Northrop Grumman Corporation - Next Gen Autonomous Detection System (NG-ADS)

GENERAL DESCRIPTION:

The NG-ADS is an autonomous biodetection system designed to collect and analyze air samples for biological threat agents. The system is designed to run unattended in indoor and outdoor environments for several weeks between replenishments. The system includes many on-board diagnostics and built-in controls with every test to monitor system performance and assure proper functionality. The NG-ADS is fully networked and provides alerts to users through a number of communication pathways. Real time data access and remote command/control are available through a simple web application accessible on any desktop, laptop, smartphone or other web-enabled device. This allows remote start/stop commands, execution of built in diagnostic routines, anytime access to instrument data, and on the fly sampling interval changes. The system can perform a retest on a sample to confirm results, and it can also be configured to accept liquid samples, if desired.

System operation is supported by an optional suite of logistics management applications tailored for NG-ADS. These applications provide closed-loop tracking of maintenance actions, inventory management, calibration tracking, maintenance history reports, and other logistics information.

The NG-ADS has undergone extensive testing by a variety of government test entities and has demonstrated real world performance in several recent field tests.

TECHNICAL DESCRIPTION:

The NG-ADS uses a continuous flow wet cyclone aerosol collector to collect aerosol particles from ambient air or a targeted source. The collected liquid sample is then tested by the system at user-configurable intervals. The system is capable of performing multiplexed PCR analysis or multiplexed immunoassay analysis, or both, on each collected sample. The PCR analysis is a highly multiplexed flow through PCR reaction coupled with Luminex's xMAP® liquid encoded bead array technology. 50 or more discrete targets can be detected simultaneously. The immunoassay assay uses the same liquid encoded bead array technology to perform a multiplexed sandwich immunoassay.

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	Fourth Tier	N/A	N/A
MOBILE Laboratory	Third Tier	N/A	N/A
DIAGNOSTIC Laboratory	Third Tier	N/A	N/A
ANALYTICAL Laboratory	Second Tier	N/A	N/A

Survey Source

Vendor Supplied Information

CONTACT INFORMATION

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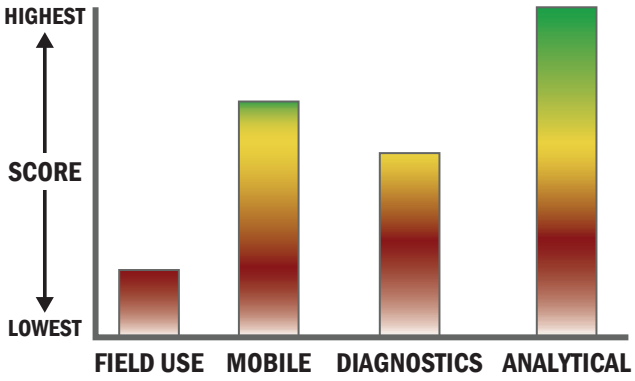
www.northropgrumman.com/capabilities/biodefense

COST

N/A

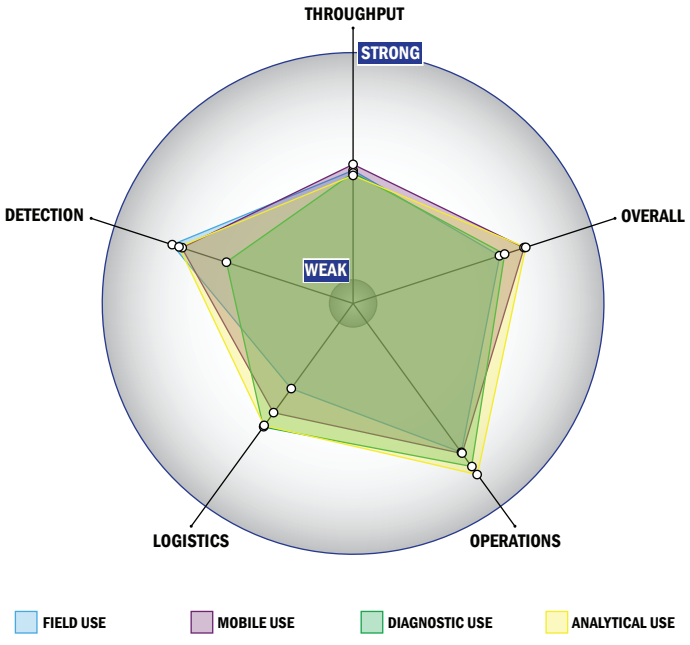
Scoring Analysis

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.



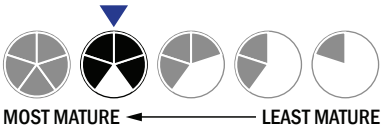
Evaluation Criteria

Throughput:

- Between 60 minutes and 8 hours for detection
- Multiple samples, multiple tests/sample per run
- Less than 32 samples every 2 hours
- The system or device is currently fully automated
- Device or system is intended for multiple detection assays
- 5 or more solutions, buffer, eluents, and/or reagents
- 0 components
- Greater than 20 minutes is required for set-up
- Automatic detection

Logistics:

- A day of training and technical skills are required
- Approximately the size of a home dishwasher
- More than 50 kg
- Wireless and wired connections are available
- System or device has 110V electrical requirement



Operations:

- Can be used from 4 °C to 37 °C
- Components must be stored at 4 °C
- Performance is not influenced by relative humidity
- Between 6 months and 1 year shelf life
- 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 but modification requires licensing
- The system hardware is open but modification requires licensing

Detection:

- Possible the system could receive 510K clearance, no current efforts at this time
- Possible the system could receive FDA approval, no current efforts at this time
- Less than 250 µL
- Superior specificity. System has a false alarm rate approaching zero (~0%)
- 100-1,000 CFU per mL
- 100-1,000 PFU per mL
- Less than 1 ng per mL
- Fully automated spore lysis