

# CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there is qualified data on this page.

Meter ID:

NE  
SI #43

RQ:

2018-01-15-22

Project:

SUV 3

Notes: (1) Always wait for meter to stabilize before recording any readings.

(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).

(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Circle/Fill In: Lab Calibration or Calibration/Verification on Site

Temperature (Quarterly) FT 1400

Date of Last Temperature Verification

1/18

| DO<br>DEP SOP<br>FT 1500 | Name          | Date    | Time<br>CT-ET | Temp<br>mg/L | D.O.<br>Chart<br>mg/L | Meter<br>D.O.<br>mg/L | % DO | Probe<br>Charge | Probe<br>Gain | Pass<br>/ Fail | Lab<br>/ Field |
|--------------------------|---------------|---------|---------------|--------------|-----------------------|-----------------------|------|-----------------|---------------|----------------|----------------|
| Calibr.                  | N. Fredin     | 1/16/18 | 0700          | 20.52        | 19.55                 | 9.00                  | 100  | 64.5            | 0.88          | P/F            | L/F            |
| ICV                      | ✓             | ✓       | 0705          | 20.55        | 9.00                  | 9.01                  | 99   | 64.5            | 0.88          | P/F            | L/F            |
| CCV                      | A. Kalmbacher | 1-16-18 | 1555          | 19.3         | 9.22                  | 9.06                  | 98.2 | 63.5            | 0.889         | P/F            | L/F            |
| CCV                      |               |         |               |              |                       |                       |      |                 |               | P/F            | L/F            |

DO Acceptance criteria from Table  $\pm 0.3$  mg/L.

Optical: DO gain range 0.85 to 1.15; DO charge N/A.

Rapid-Pulse Sensors: DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.

Steady-state & Galvanic Sensors: DO Gain & Charge N/A.

| Spec.<br>Cond.<br>FT 1200 | Name          | Date    | Time<br>CT-ET | Lot #   | Expir.<br>Date | Standard<br>$\mu$ hos/cm | Meter<br>Reading<br>$\mu$ hos/cm | Pass<br>/ Fail | Lab<br>/ Field |
|---------------------------|---------------|---------|---------------|---------|----------------|--------------------------|----------------------------------|----------------|----------------|
| Calibr.                   | N. Fredin     | 1/16/18 | 0708          | 171129A | 12/18          | 1,000                    | 1,000                            | P/F            | L/F            |
| ICV                       | ✓             | ✓       | 0710          | 170315A | 3/18           | 100                      | 98                               | P/F            | L/F            |
| CCV                       | A. Kalmbacher | 1-16-18 | 1600          | 17129A  | 12/12          | 1,000                    | 996                              | P/F            | L/F            |
| CCV                       |               |         |               |         |                |                          |                                  | P/F            | L/F            |

Conductivity Acceptance criteria  $\pm 5\%$

| pH<br>DEP SOP<br>FT 1100 | Name          | Date    | Time<br>CT-ET | Lot #   | Expir.<br>Date | pH<br>Buffer<br>SU | Meter<br>reading<br>SU | mV     | Pass<br>/ Fail | Lab<br>/ Field |
|--------------------------|---------------|---------|---------------|---------|----------------|--------------------|------------------------|--------|----------------|----------------|
| Calibr.                  | N. Fredin     | 1/16/18 | 0715          | 2708860 | 7/19           | 7.0                | 7.0                    | -15.9  | P/F            | L/F            |
| Calibr.                  | ✓             | ✓       | 0718          | 2711517 | 10/17          | 4.0                | 4.0                    | 155.1  | P/F            | L/F            |
| Calibr.                  | ✓             | ✓       | 0720          | 2706031 | 12/18          | 10.0               | 10.0                   | -186.5 | P/F            | L/F            |
| ICV                      | ✓             | ✓       | 0725          | 2708860 | 7/19           | 7.0                | 6.99                   | -15.9  | P/F            | L/F            |
| CCV                      | A. Kalmbacher | 1-16-18 | 1603          | 2706031 | 12/18          | 10.0               | 10.0                   | -188.0 | P/F            | L/F            |
| CCV                      |               |         |               |         |                |                    |                        |        | P/F            | L/F            |

pH Acceptance criteria  $\pm 0.2$  SU; mV pH 7 Range  $0 \pm 50$ ;

mV pH 4 Range  $+180 \pm 50$ ;

mV pH 10 Range  $-180 \pm 50$ ;

If mV are recorded: slope from 7 to 10 \_\_\_\_\_, slope from 4 to 7 \_\_\_\_\_ (both must be between 165 and 180 mV)

Is meter equipped with depth sensor? Yes / No If yes, list date of last quarterly depth verification

| Depth Sensor<br>(Daily Calibration &<br>ICV) | Name      | Date    | Time<br>CT-ET | Calibrated<br>Value (0.00 or<br>Offset), meters | ICV Value<br>meters | Pass<br>/ Fail | Lab<br>/ Field |
|----------------------------------------------|-----------|---------|---------------|-------------------------------------------------|---------------------|----------------|----------------|
| Pressure mode in air                         | N. Fredin | 1/16/18 | 0730          | 0.00                                            | 0.00                | P/F            | L/F            |

Report two decimal places. Round numbers  $\leq 4$  down,  $\geq 5$  up. ICV acceptance criteria  $\pm 5\%$  or  $\pm 0.05$ m, whichever is greater.

COMMENTS:

QA/Scanned BT 1/25/18



# CALIBRATION AND VERIFICATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)

Boldly "X" this box if there is qualified data on this name.

Meter ID: Quant 4 #1

RQ: 2018-01-15-24

Project: Suw - North

Notes: (1) Always wait for meter to stabilize before recording any readings.

(2) Report all digits displayed. Do not round before reporting measurements. (See special instructions for depth).

(3) For Calibrations, record calibrated meter reading. Do not record initial meter reading before calibration.

Circle/Fill in: Lab Calibration or Calibration/Verification on Site

Temperature (Quarterly) FT 1400

Date of Last Temperature Verification 01-10-2018

| DO DEP SOP FT 1500 | Name      | Date     | Time CT-ET | Temp | D.O. Chart mg/L | Meter D.O. mg/L | % DO  | Probe Charge | Probe Gain | Pass / Fail | Lab / Field |
|--------------------|-----------|----------|------------|------|-----------------|-----------------|-------|--------------|------------|-------------|-------------|
| Calibr.            | PO'Connor | 01-16-18 | 0725       | 20.8 | 8.95            | 8.93            | 100.0 | —            | —          | (P/F)       | (L/F)       |
| ICV                | ✓         | ✓        | 0730       | 20.8 | 8.95            | 8.93            | 100.0 | —            | —          | (P/F)       | (L/F)       |
| CCV                | PO'Connor | 01-16-18 | 1435       | 21.9 | 8.75            | 8.46            | 97.5  | —            | —          | (P/F)       | (L/F)       |
| CCV                |           |          |            |      | 8.52            | 8.84            | 100   |              |            | P/F         | L/F         |

DO Acceptance criteria from Table  $\pm 0.3$  mg/L.

Optical: DO gain range 0.85 to 1.15; DO charge N/A.

Rapid-Pulse Sensors: DO Gain Range 0.7 to 1.4; DO Charge Range 25-75.

Steady-state & Galvanic Sensors: DO Gain & Charge N/A.

| Spec. Cond. FT 1200 | Name      | Date     | Time CT-ET | Lot #   | Expir. Date | Standard $\mu$ mhos/cm | Meter Reading $\mu$ mhos/cm | Pass / Fail | Lab / Field |
|---------------------|-----------|----------|------------|---------|-------------|------------------------|-----------------------------|-------------|-------------|
| Calibr.             | PO'Connor | 01-16-18 | 0732       | 171129A | 12-2018     | 1000                   | 1000                        | (P/F)       | (L/F)       |
| ICV                 | ✓         | ✓        | 0735       | 170315A | 03-2018     | 100                    | 99                          | (P/F)       | (L/F)       |
| CCV                 | PO'Connor |          | 1442       | 171129A | 12-2018     | 1000                   | 1003                        | (P/F)       | (L/F)       |
| CCV                 |           |          |            |         |             |                        |                             | P/F         | L/F         |

Conductivity Acceptance criteria  $\pm 5\%$

| pH DEP SOP FT 1100 | Name      | Date     | Time CT-ET | Lot #   | Expir. Date | pH Buffer SU | Meter reading SU | mV | Pass / Fail | Lab / Field |
|--------------------|-----------|----------|------------|---------|-------------|--------------|------------------|----|-------------|-------------|
| Calibr.            | PO'Connor | 01-16-18 | 0737       | 2708B60 | 07-2019     | 7.0          | 7.00             | —  | (P/F)       | (L/F)       |
| Calibr.            | ✓         | ✓        | 0739       | 2710816 | 09-2019     | 4.0          | 4.00             | —  | (P/F)       | (L/F)       |
| Calibr.            | ✓         | ✓        | 0741       | 2706D31 | 12-2018     | 10.0         | 9.95             | —  | (P/F)       | (L/F)       |
| ICV                | PO'Connor | 01-16-18 | 1440       | 2708B60 | 07-2019     | 7.0          | 7.00             | —  | (P/F)       | (L/F)       |
| CCV                |           |          |            |         |             |              |                  |    | P/F         | L/F         |
| CCV                |           |          |            |         |             |              |                  |    | P/F         | L/F         |

pH Acceptance criteria  $\pm 0.2$  SU;

mV pH 7 Range  $0 \pm 50$ ;

mV pH 4 Range  $+180 \pm 50$ ;

mV pH 10 Range  $-180 \pm 50$ ;

If mV are recorded: slope from 7 to 10 N/A, slope from 4 to 7 \_\_\_\_\_ (both must be between 165 and 180 mV)

Is meter equipped with depth sensor? Yes / No If yes, list date of last quarterly depth verification \_\_\_\_\_

| Depth Sensor (Daily Calibration & ICV) | Name | Date | Time CT-ET | Calibrated Value (0.00 or Offset), meters | ICV Value meters | Pass / Fail | Lab / Field |
|----------------------------------------|------|------|------------|-------------------------------------------|------------------|-------------|-------------|
| Pressure mode in air                   | N/A  |      |            |                                           |                  | P/F         | L/F         |

Report two decimal places. Round numbers  $\leq 4$  down,  $\geq 5$  up. ICV acceptance criteria  $\pm 5\%$  or  $\pm 0.05$ m, whichever is greater.

COMMENTS:

QA/Scanned BD 1/25/18