.Pres.**	Pre-Calib. D.O. %	Post-Calib D.O.%	DO Charge (Range: 50 +/- 25)	DO Gain = 1 (Range: .7 to 1.5)
_____	x 25.4 = _____		- _____	= _____	_____	_____	_____	_____

DISSOLVED OXYGEN SENSOR OUTPUT TEST (after DO calibration probe in saturated air)

After calibration, did the DO % output display the proper declining high to low trend? If so, check ACCEPT. Should the output display a negative number or start at a low number and climb up to the calibration point, check REJECT and do not deploy the probe.

_____ **ACCEPT**

_____ **REJECT**

NOTES: (End of Day D.O. calibration check: _____)

Dis. Oxygen Calib: Date: _____ Technician: _____ Sonde SN: _____
Handpad SN: _____

DO membrane changed? Y N Note: After membrane change, should wait 6 to 8 hours before final DO calibration, run sensor for 15 minutes in Discrete Run to accelerate burn-in.

Corrected* Barometric Pressure (Inches/Hg)	x 25.4 =	Barometric Pressure mm/Hg	- [Sea level correction] [2.5*(Altitude/100)]	= **True Bar.Pres.**	Pre-Calib. D.O. %	Post-Calib D.O.%	DO Charge (Range: 50 +/- 25)	DO Gain = 1 (Range: .7 to 1.5)
_____	x 25.4 = _____		- _____	= _____	_____	_____	_____	_____

DISSOLVED OXYGEN SENSOR OUTPUT TEST (after DO calibration probe in saturated air)

After calibration, did the DO % output display the proper declining high to low trend? If so, check ACCEPT. Should the output display a negative number or start at a low number and climb up to the calibration point, check REJECT and do not deploy the probe.

_____ **ACCEPT**

_____ **REJECT**

NOTES: (End of Day D.O. calibration check: _____)