

# YSI REPAIR CENTER

## CALIBRATION VALUES

### SONDE CALIBRATION RECORD

Model 6920V2 S/N 08H100353 Date 4-6-11

Customer National Park Service

#### Dissolved Oxygen – Before Lot#/SN: 08H101103

|           | Actual     | Measured    | Barometer    | Delta      | Charge     |
|-----------|------------|-------------|--------------|------------|------------|
| DO % Nit. | <u>0</u>   | <u>1.6</u>  | <u>720.7</u> | <u>1.6</u> | <u>N/A</u> |
| DO % Sat. | <u>100</u> | <u>98.4</u> | <u>720.7</u> | <u>1.6</u> | <u>N/A</u> |

#### Dissolved Oxygen – After Lot#/SN: 08H101103

|           | Actual     | Measured   | Barometer  | Delta      | Charge     |
|-----------|------------|------------|------------|------------|------------|
| DO % Nit. | <u>0</u>   | <u>1.8</u> | <u>760</u> | <u>1.8</u> | <u>N/A</u> |
| DO % Sat. | <u>100</u> | <u>100</u> | <u>760</u> | <u>0</u>   | <u>N/A</u> |

#### Conductivity – Before Lot# 08G100604

|                          | Actual      | Measured     | Delta      |
|--------------------------|-------------|--------------|------------|
| Sp/ Conductance 10,000uS | <u>10mS</u> | <u>10.24</u> | <u>.24</u> |

#### Conductivity – After Lot# 08G100604

|                          | Actual      | Measured    | Delta    |
|--------------------------|-------------|-------------|----------|
| Sp/ Conductance 10,000uS | <u>10mS</u> | <u>10mS</u> | <u>0</u> |

#### Temperature – Before Lot# 08G100604

|         | Actual      | Measured    | Delta     |
|---------|-------------|-------------|-----------|
| Celsius | <u>22.9</u> | <u>22.8</u> | <u>.1</u> |

#### Temperature – After Lot# 08G100604

|         | Actual      | Measured    | Delta    |
|---------|-------------|-------------|----------|
| Celsius | <u>22.2</u> | <u>22.2</u> | <u>0</u> |

#### pH – Before Lot# 08G

|             | Actual    | Measured    | Delta      | mV            |
|-------------|-----------|-------------|------------|---------------|
| 4.0 Buffer  | <u>4</u>  | <u>4.20</u> | <u>.20</u> | <u>133.7</u>  |
| 7.0 Buffer  | <u>7</u>  | <u>7.29</u> | <u>.29</u> | <u>-39.9</u>  |
| 10.0 Buffer | <u>10</u> | <u>10.4</u> | <u>.4</u>  | <u>-215.6</u> |

**pH – After** Lot# 086

|             | Actual    | Measured  | Delta    | mV            |
|-------------|-----------|-----------|----------|---------------|
| 4.0 Buffer  | <u>4</u>  | <u>4</u>  | <u>0</u> | <u>138.1</u>  |
| 7.0 Buffer  | <u>7</u>  | <u>7</u>  | <u>0</u> | <u>-38.9</u>  |
| 10.0 Buffer | <u>10</u> | <u>10</u> | <u>0</u> | <u>-212.6</u> |

**ORP – Before** Lot# \_\_\_\_\_

|        | Actual | Measured | Delta |
|--------|--------|----------|-------|
| Zobell | 235    | _____    | _____ |

**ORP – After** Lot# \_\_\_\_\_

|        | Actual | Measured | Delta |
|--------|--------|----------|-------|
| Zobell | 235    | _____    | _____ |

**Depth - Before**

|  | Actual | Measured | Delta |
|--|--------|----------|-------|
|  | _____  | _____    | _____ |

**Depth - After**

|  | Actual | Measured | Delta |
|--|--------|----------|-------|
|  | _____  | _____    | _____ |

**Turbidity – Before** SN: \_\_\_\_\_

|          | Actual | Measured | Delta |
|----------|--------|----------|-------|
| 0NTU     | _____  | _____    | _____ |
| ____ NTU | _____  | _____    | _____ |

**Turbidity – After** SN: \_\_\_\_\_

|          | Actual | Measured | Delta |
|----------|--------|----------|-------|
| 0NTU     | _____  | _____    | _____ |
| ____ NTU | _____  | _____    | _____ |

**Chlorophyll – Before** SN: \_\_\_\_\_

|           | Actual | Measured | Delta |
|-----------|--------|----------|-------|
| 0 ug/L    | _____  | _____    | _____ |
| ____ ug/L | _____  | _____    | _____ |

**Chlorophyll – After** SN: \_\_\_\_\_

|           | Actual | Measured | Delta |
|-----------|--------|----------|-------|
| 0 ug/L    | _____  | _____    | _____ |
| ____ ug/L | _____  | _____    | _____ |

NOTES:

Updated software to ver 3.10.  
Replaced membrane on ROX DO probe.  
Cert. of Analysis model # 3163 solution Lot # 11B10895  
was used to test cond. probe

This sonde identified by the above serial number has been calibrated and tested according to YSI specs on 4/6/11 by J. McCabe

*Joe McCabe*

# Certificate of Analysis



**YSI Incorporated**

Yellow Springs Instrument Co., Yellow Springs, Ohio 45387 USA

Phone (937) 767-7241 (800) 765-4974 Fax (937) 767-9353

**Product Model Number:**

3163

**Conductivity Calibration  
Solution**

**Lot Number:**

11B101895

**Testing of Production Standard with a Metrology Calibrated Cell**

**Nominal Conductivity  
(microsiemens/cm):**

10K

**Specification Range,  
(microsiemens/cm):**

9,975 - 10,025

**Test Result,  
(microsiemens/cm):**

9985

**Lot Result:**

Accepted

**Inspected by::**

J. Jenkins

**Date Tested:**

01-Mar-11



A handwritten signature in blue ink, appearing to read 'Lisa M. Abel'.

Lisa M. Abel  
Director, Quality and Corporate  
Responsibility



# Certificate of Calibration and Traceability

We certify that this product has been tested and calibrated using standards whose calibrations are traceable to the National Institute of Standards and Technology (NIST) or are derived from values of natural physical constants.

As tested, it met or exceeded its current published specifications.

☐ Product meet specifications as received.

☒ Adjustment required to meet specifications.

Model no. sonde / C/T Probe  
6920U2 / 006560

Serial no. sonde  
08H/00353 / 08G/00604

Calibrated by J. McCabe  
for Keller

Order no. 634185

Received date 2-7-11

Calibration date 4-6-11

Test performed Test/cal

Ambient temperature 23°C

Test equipment used for this calibration:

| ID no.       | Last cal. date | Cal. due date  |
|--------------|----------------|----------------|
| <u>60212</u> | <u>2-15-11</u> | <u>5-15-11</u> |
| _____        | _____          | _____          |
| _____        | _____          | _____          |
| _____        | _____          | _____          |

☒ Additional data attached. Number of pages 1

Report shall not be reproduced except in full, without the written approval of YSI.



# Certificate of Calibration and Traceability

We certify that this product has been tested and calibrated using standards whose calibrations are traceable to the National Institute of Standards and Technology (NIST) or are derived from values of natural physical constants.

As tested, it met or exceeded its current published specifications.

☐ Product meet specifications as received.

☒ Adjustment required to meet specifications.

Model no. sonde PH Probe 6920V2/006561

Serial no. sonde PH probe 08H/00353/08G

Calibrated by J. McGhee

Order no. 634185

Received date 2-7-11

Calibration date 4-6-11

Test performed Test/cal

Ambient temperature 23°C

Test equipment used for this calibration:

| ID no.                  | Last cal. date | Cal. due date |
|-------------------------|----------------|---------------|
| <u>Ph 7:3822-10K2S</u>  | _____          | _____         |
| <u>Ph 4:3821-10K2R</u>  | _____          | _____         |
| <u>Ph 10:3823-10K2T</u> | _____          | _____         |
| _____                   | _____          | _____         |

☒ Additional data attached. Number of pages 0

Report shall not be reproduced except in full, without the written approval of YSI.



# Certificate of Calibration and Traceability

We certify that this product has been tested and calibrated using standards whose calibrations are traceable to the National Institute of Standards and Technology (NIST) or are derived from values of natural physical constants.

As tested, it met or exceeded its current published specifications.

☐ Product meet specifications as received.

☒ Adjustment required to meet specifications.

Model no. Sonde ROX DO 6920R/ROX 6150

Serial no. Sonde ROX DO 08H100353/08H101103

Calibrated by J. McCabe for Metabio

Order no. 634185

Received date 2-7-11

Calibration date 4-6-11

Test performed Test/cal

Ambient temperature 23°C

Test equipment used for this calibration:

ID no.

Last cal. date

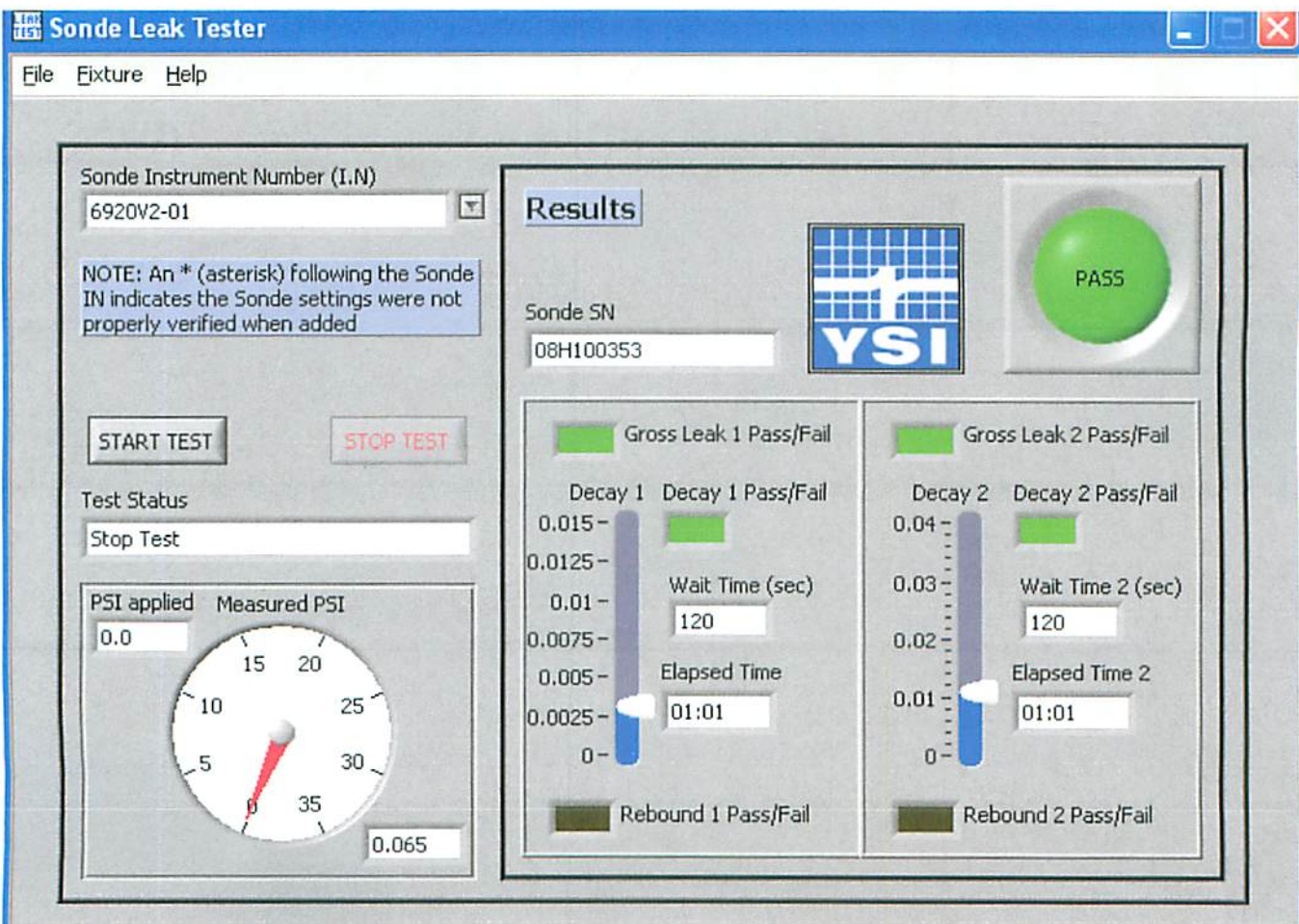
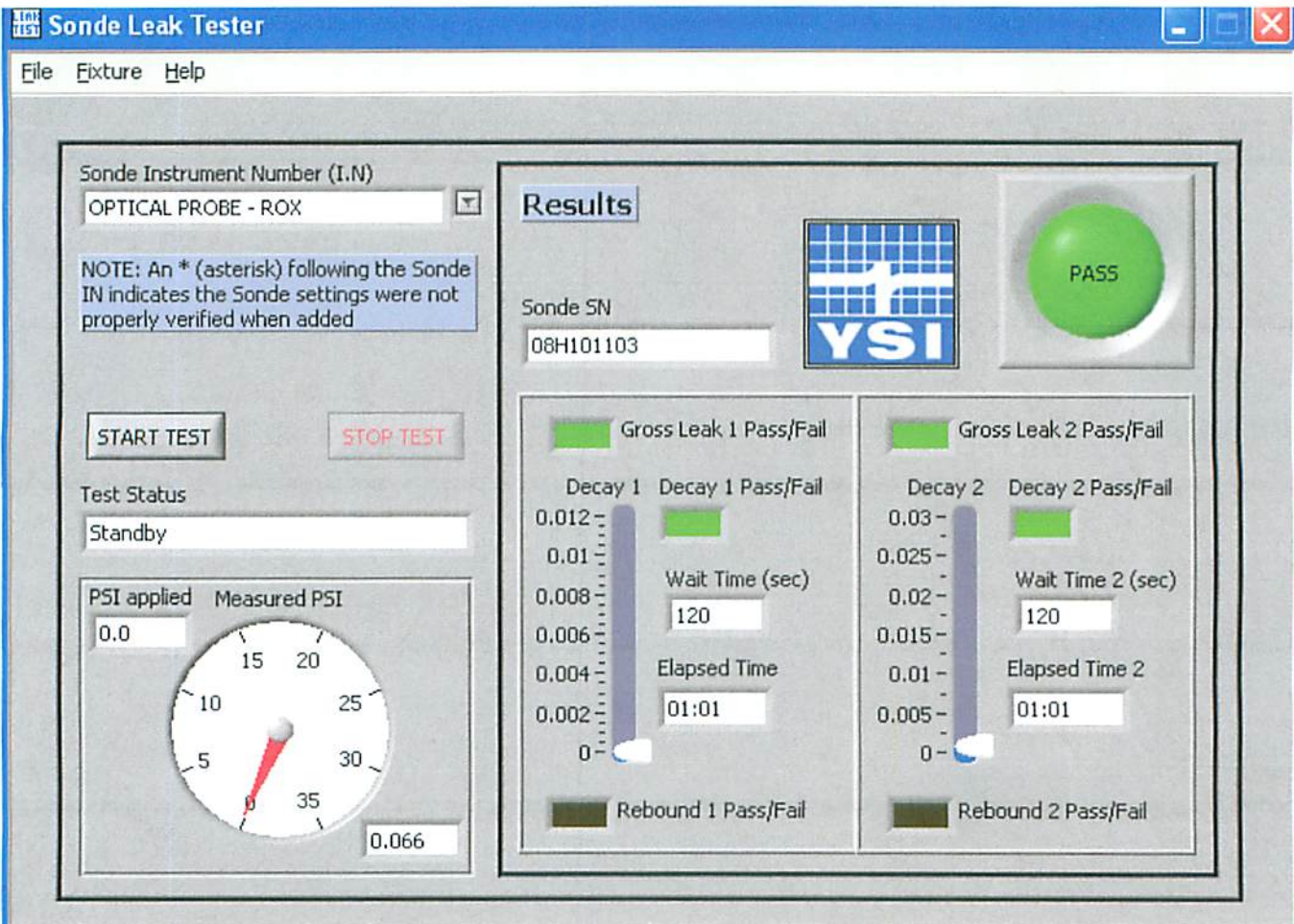
Cal. due date

Tested and calibrated probe using O<sub>2</sub> Nitrogen and 100% saturation water bath.

\_\_\_\_\_  
\_\_\_\_\_

☐ Additional data attached. Number of pages \_\_\_\_\_

Report shall not be reproduced except in full, without the written approval of YSI.



# YSI REPAIR CENTER

## CALIBRATION VALUES

### SONDE CALIBRATION RECORD

Model 6920V2 S/N 08H100354 Date 4-6-11

Customer National Park Service

#### Dissolved Oxygen – Before Lot#/SN: 08H101101

|           | Actual     | Measured    | Barometer    | Delta      | Charge     |
|-----------|------------|-------------|--------------|------------|------------|
| DO % Nit. | <u>0</u>   | <u>2.4</u>  | <u>721.2</u> | <u>2.4</u> | <u>N/A</u> |
| DO % Sat. | <u>100</u> | <u>98.5</u> | <u>721.2</u> | <u>1.5</u> | <u>N/A</u> |

#### Dissolved Oxygen – After Lot#/SN: 08H101101

|           | Actual     | Measured   | Barometer  | Delta      | Charge     |
|-----------|------------|------------|------------|------------|------------|
| DO % Nit. | <u>0</u>   | <u>1.9</u> | <u>760</u> | <u>1.9</u> | <u>N/A</u> |
| DO % Sat. | <u>100</u> | <u>100</u> | <u>760</u> | <u>0</u>   | <u>N/A</u> |

#### Conductivity – Before Lot# 08G100604

|                          | Actual        | Measured       | Delta      |
|--------------------------|---------------|----------------|------------|
| Sp/ Conductance 10,000uS | <u>10.0mS</u> | <u>10.13mS</u> | <u>.13</u> |

#### Conductivity – After Lot# 08G100604

|                          | Actual      | Measured    | Delta    |
|--------------------------|-------------|-------------|----------|
| Sp/ Conductance 10,000uS | <u>10mS</u> | <u>10mS</u> | <u>0</u> |

#### Temperature – Before Lot# 08G100604

|         | Actual      | Measured    | Delta    |
|---------|-------------|-------------|----------|
| Celsius | <u>22.8</u> | <u>22.8</u> | <u>0</u> |

#### Temperature – After Lot# 08G100604

|         | Actual      | Measured    | Delta    |
|---------|-------------|-------------|----------|
| Celsius | <u>22.3</u> | <u>22.3</u> | <u>0</u> |

#### pH – Before Lot# 08G

|             | Actual    | Measured     | Delta      | mV            |
|-------------|-----------|--------------|------------|---------------|
| 4.0 Buffer  | <u>4</u>  | <u>4.37</u>  | <u>.37</u> | <u>140.5</u>  |
| 7.0 Buffer  | <u>7</u>  | <u>7.32</u>  | <u>.32</u> | <u>-37.7</u>  |
| 10.0 Buffer | <u>10</u> | <u>10.22</u> | <u>.22</u> | <u>-211.9</u> |

**pH – After**

|             | Actual    | Measured  | Delta    | mV            |
|-------------|-----------|-----------|----------|---------------|
| 4.0 Buffer  | <u>4</u>  | <u>4</u>  | <u>0</u> | <u>141.1</u>  |
| 7.0 Buffer  | <u>7</u>  | <u>7</u>  | <u>0</u> | <u>-35.1</u>  |
| 10.0 Buffer | <u>10</u> | <u>10</u> | <u>0</u> | <u>-212.0</u> |

**ORP – Before**

|        | Actual | Measured | Delta |
|--------|--------|----------|-------|
| Zobell | 235    | _____    | _____ |

**ORP – After**

|        | Actual | Measured | Delta |
|--------|--------|----------|-------|
| Zobell | 235    | _____    | _____ |

**Depth - Before**

| Actual | Measured | Delta |
|--------|----------|-------|
| _____  | _____    | _____ |

**Depth - After**

| Actual | Measured | Delta |
|--------|----------|-------|
| _____  | _____    | _____ |

**Turbidity – Before**

|           | Actual | Measured | Delta |
|-----------|--------|----------|-------|
| 0NTU      | _____  | _____    | _____ |
| _____ NTU | _____  | _____    | _____ |

**Turbidity – After**

|           | Actual | Measured | Delta |
|-----------|--------|----------|-------|
| 0NTU      | _____  | _____    | _____ |
| _____ NTU | _____  | _____    | _____ |

**Chlorophyll – Before**

|            | Actual | Measured | Delta |
|------------|--------|----------|-------|
| 0 ug/L     | _____  | _____    | _____ |
| _____ ug/L | _____  | _____    | _____ |

**Chlorophyll – After**

|            | Actual | Measured | Delta |
|------------|--------|----------|-------|
| 0 ug/L     | _____  | _____    | _____ |
| _____ ug/L | _____  | _____    | _____ |

NOTES:

Updated software to ver 3.10.  
Replaced ROX DO membrane

This sonde identified by the above serial number has been calibrated and tested according to YSI specs on 4 / 6 / 11 by I. Mc Coge

Joe Ralala



# Certificate of Calibration and Traceability

We certify that this product has been tested and calibrated using standards whose calibrations are traceable to the National Institute of Standards and Technology (NIST) or are derived from values of natural physical constants.

As tested, it met or exceeded its current published specifications.

- ☐ Product meet specifications as received.  
☒ Adjustment required to meet specifications.

Model no. sonde c/t Probe 692002/000560 Serial no. sonde c/t 08H100354/08G100604  
Calibrated by J. McCabe Order no. 634185  
Received date 2-7-11 Calibration date 4-6-11  
Test performed Test/cal Ambient temperature 23°C

Test equipment used for this calibration:

| ID no.       | Last cal. date | Cal. due date  |
|--------------|----------------|----------------|
| <u>602/2</u> | <u>2-15-11</u> | <u>5-15-11</u> |
| _____        | _____          | _____          |
| _____        | _____          | _____          |
| _____        | _____          | _____          |

☒ Additional data attached. Number of pages 1

Report shall not be reproduced except in full, without the written approval of YSI.

# Certificate of Analysis



**YSI Incorporated**

Yellow Springs Instrument Co., Yellow Springs, Ohio 45387 USA

Phone (937) 767-7241 (800) 765-4974 Fax (937) 767-9353

**Product Model Number:**

3163

**Conductivity Calibration  
Solution**

**Lot Number:**

11B101895

**Testing of Production Standard with a Metrology Calibrated Cell**

**Nominal Conductivity  
(microsiemens/cm):**

10K

**Specification Range,  
(microsiemens/cm):**

9,975 - 10,025

**Test Result,  
(microsiemens/cm):**

9985

**Lot Result:**

Accepted

**Inspected by::**

J. Jenkins

**Date Tested:**

01-Mar-11



A handwritten signature in blue ink, appearing to read 'Lisa M. Abel'.

Lisa M. Abel  
Director, Quality and Corporate  
Responsibility



# Certificate of Calibration and Traceability

We certify that this product has been tested and calibrated using standards whose calibrations are traceable to the National Institute of Standards and Technology (NIST) or are derived from values of natural physical constants.

As tested, it met or exceeded its current published specifications.

☐ Product meet specifications as received.

☒ Adjustment required to meet specifications.

Model no. sonde Ph 6920V2/006561

Serial no. sonde Ph 08H100354/08G

Calibrated by J. McGlo  
Joe Keesee

Order no. 634185

Received date 2-7-11

Calibration date 4-6-11

Test performed Test/cal

Ambient temperature 23°C

Test equipment used for this calibration:

| ID no.                 | Last cal. date | Cal. due date |
|------------------------|----------------|---------------|
| <u>Ph7:3822-10K2S</u>  | _____          | _____         |
| <u>Ph4:3821-10K2R</u>  | _____          | _____         |
| <u>Ph10:3823-10K2T</u> | _____          | _____         |
| _____                  | _____          | _____         |

☐ Additional data attached. Number of pages 0

Report shall not be reproduced except in full, without the written approval of YSI.



# Certificate of Calibration and Traceability

We certify that this product has been tested and calibrated using standards whose calibrations are traceable to the National Institute of Standards and Technology (NIST) or are derived from values of natural physical constants.

As tested, it met or exceeded its current published specifications.

☐ Product meet specifications as received.

☒ Adjustment required to meet specifications.

Model no. sonde DO 692012/6150

Serial no. sonde DO 08H100354/08H101101

Calibrated by J. McGee  
Ex. Reliance

Order no. 634185

Received date 2-7-11

Calibration date 4-6-11

Test performed Test/cal

Ambient temperature 23°C

Test equipment used for this calibration:

ID no.

Last cal. date

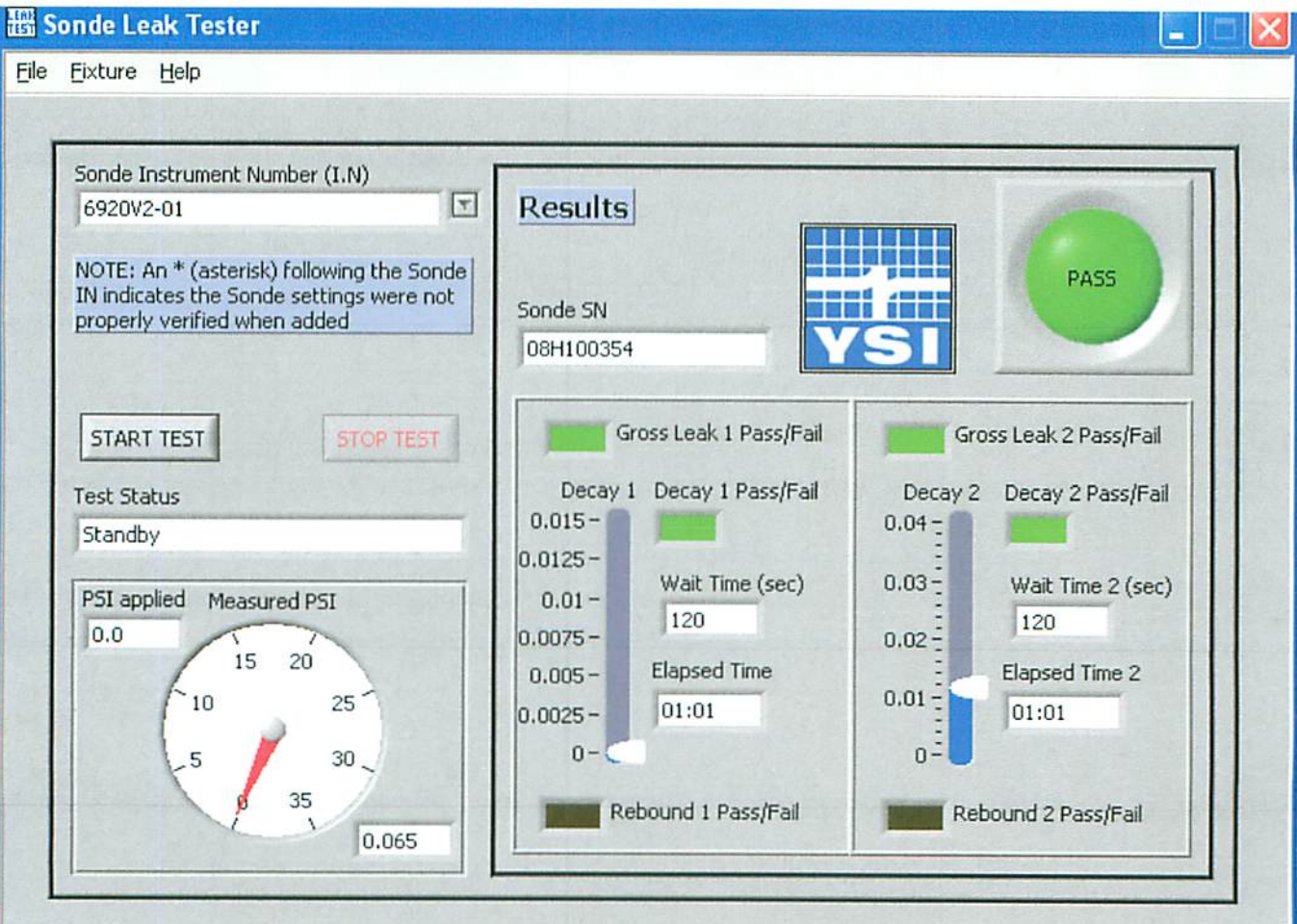
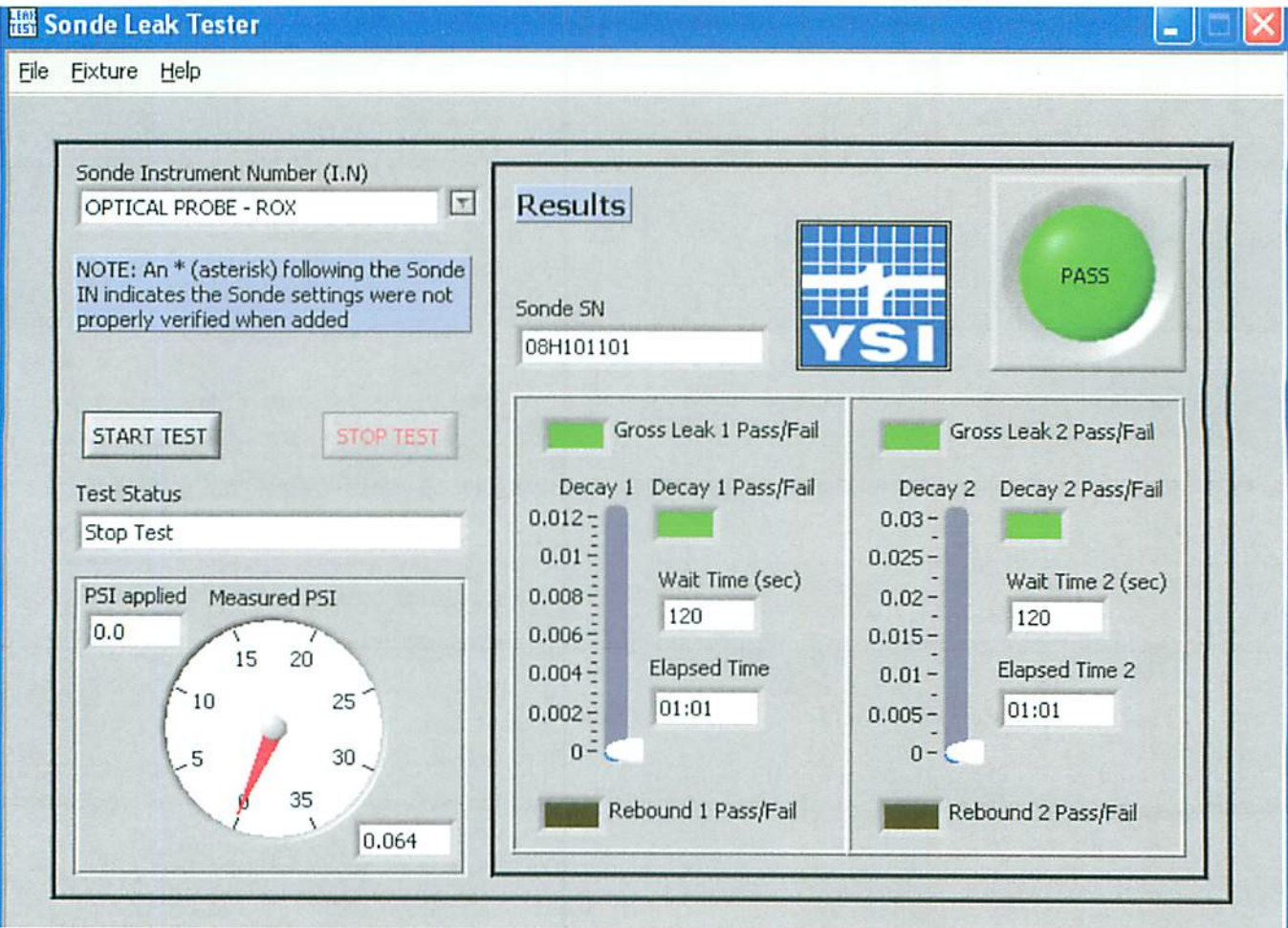
Cal. due date

Tested and calibrated probe using 030 Nitrogen  
and 100% saturation water bath.

\_\_\_\_\_  
\_\_\_\_\_

☒ Additional data attached. Number of pages 0

Report shall not be reproduced except in full, without the written approval of YSI.



# YSI REPAIR CENTER

## CALIBRATION VALUES

### SONDE CALIBRATION RECORD

Model 6920V2 S/N 08H100355 Date 4-6-11

Customer National Park Service

#### Dissolved Oxygen – Before Lot#/SN: 08H101102

|           | Actual     | Measured    | Barometer    | Delta      | Charge     |
|-----------|------------|-------------|--------------|------------|------------|
| DO % Nit. | <u>0</u>   | <u>.7</u>   | <u>720.5</u> | <u>.7</u>  | <u>N/A</u> |
| DO % Sat. | <u>100</u> | <u>97.2</u> | <u>720.5</u> | <u>2.8</u> | <u>N/A</u> |

#### Dissolved Oxygen – After Lot#/SN: 08H101102

|           | Actual     | Measured   | Barometer  | Delta      | Charge     |
|-----------|------------|------------|------------|------------|------------|
| DO % Nit. | <u>0</u>   | <u>1.8</u> | <u>760</u> | <u>1.8</u> | <u>N/A</u> |
| DO % Sat. | <u>100</u> | <u>100</u> | <u>760</u> | <u>0</u>   | <u>N/A</u> |

#### Conductivity – Before Lot# 08G100604

|                          | Actual      | Measured       | Delta      |
|--------------------------|-------------|----------------|------------|
| Sp/ Conductance 10,000uS | <u>10mS</u> | <u>10.61mS</u> | <u>.61</u> |

#### Conductivity – After Lot# 08G100604

|                          | Actual      | Measured    | Delta    |
|--------------------------|-------------|-------------|----------|
| Sp/ Conductance 10,000uS | <u>10mS</u> | <u>10mS</u> | <u>0</u> |

#### Temperature – Before Lot# 08G100604

|         | Actual      | Measured    | Delta    |
|---------|-------------|-------------|----------|
| Celsius | <u>22.9</u> | <u>22.9</u> | <u>0</u> |

#### Temperature – After Lot# 08G100604

|         | Actual      | Measured    | Delta    |
|---------|-------------|-------------|----------|
| Celsius | <u>22.2</u> | <u>22.2</u> | <u>0</u> |

#### pH – Before Lot# 08G

|             | Actual    | Measured    | Delta      | mV            |
|-------------|-----------|-------------|------------|---------------|
| 4.0 Buffer  | <u>4</u>  | <u>4</u>    | <u>0</u>   | <u>159.0</u>  |
| 7.0 Buffer  | <u>7</u>  | <u>7.11</u> | <u>.11</u> | <u>-30.2</u>  |
| 10.0 Buffer | <u>10</u> | <u>10</u>   | <u>0</u>   | <u>-178.2</u> |

**pH – After**Lot# 08G

|             | Actual    | Measured  | Delta    | mV            |
|-------------|-----------|-----------|----------|---------------|
| 4.0 Buffer  | <u>4</u>  | <u>4</u>  | <u>0</u> | <u>154.0</u>  |
| 7.0 Buffer  | <u>7</u>  | <u>7</u>  | <u>0</u> | <u>-30.7</u>  |
| 10.0 Buffer | <u>10</u> | <u>10</u> | <u>0</u> | <u>-201.6</u> |

**ORP – Before**

Lot# \_\_\_\_\_

|        | Actual | Measured | Delta |
|--------|--------|----------|-------|
| Zobell | 235    | _____    | _____ |

**ORP – After**

Lot# \_\_\_\_\_

|        | Actual | Measured | Delta |
|--------|--------|----------|-------|
| Zobell | 235    | _____    | _____ |

**Depth - Before**

Actual Measured Delta

\_\_\_\_\_

**Depth - After**

Actual Measured Delta

\_\_\_\_\_

**Turbidity – Before** SN: 10C10561

|                | Actual     | Measured     | Delta      |
|----------------|------------|--------------|------------|
| 0NTU           | <u>0</u>   | <u>0.9</u>   | <u>.9</u>  |
| <u>126</u> NTU | <u>126</u> | <u>120.5</u> | <u>5.5</u> |

**Turbidity – After** SN: 10C10561

|                | Actual     | Measured   | Delta    |
|----------------|------------|------------|----------|
| 0NTU           | <u>0</u>   | <u>0</u>   | <u>0</u> |
| <u>126</u> NTU | <u>126</u> | <u>126</u> | <u>0</u> |

**Chlorophyll – Before** SN: \_\_\_\_\_

|            | Actual | Measured | Delta |
|------------|--------|----------|-------|
| 0 ug/L     | _____  | _____    | _____ |
| _____ ug/L | _____  | _____    | _____ |

**Chlorophyll – After** SN: \_\_\_\_\_

|            | Actual | Measured | Delta |
|------------|--------|----------|-------|
| 0 ug/L     | _____  | _____    | _____ |
| _____ ug/L | _____  | _____    | _____ |

NOTES:

Updated software to ver 3.10.  
Replaced membrane on ROX DO probe.  
Cert. of Analysis model #3163 solution Lot #11B101875  
was used to test cond. probe.

This sonde identified by the above serial number has been calibrated and tested according to YSI specs on 4/6/11 by J. McCabe

Joe Keldner



# Certificate of Calibration and Traceability

We certify that this product has been tested and calibrated using standards whose calibrations are traceable to the National Institute of Standards and Technology (NIST) or are derived from values of natural physical constants.

As tested, it met or exceeded its current published specifications.

☐ Product meet specifications as received.

☒ Adjustment required to meet specifications.

Model no. Sonde c/T Probe  
6920 U2 / 006560

Serial no. Sonde c/T Probe  
08H100355 / 08G100604

Calibrated by J. McGee  
Joe McGee

Order no. 634185

Received date 2-7-11

Calibration date 4-6-11

Test performed Test/Cal

Ambient temperature 23°C

Test equipment used for this calibration:

| ID no.            | Last cal. date    | Cal. due date     |
|-------------------|-------------------|-------------------|
| <u>6212</u>       | <u>2-15-11</u>    | <u>5-15-11</u>    |
| <u>          </u> | <u>          </u> | <u>          </u> |
| <u>          </u> | <u>          </u> | <u>          </u> |
| <u>          </u> | <u>          </u> | <u>          </u> |

☒ Additional data attached. Number of pages 1

Report shall not be reproduced except in full, without the written approval of YSI.



# Certificate of Calibration and Traceability

We certify that this product has been tested and calibrated using standards whose calibrations are traceable to the National Institute of Standards and Technology (NIST) or are derived from values of natural physical constants.

As tested, it met or exceeded its current published specifications.

- ☐ Product meet specifications as received.  
☒ Adjustment required to meet specifications.

Model no. Sonde Ph 6920U2/006561

Serial no. Sonde Ph 08H/00355/08G

Calibrated by J. McGlo  
Joe Nelson

Order no. 634185

Received date 2-7-11

Calibration date 4-6-11

Test performed Test/cal

Ambient temperature 23°C

Test equipment used for this calibration:

| ID no.                 | Last cal. date | Cal. due date |
|------------------------|----------------|---------------|
| <u>Ph7:3822-10K2S</u>  | _____          | _____         |
| <u>Ph4:3821-10K2R</u>  | _____          | _____         |
| <u>Ph10:3823-10K2T</u> | _____          | _____         |
| _____                  | _____          | _____         |

☐ Additional data attached. Number of pages 0

Report shall not be reproduced except in full, without the written approval of YSI.



# Certificate of Calibration and Traceability

We certify that this product has been tested and calibrated using standards whose calibrations are traceable to the National Institute of Standards and Technology (NIST) or are derived from values of natural physical constants.

As tested, it met or exceeded its current published specifications.

- ☐ Product meet specifications as received.  
☒ Adjustment required to meet specifications.

Model no. Sonde ROX DO 6920V2/6150 Serial no. Sonde ROX DO 08H100355/08H101102  
Calibrated by J. McCabe Order no. 634185  
Received date 2-7-11 Calibration date 4-6-11  
Test performed Test/cal Ambient temperature 23°C

Test equipment used for this calibration:

ID no. Last cal. date Cal. due date

Tested and calibrated probe using O<sub>2</sub> Nitrogen  
and 100% saturation water bath.

☐ Additional data attached. Number of pages 0

Report shall not be reproduced except in full, without the written approval of YSI.



# Certificate of Calibration and Traceability

We certify that this product has been tested and calibrated using standards whose calibrations are traceable to the National Institute of Standards and Technology (NIST) or are derived from values of natural physical constants.

As tested, it met or exceeded its current published specifications.

☐ Product meet specifications as received.

☒ Adjustment required to meet specifications.

Model no. Sonde Turb. 692012/6136 Serial no. Sonde Turb. 08H100355/10C10561  
Calibrated by J. McRob Order no. 634185  
Joe Kelala  
Received date 2-7-11 Calibration date 4-6-11  
Test performed Test/cal Ambient temperature 23°C

Test equipment used for this calibration:

ID no. Last cal. date Cal. due date

6073 G Turb standard used to calibrate  
probe. Lot Analysis # 5040780 included.

\_\_\_\_\_  
\_\_\_\_\_

☒ Additional data attached. Number of pages 3

Report shall not be reproduced except in full, without the written approval of YSI.

G F S CHEMICALS, INC.  
Columbus, Ohio 43222

LOT ANALYSIS

ITEM: 8172 AMCO CLEAR TURBIDITY STANDARD, 100 NTU for YSI

LOT#: C040780

| TEST                                                  | PASS/<br>FAIL | NUMERICAL<br>RESULT |
|-------------------------------------------------------|---------------|---------------------|
| 1. Turbidity (on YSI 6026) 100 NTU                    | PASS          | 100 NTU             |
| 2. NIST Traceable (particle size)                     | PASS          | SRM 1963            |
| 3. NIST Traceable (particle concentrat'n/distribut'n) | PASS          | SRM 2031            |
| 4. O.D. at 455 nm (10 mm pathlength) 0.127 - 0.131    | PASS          | 0.128               |
| 5. Traceable to fresh formazin dilution value         | PASS          | Conforms            |
| 6. Expiration date (1 year from ship date)            | PASS          | See label           |

TRACEABLE TO N.I.S.T. (Y/N)? Y

Comment:

Reported by: Renita Smith

C/A Print Date: 1/13/11

QC Supervisor: Joshua Crow

Quality Assured to Retest Point: 12 months  
from shipment

Not for direct use in food, cosmetics, finished pharmaceuticals or drug products. Supplier is not responsible for compliance with FDA Current Good Manufacturing Practice (cGMP) requirements, including without limitation those for finished drug products in 21 C.F.R Parts 210 and 211. Consult warranty limitations at [www.gfschemicals.com/statics/documents/aboutus/termsandconditions.html](http://www.gfschemicals.com/statics/documents/aboutus/termsandconditions.html) For resale by GFS authorized distributors only.



CHEMICALS

4000 NTU/FNU  
Formazin Concentrate  
Formazin

ISO 9001:2000 Certified

## CERTIFICATE OF TRACEABILITY AMCO CLEAR® STANDARDS

These certified reference standards are intended for use as stable primary calibration standards for turbidity measuring instrumentation. The narrow particle size distribution, average particle size, and spherical shape make these particle suspensions ideal for use in the calibration of instruments based on light scatter through a liquid medium. The certified concentrations of AMCO Clear standards are based upon the calibration of specific turbidity instruments (many of which are quite unique in their light source and detector systems) with freshly diluted formazin concentrate (4000 NTU/FNU). Since formazin concentrate will vary from lot to lot and manufacturer to manufacturer by as much as 5% or more, AMCO Clear standards are formulated to match a large batch of formazin that contained many individual batches to help eliminate this inherent deviation.

Each new batch of stable standard suspension is then formulated to match the previous batches, so the variability of the primary standard is greatly reduced. Cross-referencing to new batches of 4000 NTU/FNU formazin concentrate dilutions is completed quarterly to maintain traceability to formazin, although AMCO Clear standards are guaranteed to be within 1% of the true value lot to lot and maintain the certified value for 1 year.

**Traceability to Formazin:** These calibration standards were manufactured under an ISO 9001-2008 certified quality system. A formazin calibrated turbidity meter was used in the formulation and testing of the standards for each specific instrument design. The current formazin lot number R998970 is a combination of 5 formazin lots and well matches the bulk standard mentioned above. The formazin was diluted with filtered (0.03µm) 18 megohm de-ionized water to the instrument's calibration values utilizing calibrated Class A volumetric glassware.

**NIST Traceability:** Although there is no recognized NIST standard for turbidity, AMCO Clear® spherical styrene divinylbenzene (SDVB) co-polymer calibration standards are recognized for maintaining a consistent average particle size (0.2 µm) and size distribution (0.1-0.3µm) in aqueous suspension traceable to NIST SRM 1963 and SRM 1691. Each standard is also evaluated for lot to lot consistency and reproducibility utilizing a spectrophotometer certified twice yearly to NIST SRM 2031 and SRM 2034 and certified Hg lamp.

Josh Crow: Manager, AMCO Clear Water Analysis Div, GFS Chemicals Inc.

AMCO Clear Div Manager

Date: 1/21/10

**GFS CHEMICALS, INC.**

P.O. Box 245 Powell, OH 43065  
740-881-5501(Tel.) 740-881-5989(Fax)  
1-800-424-9300(Chemtrec 24hr. Info.)

**MATERIAL SAFETY DATA SHEET**

AmcoClear

**AMCO CLEAR® TURBIDITY STANDARD**

**CHEMICAL NAME & SYNONYMS**

AMCO CLEAR® Turbidity Standard

**DOT CLASS**

NR

**TSCA listed** - Yes

**SARA TITLE 313**

No

**FORMULA**

Styrene Divinyl Benzene

Copolymer Beads <1%

H<sub>2</sub>O >99%

**REPORTABLE QUANTITY**

N/A

N/A

**F.W.**

N/A

18.02

**CAS#**

9003-70-7

7732-18-5

**PHYSICAL DATA**

Boiling point 100°C; Density 1.0; melting point 0°C; pH 6.7

**APPEARANCE & ODOR**

White powder suspended in clear, colorless liquid. Depending on concentration, solution may be clear, hazy or opaque. Odorless.

**REACTIVITY & CONDITIONS TO AVOID**

Stable. Incompatible with organic matter (no hazardous reaction). Hazardous polymerization will not occur. Keep from freezing (once frozen, polymer will not remain completely suspended).

**FIRE HAZARDS**

None. NFPA # 0-0-0.

**EXTINGUISHER**

Fight surrounding fire.

**FLASHPOINT**

N/A

**LEL**

N/A

**UEL**

N/A

**HEALTH HAZARDS**

No health hazards by normal means of exposure. LD<sub>50</sub> (oral-rabbit) 368 g (water)/kg. OSHA PEL/ACGIH TLV not established. No evidence of carcinogenicity.

**SPECIAL PRECAUTIONS**

Always use good laboratory practices. Keep from freezing, avoid contaminating solution.

**FIRST AID**

Flush eyes with water. Seek medical attention if irritation develops. Wash contacted skin with water. Ingestion is not hazardous. Inhalation is not an expected route of exposure.

**SPILLS & LEAKS**

Wash up with water. Flush to drain with plenty of water or general trash.

**CATALOG #**

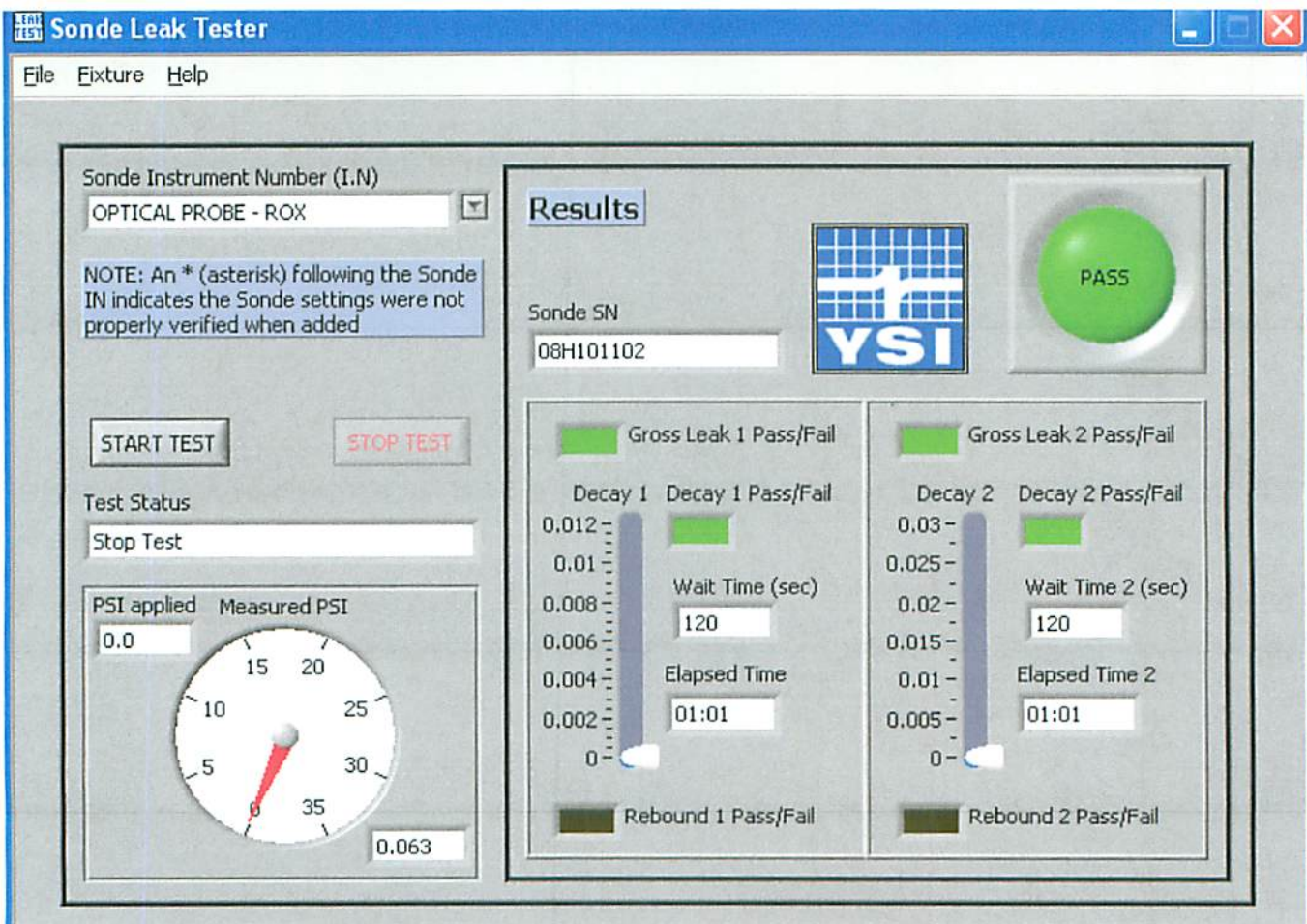
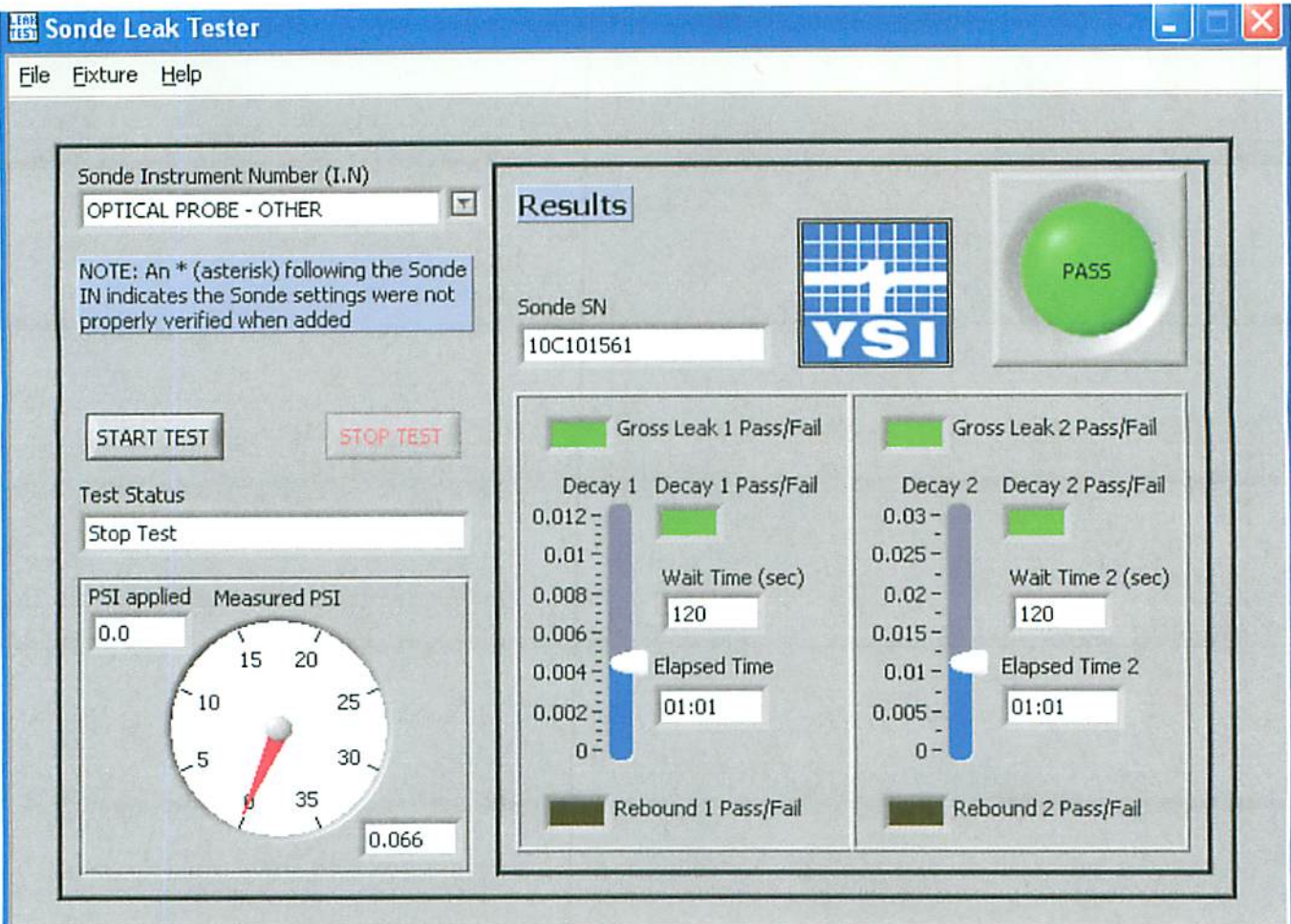
Amco Clear

**PREPARED BY**

MDM

**DATE**

April 22, 2009



# Sonde Leak Tester

File Fixture Help

Sonde Instrument Number (I.N)

6920V2-01

NOTE: An \* (asterisk) following the Sonde IN indicates the Sonde settings were not properly verified when added

START TEST

STOP TEST

Test Status

Stop Test

PSI applied Measured PSI

0.0



0.070

## Results

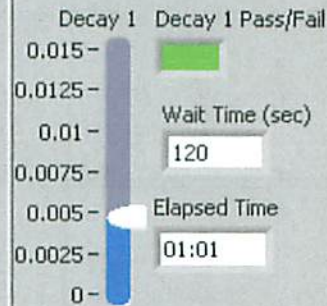
Sonde SN

08H100355



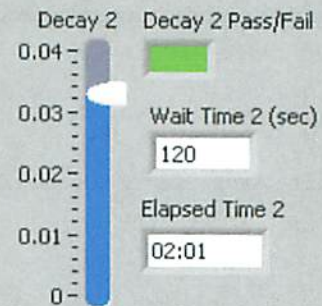
PASS

Gross Leak 1 Pass/Fail



Rebound 1 Pass/Fail

Gross Leak 2 Pass/Fail



Rebound 2 Pass/Fail