# Technical Associates - Ship Ballast CBRN Solar Powered Water Monitor - Portable

## GENERAL DESCRIPTION:

Contamination of oceans and freshwater ports is a worldwide problem. Ships take on ballast water, including local microorganisms and other pollutants native to the departure location. Ballast release takes place during the voyage or at the destination port releasing these transplanted microorganisms and toxins into a new environment.

The Ship Ballast CBRN Solar Powered Water Monitor – Portable, MiniTect, contains 20 sensors detecting radiation, microorganisms, and chemicals.

- All in one system - portable, solar powered system – suitcase or backpack models.
- Measures down to military drinking water standards.
- 4-10 radiation tests provided
- 7 major chemical tests provided
- Large number of microbes detected
- Real time, in-line, continuous, true fail safe design with alarm to alert operator to manually shut the ballast release valve.
- No reagents required
- Portable, easy installation and use

End Users:

- Ship board use: Military/Civilian/Commercial

## TECHNICAL DESCRIPTION:

**Technical Description The Ship Ballast CBRN Solar Powered Water Monitor - Portable.**

A fully automated proprietary system. Detects/measures: alphas, betas and gammas; Tritium; Radon; Radium; and Uranium. Detects chlorine, nitrogen, TOC, microbes, and chemicals.

Portable inlet pipe for use in various locations. Included pump pulls the sample into the specific measurement cells, and then ejects the sample back to the source or to drain or storage tank. Frequency of sampling is operator's discretion. Sample size is 1 liter per minute. Data inputs directly to built-in computer with special application software and digital readout. Suitcase model is built into water tight shock proof pelican case.

## Tier Selection

Final tier assignment is based on overall product score.

Top Tier  Second Tier  Third Tier  Fourth Tier  Bottom Tier

**RANKINGS**

| | Biological | Chemical | Radiological |
|---|---|---|---|
| **FIELD USE** System | Top Tier | Second Tier | Second Tier |
| **MOBILE** Laboratory | Fourth Tier | Fourth Tier | Third Tier |
| **DIAGNOSTIC** Laboratory | Fourth Tier | Bottom Tier | Third Tier |
| **ANALYTICAL** Laboratory | Fourth Tier | Bottom Tier | Third Tier |

## Survey Source

Vendor Supplied Information

## CONTACT INFORMATION

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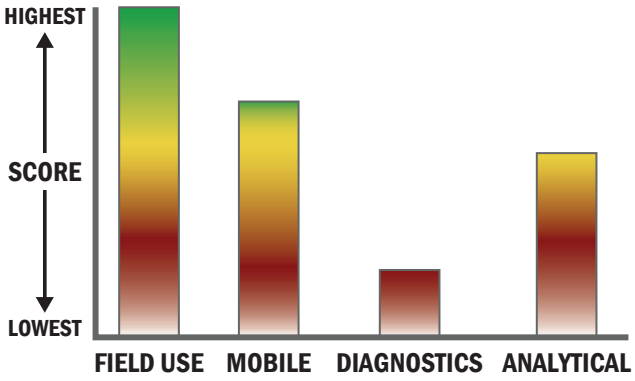
## COST

- $172,800/system
- <$1.00/analysis

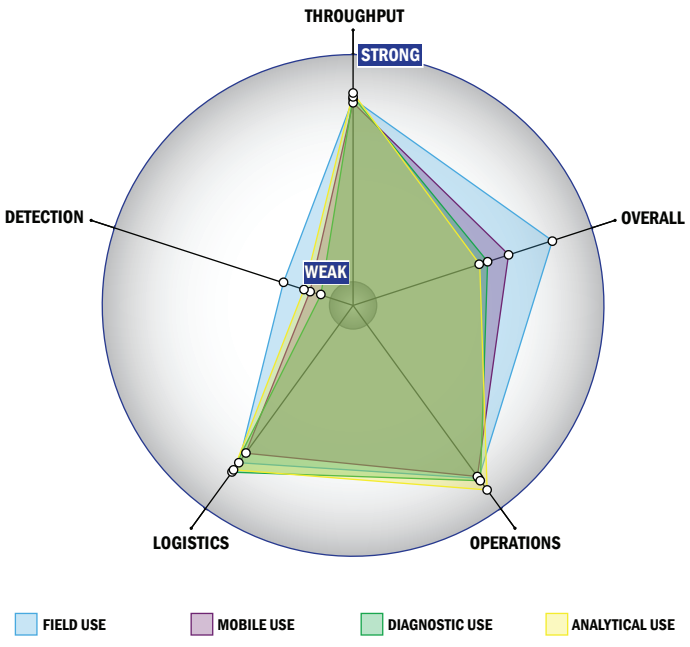
## Scoring Analysis

System scores are compared across the four scenarios and ranked from highest to lowest.




## Impact Chart

The Impact Chart is a spider graph representing specific categories and designed to give the reader a visual depiction of how a particular system is expected to operate across the four different scenarios. The score for each of the seven categories is presented as the percentage of the total possible score. Higher category scores extend the spokes of a graphic toward the outer edge of the chart. The area graphed for each of the four scenarios relates to how well the system performed in that scenario. Graphics for each of the four scenarios are super-imposed for ease of comparison.



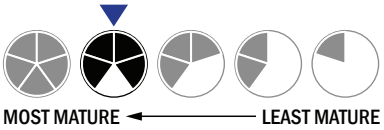

## Evaluation Criteria

### Throughput:

- Between 2 and 15 minutes for detection
- Continuous operation with no defined runs
- System is continuous and provides real time analysis with no defined tests/samples
- The system or device is currently fully automated
- Device or system is intended for multiple detection assays
- 0-1 solutions, buffer, eluents, and/or reagents
- 0 components
- Less than 5 minutes is required for set-up
- Automatic detection

### Logistics:

- Very brief (minutes-hours) training and minimal technical skills
- Approximately the size of a carry-on luggage suitcase
- Between 5 and 25 kg
- Satellite and wired connections are available
- System or device uses batteries
- 4-8 hours battery life




### Operations:

- Can be used from 4 °C to 37 °C
- Performance is not influenced by relative humidity
- Greater than 10 years expected life
- Results can be viewed in real-time
- The system or device is currently fully autonomous
- The system software is open and available for modification
- The system hardware is open and available for modification

### Detection:

- Greater than 250 µL
- Excellent specificity. System has occasional false alarms under certain conditions (<2%)
- 100-1,000 ng per mL
- >1 ppt
- Efforts underway to identify liquid chemical agent
- Total dose, dose rate and count rate with simultaneous display readout and automatic differentiation between types of radiation detected
- Down to background level radiation for dose rate
- Down to background level radiation for count rate
- System is used for surveying