void CTD\_Plus\_Data::CalcFluorescence ()

{

// Using calibration sheet from WETLabs

// dated July-16-2008

// S/N: FLNTURTD-1112

// Phone # 541-929-5650

// www.wetlabs.com

//

// dark Counts = 0.081 (V) 56 counts

// ScaleFactor = 10 (ug/l/V) 0.0120 ug/l/count

// Maximum Output = 4.97 (V) 4119 counts

// Resolution = 0.1 (mV) 0.7 counts

// CHL(ug/l) = ScaleFactor(10) \* (Output - DarkCounts(0.081))

fluorescence = (float)(10.0 \* (fluorescenceSensor - 0.081));

} /\* CalcFluorescence \*/

/\*\*

@brief Initially cloned from 'CalcFluorescence' We need to update calcs.

@todo Update Calibration Calcs.

\*/

void CTD\_Plus\_Data::CalcCdomFluorescence ()

{

// Using calibration sheet from WETLabs

// dated July-16-2008

// S/N: FLNTURTD-1112

// Phone # 541-929-5650

// www.wetlabs.com

//

// dark Counts = 0.081 (V) 56 counts

// ScaleFactor = 10 (ug/l/V) 0.0120 ug/l/count

// Maximum Output = 4.97 (V) 4119 counts

// Resolution = 0.1 (mV) 0.7 counts

// CHL(ug/l) = ScaleFactor(10) \* (Output - DarkCounts(0.081))

cdomFluorescence = (float)(10.0 \* (cdomFluorescenceSensor - 0.081));

} /\* CalcCdomFluorescence \*/

void CTD\_Plus\_Data::CalcTurbidity ()

{

// Using calibration sheet from WETLabs

// dated July-16-2008

// S/N: FLNTURTD-1112

// Phone # 541-929-5650

// www.wetlabs.com

//

// dark Counts = 0.075 (V) 50 counts

// NTU Solution Value = 2.41 (V) 1976 counts

// ScaleFactor = 5 (NTU/V) 0.0060 NTU/count

// Maximum Output = 4.97 (V) 4119 counts

// Resolution = 0.1 (mV) 0.6 counts

// NTU = ScaleFactor (5 NTU/V) \* (turbiditySensor - DarkCounts(0.075 V) )

turbidity = (float)(2.41 \* (turbiditySensor - 0.075));

} /\* CalcTurbidity \*/

void CTD\_Plus\_Data::CalcTransmisivity ()

{

// Using calibration sheet from WETLabs

// dated July-16-2008

// S/N: FLNTURTD-1112

// Phone # 541-929-5650

// www.wetlabs.com

//

// Vdark = 0.061V

// Vair = 4.815V

// Vref = 4.466V

//

// Tr = (Vsig - Vdark) / (Vref - Vdark)

transmisivity = (float)(((double)transmisivitySensor - 0.075) / (4.466 - 0.061));

} /\* CalcTurbidity \*/

float OxygenSaturation (float waterTemp, // Celcius

float salinity // psu

)

{

// Froma page Appendix A, page 6of SBE 43 Dissolved Oxygen Sensor

// Application Note No. 64.

static double A1 = -173.4292;

static double A2 = 249.6339;

static double A3 = 143.3483;

static double A4 = -21.8429;

static double B1 = -0.033096;

static double B2 = 0.014259;

static double B3 = -0.00170;

static float lastWaterTemp = -9999.99f;

static float lastSalinity = -9999.99f;

static double lastOxSat = -9999.99;

if ((lastWaterTemp == waterTemp) && (lastSalinity == salinity))

return (float)lastOxSat;

double S = salinity;

double Ta = 273.15 + (double)waterTemp;

double Ta100 = Ta / 100.0;

double A = A1 + A2 \* (100.0 / Ta) + A3 \* log (Ta100) + A4 \* Ta100;

double B = B1 + B2 \* Ta100 + B3 \* Ta100 \* Ta100;

lastOxSat = exp (A + S \* B);

return (float)lastOxSat;

} /\* OxygenSaturation \*/

float CTD\_Plus\_Data::DissolvedOxygenConcentration (float voltage,

float temperature,

float salinity,

float pressure

)

{

static double Soc = 0.3634;

static double Boc = 0.0000;

static double Voffset = -0.5098;

static double tcor = 0.0016;

static double pcor = 1.350e-04;

static double tau = 0.0;

static double deltaV = 0.0;

double P = pressure;

double T = temperature;

double V = voltage;

double disolvedOxygen\_a = (Soc \* (V + Voffset + tau \* deltaV) + Boc \* exp (-0.03 \* T));

double Oxsat = OxygenSaturation (temperature, salinity);

double disolvedOxygen\_b = Oxsat \* exp (tcor \* T) \* exp (pcor \* P);

double dissolvedOxygenConcentration = disolvedOxygen\_a \* disolvedOxygen\_b;

return (float)dissolvedOxygenConcentration;

} /\* DissolvedOxygenConcentration \*/