

**2002 Dog Island Lease Area, Levy County
Quality Assurance/Quality Control (AQ/QC) Log**

Key to Log:

File Name: Name of excel files containing the data for that month. File names have two or three parts: 1) the two-letter site abbreviation (GJ, HB, BA, etc.), 2) the year and month (ie. -0201), and 3) the nature of the file (“-raw” contains the raw, unaltered data; “-QAQC” contains the quality controlled data set as well as all corrections; the file name that ends with the year and month is the quality controlled file containing only the corrected and finalized data—this is the file sent to the archive)

Deployments: Number of different sondes that recorded data during the month and the periods of dates/times of each deployment.

Condition of Sonde: The post-deployment condition of each sonde deployed during the month. This includes information on fouling, equipment failures and whether post-deployment checks were performed.

Removed Data: Tabulation of all data points removed from a given month. “Trimming on ends of data sets” is a record of all data points removed from either the beginning or the end of the different files in order to create a seamless monthly record (most points removed here were data not recorded in the water, but rather, were point recorded prior to deployment or following retrieval); “Removal of bad data” is a record of data deemed to be of low quality (for example, data out of range of instrument, instrument or probe failures, etc... See Word file “QAQCGuidelines.doc” for criteria used). Table columns give the parameter values deleted, the reason for the deletion (see abbreviations) and the dates and times of points deleted.

Corrected data: This is a record of all data points that were corrected. This includes corrections due to instrument drift, fouling, incorrect instrument calibration, etc. Included are probe readings in the standard pre- and post-deployment and excel formulae used to calculate corrected values. Inability to correct data due to lack of proper post-deployment check procedures or substandard sonde condition (eg. heavily fouled) may also be noted here.

Missing data: This is a record of all missing data points not due to the QA/QC process (ie. not accounted for in “Removal of bad data”). A common cause for this missing data is a lag time between the retrieval of one sonde and the deployment of the second sonde or failure of the instrument to log data at a given time.

Problems and Anomalies: This is a record of troublesome trends or data points not removed from data set, but that could prove a problem in interpretation. Examples include sudden jumps in the data when sondes are changed out (reflecting drift in retrieved sonde or a lack of standardization between the two sondes). Notes regarding reliability of data (whether or not it is or may be faulty) may also be found here. **ALWAYS read this section before interpreting data.**

Abbreviations:

IF	=	Instrument Failure: Data logger returned values of -6999
PF	=	Probe Failure: Probe measuring individual parameter apparently malfunctioned.
ADL	=	Above Detection Limit: data logger returned a data point that is above the detection limit of the probe
BDL	=	Below Detection Limit: data logger returned a data point that is above the detection limit of the probe
SND	=	Sonde Not Deployed: evidence indicates that sonde was not in the water on-site when data was recorded
FOUL	=	Fouled: evidence indicates sonde was not functioning properly due to severe fouling
EXP	=	Exposed: Sonde was exposed to air due to low water level or some disturbance.
NMD	=	Next month's data: trimmed data belonged to next month
PMD	=	Previous month's data: trimmed data belonged to previous month

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General Notes on Reliability of Data:

- 1) In general, measurements of temperature and depth are very reliable unless otherwise noted in “Problems and Anomalies”.
- 2) Salinity is typically reliable, but this data can be compromised by bad calibrations and fouling. These effects are most obvious as sudden discontinuities in the trend when sondes are changed. If the discontinuity that occurs with a sonde change is more than +/- 2 ppt in magnitude, the discontinuity is noted as a faulty trend.
- 3) Measurements of dissolved oxygen are often not reliable. Typically, oxygen measurements taken soon after a sonde is deployed are reliable, but reliability decreases during the deployment period due to instrument drift and fouling. The most unreliable oxygen data is that collected near the time the sonde is retrieved. ALWAYS read “Problems and Anomalies” before interpreting dissolved oxygen! Dissolved oxygen discontinuities of +/- 25% or more coincident with sonde changes are noted as faulty if they do not fall within the actual rate of change occurring before and after the sonde change.
- 4) The reliability of turbidity measurements is much like that of oxygen. Turbidity measurements are best early and worst late in the deployment period.
- 5) The reliability of chlorophyll measurements is unknown. We do not currently know what the measurements mean in a biological context. Confirmation studies are underway.
- 6) If the word "**faulty**" appears regarding a trend or data period, the data should be considered highly unreliable. Do not use this data (if it wasn't deleted altogether) for anything but a general guideline to potential conditions. This designation is only used regarding data known to be of very poor quality.
- 7) If the phrase "**may be faulty**" appears regarding a trend or data period, the data may not be reliable. Typically, the data appears to be of reasonably good quality and probably does reflect the real trends in environmental condition, but very strict interpretation is not recommended.
- 8) If a proper post-deployment check was not performed, reliability of all data for that deployment period must be considered suspect.

**2002 Dog Island Lease Area, Levy County
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OCTOBER 2002

Files: Sondes:DI021004, DI021023;
Data: DI-0210-raw, DI-210-QAQC, DI-210

Deployments: (2); 10/4-10/23, 10/23-11/4

Condition of Sondes: 10/4-10/23 (Heavily fouled), 10/23-11/4 (Heavily fouled)

Removed Data:

Trimming on ends of data sets:

File	Reason	Data Points
DI021004	SND	10/4 930-1200; 10/23 915-1315
DI021023	SND	10/23 830-1030
DI021023	NMD	11/1 000-11/4 1600

Removal of bad data:

Parameter(s)	Problem	Data Points
Oxygen	FOUL	10/12 1100-10/23 1030
Turbidity	FOUL	10/12 1100-10/23 1030
Oxygen	PF	10/23 1100-1730
All	EXP	10/4 1900-2000; 10/5 1930-2030; 10/6 730-930; 10/7 800-1030; 10/8 900-1100; 10/9 930-1200; 10/10 1030-1230; 10/23 900-1000

Corrected Data:

10/4-10/23

Specific Conductivity:

standard 1.413, probe 2.450

Formula: $= -((2.45 - 1.413) / (\$B\$1080 - \$B\$168)) * (B168 - \$B\$168) + E168$

Salinity $= (0.6599 * R168) - 0.6372$

Oxygen:

pre-deployment O2: 104.5

post-deployment O2: 20.7

standard 100, probe 15.7;

NOT CORRECTABLE—post-deployment readings below acceptable limits (see below)

Turbidity:

standard 0, probe 1572; standard 100, probe 1570.8

NOT CORRECTABLE—post-deployment readings above acceptable limits (see below)

Chlorophyll:

standard 0.0, probe 7.8

Not Corrected (see below)

10/23-11/4

Specific Conductivity:

standard 10, probe 8.043

Formula: $= -((8.043 - 10) / (\$B\$1658 - \$B\$1081)) * (B1094 - \$B\$1081) + E1094$

Salinity $= (0.6478 * R1094) - 0.5057$

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OCTOBER 2002

Oxygen:

pre-deployment O2: 100.7

post-deployment O2: 96.0

standard 100, probe 88.1; O2 correction = 92.0

Formula: $= -((92-100)/(\$B\$1658-\$B\$1081))*(B1094-\$B\$1081)+H1094$

Conversion for O2 concentration: $= 4.3-(0.132*D1094)-(0.0597*S1094)+(0.0766*P1094)$

Turbidity:

standard 0, probe 0.3; standard 100, probe 106.6

Formula:

$= (((((100/106.3)-1)*(K1094))-(0.3))*((B1094-\$B\$1081)/(\$B\$1658-\$B\$1081)))+K1094$

Chlorophyll:

standard 0.0, probe 1.9

Formula: $= -((1.9-0)/(\$B\$1658-\$B\$1081))*(B1094-\$B\$1081)+L1094$

Missing Data:

Problems and Anomalies:

All parameters (see table above): EXP Depth cyclically fell to very low levels indicating exposure or near exposure of the sonde during low tide. Salinity changed substantially during these periods indicating the sonde was, in fact, exposed at low tide. All data except depth were **faulty** and were deleted.

Oxygen and Turbidity 10/12 1100-10/23 1030: Heavy fouling caused oxygen readings to decline and turbidity readings to increase starting on 10/12. The post-deployment check showed both of these probes to read beyond acceptable limits in the standards (DO=15.7% in 100% standard; Turbidity=1572.0 and 1570.8 in 0.0 and 100.0 standards, respectively). This period was deemed **faulty** and was deleted. The period from 10/4 to 10/12 was not correctable, and original data were retained. As a result this portion of the record **may be faulty** due to drift and fouling; interpret with caution.

Chlorophyll 10/4-10/23: In post-deployment check the chlorophyll probe read 7.8 in 0.0 standard apparently due to the heavy fouling sustained by the sonde during this deployment period. This was not corrected since the increase happened rather suddenly during the fouling period and the correction factor would not make the data series better as a whole. The original data are retained and are faulty to a certain extent, but the effects are not particularly bad. The most affected portion of the series is near the end of the deployment period. Interpret with caution.

Oxygen 10/23 1100-1730: The diagnostic DO charge exceeded the acceptable limit (>75) during this period. This data was deemed **faulty** and was deleted.

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NOVEMBER 2002

Files: Sondes: DI011023, DI021104, DI021122;
Data: DI -0211-raw, DI -0211-QAQC, DI -0211

Deployments: (3); 10/23-11/4, 11/4-11/22, 11/22-12/18

Condition of Sondes: 10/23-11/4 (Heavily fouled), 11/4-11/22 (Fouled), 11/22-12/18 (Lightly fouled)

Removed Data:

Trimming on ends of data sets:

File	Reason	Data Points
DI021023	PMD	10/23 830-10/31 2330
DI021023	SND	11/4 1230-1600
DI021104	SND	11/4 930-1200; 11/22 1300-1500
DI021122	SND	11/22 900-1330
DI021122	NMD	12/1 000-12/19 1030

Removal of bad data:

Parameter(s)	Problem	Data Points
Oxygen	PF	11/4 1230-11/22 1230
Salinity	PF	11/4 1230-11/22 1230
All	EXP	11/2 600-800; 11/23 730-1330; 11/24 900-1400; 11/25 1100-1430; 11/26 1130-1530; 11/27 1300-1630; 11/28 1400-1730; 11/29 230-700 & 1500-1800

Corrected Data:

10/23-11/4

**This time period was continuous with October and was corrected as for that month (see above)

11/4-11/22

Specific Conductivity:

NOT CORRECTABLE--Probe failure, Broken DO membrane resulted in "cross-talk" (see below)

Oxygen:

NOT CORRECTABLE--Probe failure, Broken DO membrane (see below)

Turbidity:

standard 0, probe 0.2; standard 100, probe 114.4

Formula: $=((((100/114.2)-1)*(K171))-(0.2))*((B171-\$B\$171)/(\$B\$1035-\$B\$171))+K171$

Chlorophyll:

standard 0.0, probe 0.0

No correction necessary

11/22-12/18

Specific Conductivity:

standard 10.0, probe 10.2

Formula: $=-(((10.2-10)/(\$B\$844-\$B\$2))*((B2-\$B\$2))+E2$

Salinity $=(0.645*R2)-0.1507$

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NOVEMBER 2002

Oxygen:

pre-deployment O2: 111.7
post-deployment O2: 173.6
standard 100, probe 146.8;
NOT CORRECTABLE--probe failed and diagnostics inconsistent

Turbidity:

standard 0, probe -0.6; standard 100, probe 103.0
Formula: $=((((100/103.6)-1)*(K2))-(-0.6))*((B2-\$B\$2)/(\$B\$844-\$B\$2))+K2$

Chlorophyll:

standard 0.0, probe 0.1
Formula: $=(-(0.1-0)/(\$B\$844-\$B\$2))*(B2-\$B\$2))+L2$

Missing Data:

11/22 1300-1330: No sonde deployed during this period.

Problems and Anomalies:

All parameters (see table above): EXP Depth cyclically fell to very low levels indicating exposure or near exposure of the sonde during low tide. Salinity changed substantially during these periods indicating the sonde was, in fact, exposed at low tide. All data except depth were **faulty** and were deleted.

Oxygen 11/4-11/22: The probe behaved erratically during the deployment period, first increasing sharply then decreasing to near zero. During the post-deployment check, the probe membrane was not intact and was fouled, and the probe did not work properly in the standard. Also, there was evidence of cross-talk between the DO probe and the conductivity probe, indicating the membrane was not intact from the beginning. Because of these problems, the entire record was deemed **faulty** and was deleted.

Salinity 11/4-11/22: When this sonde was deployed, salinity increased 5.3ppt over the previous sonde, then it steadily decreased over the deployment period and when the next sonde was deployed salinity increased by 7ppt. During this deployment period there was also little evidence of the tidal signature, again indicating the probe was not functioning properly. Considering the findings with the oxygen probe, this poor performance was likely due to the oxygen probe cross-talking with the conductivity probe. This data record was deemed **faulty** and was deleted.

Oxygen 11/22-12/18: Although calibrated to 100%, probe was reading ~112% prior to deployment. In the middle of the deployment period (12/8) and coincident with a low tide that exposed the sonde, DO inexplicably increased by ~50% and stayed there for the remainder of the deployment period. During the post-deployment check, the probe read 146% in a 100% standard, but it was reading ~175% following retrieval. There is no way to convincingly correct these multiple problems with the data set. The data recorded after 12/8 1230 was deemed **faulty** and was deleted. The remainder of the data set (11/22-12-8) was retained, but is likely 12% higher than the real conditions. Also, any drift that may have occurred was not correctable, so this data should be interpreted with caution.

Turbidity 11/3 030, 11/8 1000, 11/18 430: Several spikes above the detection limit of the probe (>1000NTU) were all individual and were retained.

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DECEMBER 2002

Files: Sondes: ;

Data: DI -0212-raw, DI -0212-QAQC, DI -0212

Deployments: (2); 11/22-12/18, 12/18-1/8

Condition of Sondes: 11/22-12/18 (Lightly fouled), 12/18-1/8 (OK)

Removed Data:

Trimming on ends of data sets:

File	Reason	Data Points
DI021122	PMD	11/22 900-11/30 2330
DI021122	SND	12/18 1330-12/19 1030
DI021218	SND	12/18 830-1300
DI021218	NMD	1/1 000-1/8 1600

Removal of bad data:

Parameter(s)	Problem	Data Points
Oxygen	PF	12/18 1330-12/31 2330
All	EXP	12/1 430-900; 12/2 500-1000; 12/3 530-1100; 12/4 630-1130; 12/5 730-1130; 12/6 730-1400; 12/7 800-1500; 12/8 900-1500; 12/9 1100-1530; 12/15 400-900; 12/16 500-900; 12/17 530-930; 12/18 600-1030; 12/19 600-930; 12/20 730-1100; 12/21 600-1300; 12/22 800-1200; 12/23 830-1300; 12/25 1100-1530; 12/26 1100-1500; 12/28 130-500; 12/29 200-600; 12/30 330-700; 12/31 500-730

Corrected Data:

11/22-12/18

**This time period was continuous with November and was corrected as for that month (see above)

12/18-1/8

Specific Conductivity:

standard 1.413, probe 2.000

Formula: $=(-(2-1.413)/(\$B\$1489-\$B\$845))*(B845-\$B\$845))+E845$

Salinity $=(0.647*R845)-0.1036$

Oxygen:

Probe failure; no corrections possible.

Turbidity:

standard 0, probe 4.2; standard 100, probe 103.7

Formula: $=((((100/99.5)-1)*(K845))-(4.2))*((B845-\$B\$845)/(\$B\$1489-\$B\$845))+K845$

Chlorophyll:

standard 0.0, probe 1.2

Formula: $=(-(1.2-0)/(\$B\$1489-\$B\$845))*(B845-\$B\$845))+L845$

Missing Data:

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DECEMBER 2002

Problems and Anomalies:

All parameters (see table above): EXP Depth cyclically fell to very low levels indicating exposure or near exposure of the sonde during low tide. Salinity changed substantially during these periods indicating the sonde was, in fact, exposed at low tide. All data except depth were **faulty** and were deleted.

Salinity: The conductivity probe read numerous periods where salinity fell to near zero. These all coincided with periods where the depth gauge indicated low tide exposure (as above).

Oxygen 11/22-12/18: Although calibrated to 100%, probe was reading ~112% prior to deployment. In the middle of the deployment period (12/8) and coincident with a low tide that exposed the sonde, DO inexplicably increased by ~50% and stayed there for the remainder of the deployment period. During the post-deployment check, the probe read 146% in a 100% standard, but it was reading ~175% following retrieval. There is no way to convincingly correct these multiple problems with the data set. The data recorded after 12/8 1230 was deemed **faulty** and was deleted. The remainder of the data set was retained, but is likely 12% higher than the real conditions. Also, any drift that may have occurred was not correctable, so this data should be interpreted with caution.

Oxygen 12/18-12/31: Probe began deployment period reading -50% and it logged this value for several days; it later began logging positive numbers, but the values were highly erratic and "-50" values continued to appear sporadically. This indicates a probe failure, so all data was deemed **faulty** and was deleted.

Turbidity: 5 spikes above detection limit of probe (>1000NTU). Because these were all individual spikes, they were retained.