

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>1500</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>-20.6</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 NO probe.
Cert. of Analysis model # 3163 solution Lot # 11B101895
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. 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>6212</u>	<u>2-15-11</u>	<u>5-15-11</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

Additional data attached. Number of pages 1

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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. McCabe Order no. 634185
Joe Nelson

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

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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
Joe Adams
 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
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Tested and calibrated probe using 0% Nitrogen and 100% saturation water both.

Additional data attached. Number of pages 0

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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. 08H100355/10C1D561
 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
<u>6073 G Turb standard used to calibrate</u>		
<u>probe. Lot Analysis # C040780 included.</u>		
_____	_____	_____
_____	_____	_____

Additional data attached. Number of pages 3

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G F S CHEMICALS, INC.
Columbus, Ohio 43222

LOT ANALYSIS

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

LOT#: C040780

TEST	PASS/ FAIL	NUMERICAL 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 For resale by GFS authorized distributors only.



ISO 9001:2000 Certified

CHEMICALS

1111 Powell Road
Powell, OH 43065
(614) 865-1000

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%
H₂O >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

Nonc. 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. LD₅₀ (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 #

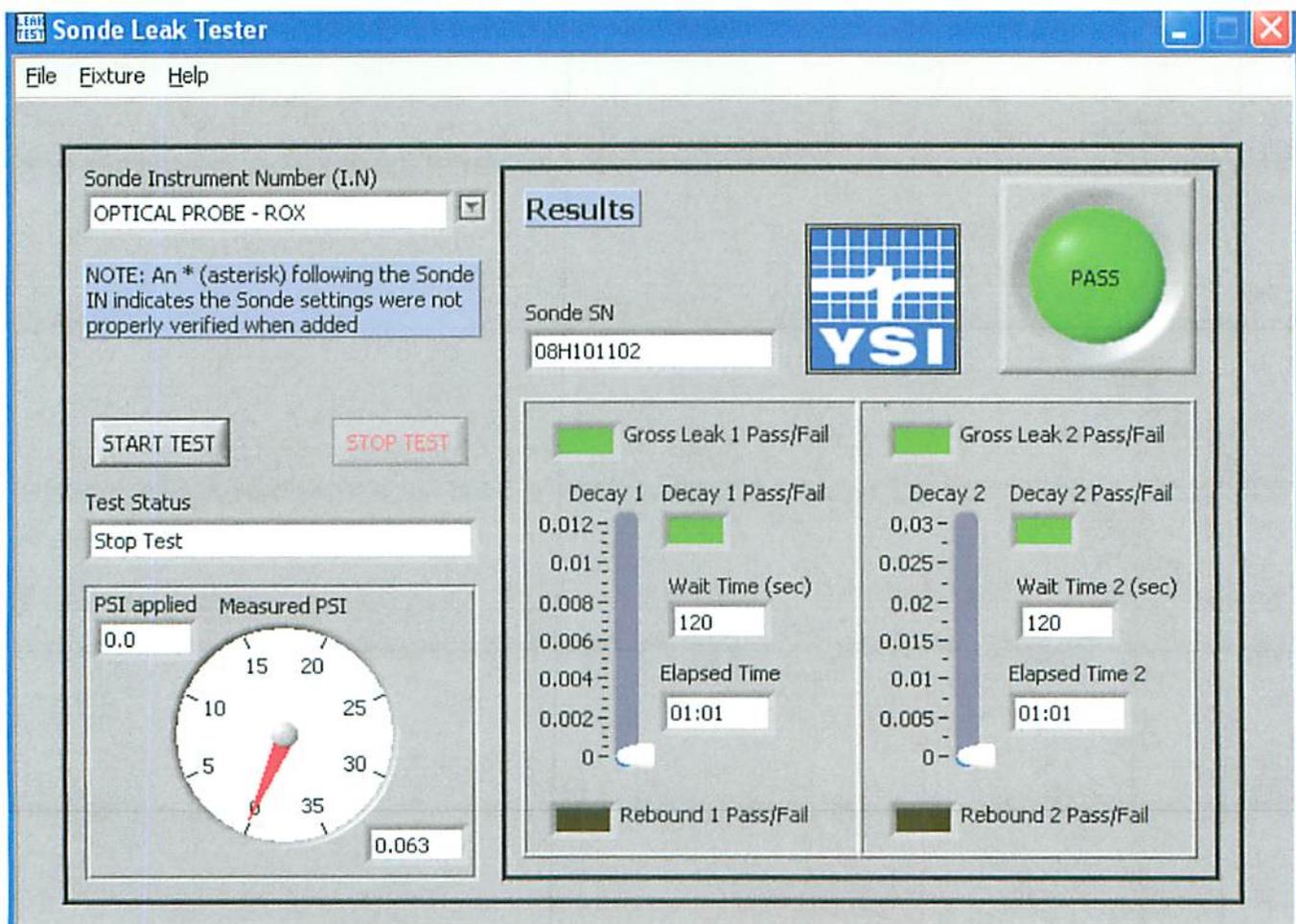
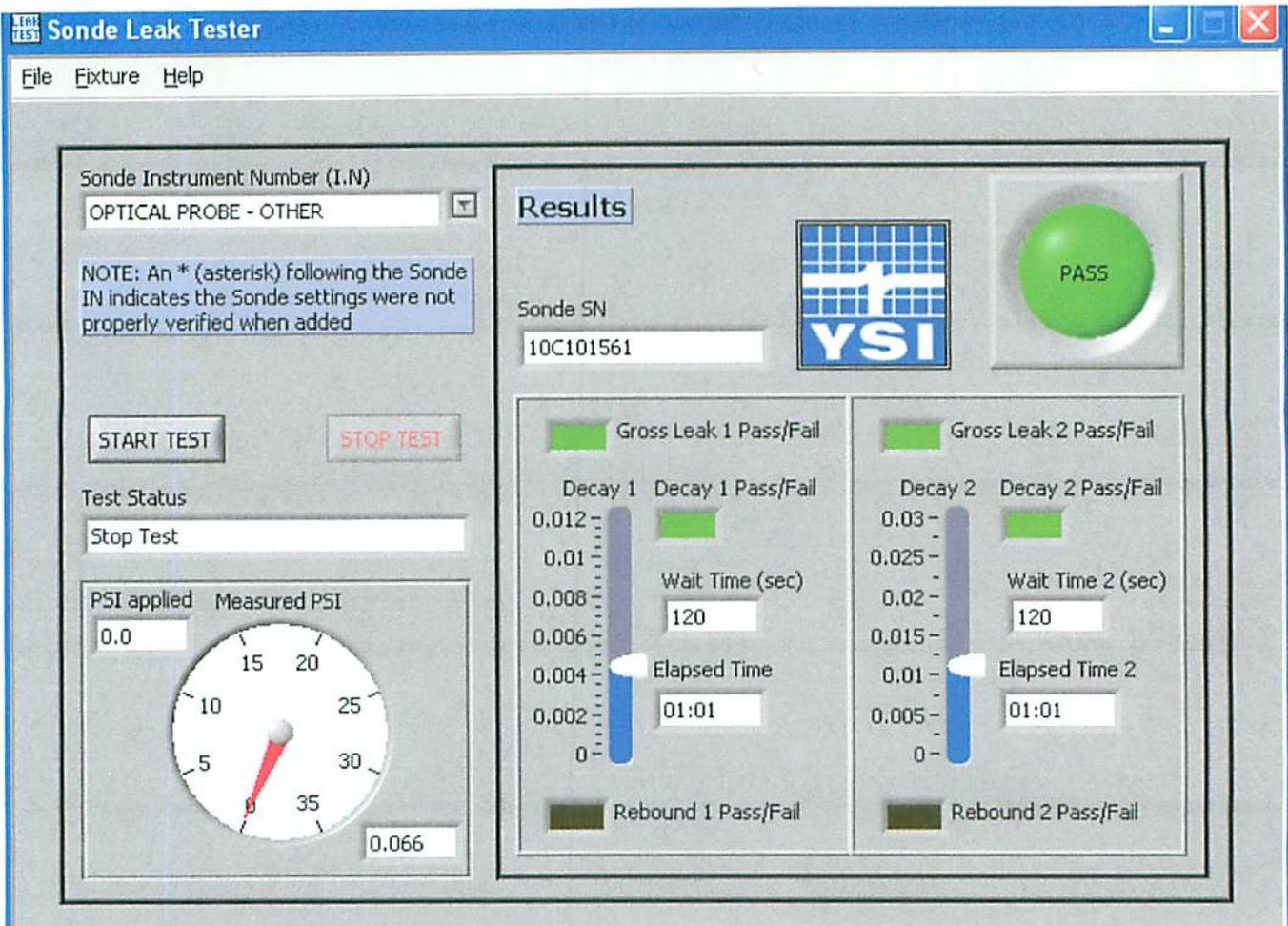
Amco Clear

PREPARED BY

MDM

DATE

April 22, 2009



Sonde 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

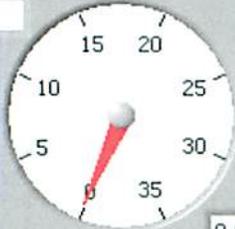
STOP TEST

Test Status

Stop Test

PSI applied Measured PSI

0.0



0.070

Results

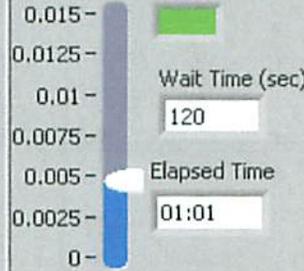


Sonde SN

08H100355

Gross Leak 1 Pass/Fail

Decay 1 Decay 1 Pass/Fail



Wait Time (sec)

120

Elapsed Time

01:01

Rebound 1 Pass/Fail

Gross Leak 2 Pass/Fail

Decay 2 Decay 2 Pass/Fail



Wait Time 2 (sec)

120

Elapsed Time 2

02:01

Rebound 2 Pass/Fail