

From:  
Trace Analytics, LLC  
15768 Hamilton Pool Road  
Austin, Texas 78738  
  
800-247-1024 • 512-263-0000  
Fax 512-263-0002  
E-mail service@AirCheckLab.com

To:  
Mr. John Gilmour  
Fort Erie Underwater Recovery Unit  
35 Jarvis St.  
Fort Erie, ON L2A2S3

# TRACE ANALYTICS, LLC



# ANALYSIS CERTIFICATE

Report 11-23869, Sampled on  
**9/29/2011**

Next Sample Due Annually, Approximately  
**9/29/2012**

## FORT ERIE UNDERWATER RECOVERY UNIT

IS IN COMPLIANCE WITH THE AIR/GAS QUALITY PORTION OF THE SPECIFICATION:

### CSA STANDARD Z180.1-2000(L)

AS ANALYZED AND REPORTED ON THIS CERTIFICATE

FOR THE SAMPLE DESCRIBED UNDER SECTION "SAMPLE & REPORT INFORMATION"



American Assn for Laboratory Accreditation  
1991: Certificate No. 322.01 Chemical Field of Testing

*Richard A. Smith*  
Richard A. Smith, C.I.H., Laboratory Director

Analytical Test Methods	Media Sampled	Estimate of Uncertainty
Gases & Vapors CAT-A-01 Gas Chromatography/Mass Spectrometry	Source Bottle: 752674	The average analytical uncertainty (k=2) is 98.8±2.4% (relative) at the specification limit for the ten compounds normally reported. For uncertainty information for a specific compound, contact Trace.
Oil & Particulate CAT-A-03 Analytical Gravimetry	Ambient Bottle: N/A	
Particle Size CAT-A-04 Optical Microscopy	Source Filter: 140615	

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### Sample & Report Information

### Results of Test: PASS

Sampled For	Fort Erie Underwater Recovery Unit	Analytes	Source Results	Ambient Results	Specification <sup>1</sup> Allowable Limits
Sampled By	John C. Gilmour	Oxygen, Volume %	20.9	N/A	20-22
Sampled On	9/29/2011	Nitrogen, Volume %	78.2	N/A	N/A
Received On	10/7/2011	Argon, Volume %	0.9	N/A	N/A
Analyzed On	10/7/2011	Nitrogen Plus Argon, Volume %	79.1	N/A	78-80
Sampled From:	Stored Air	Carbon Monoxide (CO), ppmv	<0.3	N/A	5
Sample Point:	Routine	Carbon Dioxide (CO <sub>2</sub> ), ppmv	360	N/A	500
Make:	Not Provided	Water Content (H <sub>2</sub> O), ppmv/Dewpoint, °F	<3.4 / <-91	N/A	N/A / N/A (W)
		Atmospheric Dew Point, °F (DT)	-74	N/A	N/A
		TVHC (including CH <sub>4</sub> ), ppmv	2.7	N/A	N/A
		Methane (CH <sub>4</sub> ), ppmv	2.0	N/A	10
		TVHC (excluding CH <sub>4</sub> ), ppmv	0.7	N/A	5
Hours:	2930	Oil (condensed) & Particulate, mg/m <sup>3</sup>	<0.04	N/A	1
Customer Comments		Odor (provided by customer)	None/Slight	N/A	None/Slight
		Halogenated Hydrocarbons, ppmv	<0.1	N/A	5
		Pressure Dewpoint, °C	<-68	N/A	Low T - 5°C
		Other	N/A	N/A	N/A

**PASS**

(W) Dew point is expressed in °F at one atmosphere pressure absolute.

(L) CSA Z180.1-00, 15.3.9: "Compressed breathing air at pressures less than 15.3 MPa (2216 psig) shall have a pressure dew point at least 5°C (9°F) below the lowest temperature to which any part of the compressed breathing air pipeline or the accepted respirator may be exposed at any season of the year. . . ." If not provided on the Data Sheet, pressure dew point limit is calculated for a lowest expected temperature to which equipment may be exposed of 0°C at 100 psig.

(DT) Trace Analytics is not accredited for this analysis. Dew point is calculated from the detector tube reading. A difference between the laboratory and detector tube values may be caused by vaporized water condensation that the detector tube picks up, but that is flushed through the bottle holder by the end of the sampling period.

Report Number 11-23869  
Customer ID 4704  
Date Reported 10/10/2011  
Frequency Annual  
Next Sample Due Approx. **9/29/2012**



# Trace Analytics, LLC

15768 Hamilton Pool Road  
Austin, Texas 78738  
800-AIR-1024 or 512-263-0000 • Fax: 512-263-0002  
E-mail: ServiceTeam@AirCheckLab.com

SOME INFORMATION BELOW IS PREPRINTED FROM YOUR PREVIOUS AIR TEST.

IF ANY OF THE INFORMATION HAS CHANGED OR IS INCORRECT, PLEASE MARK ONE LINE THROUGH IT AND CAREFULLY PRINT THE CORRECT INFORMATION.

### 1 Contact Information

Customer ID  Customer Name  Country

Contact  E-mail  Phone  Fax

Alternate  E-mail  Phone  Fax

**Note: Fill in this section only if you are taking a sample for a third party.**

Check box if you'd like report sent to the person below.

Contact  E-mail  Phone  Fax

### 2 Rush Analysis Request

**IMPORTANT: PLEASE CALL 1-800-247-1024 (ext. 2) or 1-512-263-0000 (ext. 2) TO SCHEDULE**

RUSH  By marking this box, I understand that I am authorizing Same Day Analysis & Reporting for an additional \$100 per sample. Initial here:

### 3 Purchase Order Information (if applicable)

PO Number:  PO Valid Thru:

### 4 System Information

System ID:  Sampled For:  Testing Schedule

Air Spec:  for different, cross out and write in

Make  Model  Serial No

Cylinder  Other ID

Pressure  High Pressure (1,000-6,000 psi)  Low Pressure (less than 1,000 psi)

Air used for  SCBA  SCUBA  Airline Respirator  Other

Purification  Molecular Sieve/Desiccant  Refrigerated Dryer  No Dryer  No Purification  Unknown

Sampled From  Compressor  Stored Air  Comp. & Storage  Source  Outlet  Breather Box  Other  Not Provided

Comp. Hours  Lowest Temperature  °F  °C (Lowest temperature low pressure breathing air may be exposed to during the year)

NFPA 1989 Only  Before Filter Change  After Filter Change  Routine

Next Due Approx: 9/29/2012

### 5 Customer Comments (use back if needed)

### 6 Sampled By and Sample Date

Submittal of this air sample authorizes Trace Analytics, LLC to provide services. If a purchase order number is required by your company, please attach it to this data sheet or write it in the spaces provided in section "3". I attest that all information provided on this datasheet is truthful and accurate to the best of my knowledge.

\_\_\_\_\_  
SIGNATURE PRINT Name (Person taking the test sample) MONTH DAY YEAR

### 7 Sample Information

Is this sample a Retest taken within 30 days of a failed test? RETEST?  Yes  No

**A Source Bottle, Filter, and Data Sheet MUST BE RETURNED for a complete analysis.**

PLEASE NOTE:

#### Sample Shelf Life

Once a sample is taken, it must be received by our laboratory within 60 days. **NO EXCEPTIONS.**

#### Shelf Life

Sampling media must be used or returned for free replacement within 2 years of shipment date. See expiration date on return box.

Filter Number        
*red or green label*

Flowrate   
*liters per minute*

Source Bottle Number        
*blue label*

Sample Time   
*minimum of 10 min.*

Ambient Bottle Number        
*white label*

**Detector Tube** (OMIT data if sampling media does not include Detector Tube)

Tube Reading (0 - 200)  Total Minutes Sampled



**Odor is REQUIRED.** It's determined by sniffing the air from the side port of the Bottle Holder. **MARK ONLY ONE.**

For Most Common Specs  None/Slight  Pronounced For NFPA 1989 Specs  Pronounced  Yes  No US Coast Guard & US Military Specs  Objectionable  Yes  No For Chart Specs Only  Discernible  Yes  No

### For TRACE Use Only

DT Reading: Red / Gray  Receiving I.D.  Receiver's Initials

## Sampling Notes for Water Vapor Detector Tube

1: Break BOTH tips of detector tube before inserting. Arrow on tube points away from Fitting. 50 LPM for 10 minutes.

2: The DT is filled with yellow filler material that reacts to the presence of water by changing color from yellow to a grayish/reddish brown. At any time during the 10 minute test if color change reaches 200 mark, remove tube and note elapsed time on data sheet.

## Reading the Detector Tube for High Pressure Air Used for SCBA

The purpose of providing a detector tube for onsite testing is to allow you the opportunity to correct a problem without having to wait for the complete report. To determine if your sample passes; identify the farthest color change on the tube between 0 and 200; locate that number on chart below; identify the flowrate you took your sample on the left hand side of chart between 40 and 60; where the two readings intersect is the approximate result in °F. For example: If tube showed color change to 50, and flowrate was 50 LPM, the result would be -49°F. The number between 0 and 200 should be written on the data sheet not the dew point from the chart below.



Flowrate Reading	Det. Tube Reading, mg/m <sup>3</sup>	2.5	5	10	20	30	40	50	60	70	80	90	100	125	175	200
	60		-93	-84	-75	-66	-60	-56	-52	-49	-47	-45	-43	-42	-38	-33
55		-92	-83	-74	-65	-58	-54	-51	-48	-45	-44	-42	-40	-36	-31	-29
50		-90	-81	-72	-62	-56	-52	-49	-46	-44	-42	-40	-38	-34	-29	-27
45		-88	-79	-70	-60	-54	-50	-47	-44	-41	-39	-38	-36	-32	-26	-24
40		-86	-77	-68	-58	-52	-47	-44	-41	-39	-36	-35	-33	-29	-23	-21
		PASS					FAIL									

Above area marked "Pass" is for high pressure air used for SCBA; with a -65°F limit per CGA Grade D/NFPA 1989. See AirCheck Notebook Instructions for complete range of flowrates and further details.

If your detector tube reading indicates that you have a problem (anything outside of the PASS area in chart above); go through the following checklist; take corrective action; then retake your sample to see if the problem has been corrected. The 2<sup>nd</sup> test is free. Submit both samples for analysis to Trace's laboratory.

## Troubleshooting Checklist

Purification filters/ Depressurized filters	High ambient air temperatures (above 70°F) affect the operating life of the cartridge. Chemicals used in purification filters begin to degrade as soon as they are installed. Is it time to change the filters?
Manual/auto drain or priority valve	If not working properly can be source for excess water and reduce filter life.
Remote fill or hose reel	Long lengths (>25 ft) of hose are notorious for accumulating and retaining water. A short 1-2 minute purge WILL NOT be sufficient. It is best to take sample from a short fill hose (5-10 ft) or directly from containment fill station. - View our resource videos at <a href="http://www.AirCheckLab.com">www.AirCheckLab.com</a>
Recent hydrostat	Bottles must be properly dried after hydrostat and should be immediately pressurized with dry air.
Valves left open	Ambient air can easily have 10,000 - 50,000 ppm of water. Purge sufficiently to remove water accumulated from ambient air.
Sample taken from storage	Take sample from compressor to identify if compressor is producing dry air. If yes, storage banks may contain excess water. Drain and refill with dry air. This may require 2-3 fills to drive off water from inside cylinders. You can request extra detector tubes (\$10 ea) to do several checks for water without doing a complete air sample.
Detector tube cracked	Only the tips of the tube should be broken. If a crack runs down the main body of the tube, results will not be dependable.
Tube fitting wet	If multiple samples are taken consecutively, excess water may pool inside the fitting. Dry fitting between uses.
Other	Keep in mind that 1 milliliter (which is about 20 drops from an eyedropper) in a 1.7 cubic ft cylinder at 4500 psig would be 90 ppm of water vapor. It doesn't take much to fail.