

# **Diveable Chemical and Biological Sampling Kit**

**QuickSilver Analytics  
Edgewood Chemical Biological Center  
AMTI  
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**ANALYTICS, INC.**

# Background

- Cooperative Research and Development Agreement (CRADA) between ECBC and QuickSilver

January 2000 – present

- ECBC designs and tests to ISO 9001:2000
- ECBC retains design control
- QS manufactures under ISO 9000
- Continue this arrangement for this effort
- Evidence quality kits



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# Diveable CB Sampling Kit Requirements

- Waterproof
- Submersible up to 3 ATMs
- Neutral buoyancy of 5lbs negative or positive pressure
- Compact
- Contains all tools and PPE needed for taking and transporting 6 forensically sound chemical and/or biological samples



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# Changes From the Standard Model QSA 102 CBRE Sampling Kit

- Dual use for chemical and biological sampling
- Teflon® versus glass sample containers
- Submersible bag for transport of kit and samples
- Pre-assembly and ease of use
- Over pack bags versus jars
- Waste disposal



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# Submersible C/B Sampling Kit Capabilities

- Liquid samples
- Solid samples
- Wipes samples
- Biological samples
- Record keeping
- PPE
- Detection
- Sample transport
- Waste Disposal
- Decontamination



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# **Inventory for Sampling Kit**

- **Over pack bags, WMD, Mylar, ALOKSAK**
- **15mL Teflon® Vial, pre-labeled, shrink-wrapped**
- **Scoops, Stainless Steel**
- **10mL Teflon® Syringe**
- **5mL Teflon® Pipette**
- **Scoop, Stainless Steel, Narrow**
- **Wipe Extension Tool**
- **Telescoping Pen**
- **PBS, 25mL**
- **Gauze Pad**
- **Grease Pencil**
- **Water, 10mL**
- **M8/pH Paper on a stick**
- **Waste Bags, 6 mil plastic and Mylar®**
- **Laminated Inventory & Record Keeping Log**
- **Teflon® Tubing Assembly (needle, tubing weight and tubing (3') pre-assembled)**
- **Alcohol Swab**
- **Mylar Bag**
- **Apron Coat**
- **Drop Cloth**
- **Scalpel**
- **Kim Towel**
- **Parafilm®**
- **Bleach Pack**
- **Dacron® Swab**
- **Sharpie**
- **Pipette Bulb**
- **Nitrile Gloves**

# Quality System

ISO	<b>*9001:2000</b> <i>Registered</i> <b>ISO/IEC 17025</b> <i>Accredited</i>
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**Organizational Changes Currently  
in Progress to Enhance Quality Capability**







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## Scope of Registration

**Sample analysis, preparation of analytical data, and development of analytical methods in support of the U.S. Government chemical, biological and material testing in support of other customers; Design and fabrication of mobile systems that are fully integrated for science, risk assessment, engineering controls and human factors for both chemical and biological operations; education and consulting services to other laboratories and organizations.**



# Barometric Pressure Testing – Dive Bag and Sampling Tool

- Sampling tools ↴
  - large Alocsak ↴
    - one of four outer dive bags:
      - Utility
      - Gas Mask
      - Platypus
      - Vacuum Sealed Mylar
- Pressure testing in fresh water and salt water



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# Barometric Pressure Testing – Dive Bag and Sampling Tool Results

- All of the outer bags showed evidence of leakage except for the Mylar bag
- The inner Aloksak did not leak, preventing water damage to the tools
- Parafilm strips hard to separate



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# Barometric Pressure Testing – Sample vials and Simulants

- Sampling tools used to collect GloGerm in 5ml and 15ml sampling vials
- Outside of vials parafilmed
- Sample vials ↴
  - Individual Alocsak bags ↴
    - Large Alocsak bag ↴
      - Large Ziploc bag
- Pressure testing in fresh water and salt water



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# Barometric Pressure Testing – Sample vials and Simulants Results

- 5ml vials leaked – individual Aloksak bag able to contain leak
- Outer Ziploc bag leaked



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# Barometric Pressure Testing – Repeat Sample Vial Testing

- Sampling and pressure testing method repeated with the following modifications:

  - 15ml vials used only

  - Individual WMD bags in place of small Aloksak bags

  - Two Aloksak bags used in place of one Aloksak and one Ziploc bag as the outer packaging

- Pressure testing in fresh water and salt water



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# Barometric Pressure Testing – Repeat Sample Vial Testing Results

- 15ml vials did not leak
- Outer Alocsak bags did not leak



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# Submersible Sampling Kit Components



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# Final Submersible Sampling Kit



Mylar Vacuum Sealed  
CB Sampling Kit  
Weight: 2.6 lbs  
Dimensions: 13 x 7 x 3"



DUI Gas Mask Bag for  
transport of samples with  
C-O-C form outside the bag



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## Conclusions

The Diveable CB Sampling Kit allows for the effective collection and transport of forensically sound chemical and/or biological samples through harsh marine conditions

Notable Features of Kit:

- Vacuum sealed Mylar Bag containing sterile kit tools
- 15ml Sample vials allows for adequate sample size
- Sample vials individually packaged in WMD bags for transport to laboratory
- Final outer packaging of vials consists of several layers of protection for ensuring the safety of the operator and maintaining the integrity of the sample

# Diveable C/B Sampling Kit Team

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