Aircheck Report and Certificate

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# TRACE Analytics LLC Analysis Certificate

Report 17-05411, Sampled on
**2/15/2017**

Next Sample Due Quarterly, Approximately
**5/15/2017**

## Adventures Under The Sea

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

## CGA G-7.1-2011 Grade E (2)

AS ANALYZED AND REPORTED ON THIS CERTIFICATE
FOR THE SAMPLE DESCRIBED UNDER SECTION "SAMPLE & REPORT INFORMATION"

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

Richard A. Smith, Laboratory Director

| Analytical Test Methods | | | Media Sampled | | Estimate of Uncertainty |
|---|---|---|---|---|---|
| Gases & Vapors | CAT-A-01 | Gas Chromatography/Mass Spectrometry | Source Bottle: | 784812 | 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 Analytics. |
| Oil & Particulate | CAT-A-03 | Analytical Gravimetry | Ambient Bottle: | N/A | |
| Particle Size | CAT-A-04 | Optical Microscopy | Source Filter: | 174734 | |
| Pressure Dew Point | CAT-A-07 | Gas Detector Tube | Detector Tube: | Draeger 5-a/P | |

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| Sample & Report Information | |
|---|---|
| Sampled For | Adventures Under The Sea |
| Sampled By | Ben Harris |
| Sampled On | 2/15/2017 |
| Received On | 2/21/2017 |
| Analyzed On | 2/21/2017 |
| Sampled From | Stored Air |
| Make | Worthington |
| Model | 767-430 |
| | |
| | |
| | |
| Hours | 3400 |
| Sample Phase | Routine |
| Customer Comments | |
| Report Number | 17-05411 |
| Customer ID | 744 |
| Date Reported | 2/22/2017 |
| Frequency | Quarterly |
| Next Sample Due Approx. | **5/15/2017** |

Results of Test: PASS

| Analytes | Source Results | Ambient Results | Specification[1] Allowable Limits |
|---|---|---|---|
| Oxygen, Volume % | 21.3 | N/A | 20-22 |
| Nitrogen, Volume % | 77.8 | N/A | N/A |
| Argon, Volume % | 0.9 | N/A | N/A |
| Nitrogen Plus Argon, Volume % | 78.7 | N/A | N/A |
| Carbon Monoxide (CO), ppmv | <0.3 | N/A | 10 |
| Carbon Dioxide ($CO_2$), ppmv | 370 | N/A | 1000 |
| Water Content ($H_2O$), ppmv/Dewpoint, °F | <3.4 / <-91 | N/A | N/A / N/A (W) |
| Atmospheric Dew Point, °F (DT) | -81 | N/A | N/A |
| TVHC (including $CH_4$), ppmv | 4.1 | N/A | 25 |
| Methane ($CH_4$) ppmv | 2.6 | N/A | N/A |
| TVHC (excluding $CH_4$), ppmv | 1.5 | N/A | N/A |
| Oil (condensed) & Particulate, mg/m$^3$ | <0.06 | N/A | 5 |
| Odor (provided by customer) | None/Slight | N/A | None/Slight |
| Other | N/A | N/A | N/A |
| Other | N/A | N/A | N/A |
| Other | N/A | N/A | N/A |

**PASS**

**(2)** This specification is intended for or applications that do not require a water content specification. CGA G-7.1-2011 has no water content limit for Grade E, for which the typical use is listed as SCUBA air. As allowed by CGA G-7.1-2011, Table1, Note 6, water content is not specified **but is** reported. Note 6: "The water content of compressed air required for any particular QVL [grade] can vary with the intended use from saturated to very dry."
**(W)** Dew point is expressed in °F at one atmosphere pressure absolute.

(DT) Dew point is calculated at 1 atmosphere pressure (14.7 psia) from the detector tube reading.