

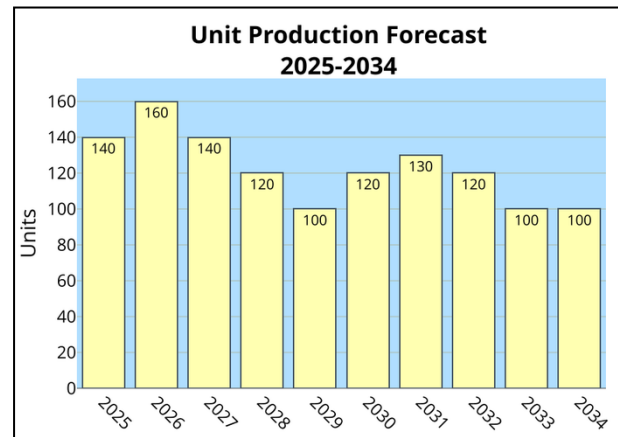
ARCHIVED REPORT

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Biological Standoff Detection System (BSDS)

Outlook

- The Joint Biological Standoff Detection System is one component of a family-of-systems approach to multiservice chemical/biological defense and situational awareness
- Budget through which JBSDS and other systems are purchased will see steady funding through the defense-wide Chemical/Biological Defense Situational Awareness program



Orientation

Description. The Biological Standoff Detection System (BSDS) and related systems will be used to detect a biological weapons attack from a safe distance.

Sponsor

U.S. Department of Defense
 Washington, DC

Application. The Joint BSBS is intended for fixed sites but is also designed for multiple platforms.

Price Range. For the purposes of this report, the average cost of JBSBS variants has been estimated to be \$100,000. This figure is based on P-1 document of the U.S. Department of Defense.

Status. Ongoing production, testing, and evaluation.

Contractors

Prime

Fibertek Inc	https://fibertek.com , 13605 Dulles Technology Dr, Herndon, VA 20171 United States, Tel: + 1 (703) 471-7671, Fax: + 1 (703) 471-5806, Email: info@fibertek.com , Co-producer
Science & Engineering Services	https://www.sesi-md.com , 6992 Columbia Gateway Dr, Columbia, MD 21046 United States, Tel: + 1 (443) 539-0139, Co-producer

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 75 Glen Road, Suite 302, Sandy Hook, CT 06482, USA; rich.pettibone@forecast1.com

Biological Standoff Detection System (BSDS)

Technical Data

Characteristics	<u>Metric</u>	<u>U.S.</u>
<u>JBSDS</u>		
Range	5 km	3 mi
Laser	Nd-YAG, ultraviolet, infrared	

Design Features. Prototype systems consisted of the Long-Range Biological Standoff Detection System (LR-BSDS) and the Short-Range Biological Standoff Detection System (SR-BSDS). Both systems were designed for detecting biological agents in the air from a safe distance. The U.S. DoD dropped both of these earlier versions from consideration in favor of the Joint BSDS (JBSDS), which is intended for use by all branches of the U.S. military.

The LR-BSDS employed laser infrared detection and ranging (LIDAR) technology. It consisted of three major components: a Continuum Surelite I-20, used as an infrared laser transmitter; a receiving telescope; and a detector with an information processor integrated into the frame. Both the transmitter and the receiver were fixed

on a rotating table. The diode-pumped, solid-state, eyesafe neodymium-yttrium aluminum garnet (Nd-YAG) lasers were provided by Fibertek. The gyroless solid-state stabilization system was developed by the CAI Division of Recon/Optical.

The SR-BSDS used an ultraviolet laser transmitter obtained by non-linear conversion of the output of a diode-pumped, solid-state Fibertek Nd-YAG laser system. As with the LR-BSDS, a receiver and information processor were also included.

The JBSDS reportedly has two types of lasers, ultraviolet and infrared, to help reduce false-positive detection rates. To ensure accuracy of information, the system can also determine the size and depth of suspected bio-material.



Biological Standoff Detection System

Source: Fibertek

Biological Standoff Detection System (BSDS)

Program Review

Background. The U.S. DoD program Chemical/Biological Defense (PE#0603284BP) provided for the exploratory development of U.S. chemical/biological (CB) warfare. It also researched technologies that would enhance the ability of the U.S. military to deter and defend against CB warfare. The program developed contamination-avoidance strategies in addition to a new detection sensor and improved decontamination procedures.

An earlier project, Counterproliferation Support CP01, funded the exploratory development of technologies with proliferation-monitoring and -controlling potential.

Efforts from Project CP01 were transitioned to several related chemical/biological defense program elements: PE#0602384BP Applied Research, PE#0603884BP Demonstration/Validation, and PE#0604384BP Engineering and Manufacturing Development.

Under PE#0603884BP, standoff biodetection work was performed within Project CP4, Counterproliferation-Joint Remote/Standoff Detection. This project supported development of an interim eyesafe long-range standoff system. The standoff program was to be made part of a biological defense system for cueing, detecting, and identifying biological warfare agents in the battlespace. The architecture supported both long-range and short-range systems.

The FY98 RDT&E funding descriptive summary of the U.S. DoD included several programs that were at least partly dedicated to standoff biodetection.

Chemical/Biological Defense (PE#0603884BP), Project Counterproliferation Support, supported the demonstration and validation of CB defensive equipment. It also addressed the various shortcomings identified in "Conduct of the Persian Gulf War: Final Report to Congress, April 1992." This was the only program that specifically allocated funds for the fabrication and testing of BSDS prototypes. It also incorporated monies for the Joint Biological Remote Early Warning System.

Project BD5, Joint Biological Defense/Standoff Detection, was moved from PE#0604384BP to PE#0603884BP in FY97. Efforts were focused on development of integrated biodetection advanced technology.

Under PE#0604384D Chemical/Biological Defense, Project CB2, efforts were made in FY97 to develop a small, lightweight early-warning biodetector using UV-laser-induced fluorescence. At the same time, a UV

database was being compiled, an effort that was completed in FY98.

Schwartz Electro-Optics Inc announced the delivery of the first four LR-BSDS prototypes in February 1999. The systems were touted as being eyesafe LIDAR systems for use in the long-range detection of man-made aerosol clouds at a distance of up to 50 kilometers.

Program elements of the BSDS projects were condensed into a stand-alone program in 1999. The new PE number was PE#0602383E and included PE#0602712E-Project MPT-01, PE#0601384BP, PE#0602384BP, and PE#0603384BP.

New System Emerges, Gains Prominence

While development of the LR-BSDS and SR-BSDS was ongoing in April 2001, another variant, the Joint Biological Point Detection System, was gaining publicity. In fall 2000, however, draft DoD documents outlining problems with the system stated that the JBSDS was "not yet operationally effective, suitable, and survivable."

A change in U.S. military requirements resulted in a decision in late 2000 that the LR-BSDS would not be fielded by the service. However, according to the system's manufacturer, Schwartz Electro-Optics, it would still be available for procurement as a Foreign Military Sale or for commercial use.

In early 2002, \$465 million was added to the Chemical Biological Defense effort through FY07, including \$300 million for improved capability to detect, mitigate, and respond to biological incidents. For FY02 alone, \$146.6 million was earmarked for RDT&E of the Biological Warfare Defense program (PE#0602383E), of which \$30 million was devoted specifically to sensors.

By 2002, it had become apparent that the U.S. DoD was focusing more attention on the JBSDS than on the SR-BSDS or LR-BSDS. In fact, government budget documents appeared to have stopped referring to SR-BSDS or LR-BSDS altogether.

The FY04/FY05 DoD budget released in early 2003 showed a slight decrease in funding for biological warfare defense, from a high of \$171.8 million in FY02 to \$161.9 million in FY03 and \$137.2 million in FY04.

By the time the budget was released, procurement of the JBSDS had begun. After an initial purchase of six systems in FY04, the number was planned to rise – after a period of test and evaluation – to 65 systems in FY09.

Biological Standoff Detection System (BSDS)

Release of the new budget also showed steady funding for R&D under PE#0603384BP Chemical/Biological Defense Advanced Technology Development. For FY04 alone, more than \$93 million was budgeted. This program provides funding for a number of CB programs, including JBSDS.

In the 2004 timeframe, Science & Engineering Services was selected as the prime contractor for the JBSDS program. The company announced in March 2005 that it had completed the first phase of JBSDS testing and evaluation.

By the end of 2005, it was being reported that JBSDS had successfully completed preliminary operational testing.

Funding for RDT&E Reaches New Heights

The FY07 budget request to Congress, released in February 2006, detailed a major increase in funding for RDT&E of many chemical/biological defense projects. Through 2011, a staggering \$1.4 billion was budgeted for the Chemical/Biological Defense Advanced Technology Development program. Though not separately broken out, the funding would in large part be used for ongoing testing and evaluation of the JBSDS.

In its FY13 budget request to Congress, the U.S. DoD allocated some \$2.1 billion for RDT&E related to chemical/biological defense.

The FY16 budget request for the Chemical/Biological Defense – Situational Awareness procurement program, through which JBSDS and other systems would be purchased, included over \$1.3 billion in funding through FY20.

In FY16, \$20.4 million was spent on the Joint Chemical Agent Detector (JCAD) effort within the larger Chemical/Biological Defense program. The JCAD program employs an incremental acquisition strategy to develop a miniaturized, rugged, and portable point chemical agent detector that automatically and

simultaneously detects, identifies, and alerts the presence of nerve, blister, and blood chemical warfare agents.

For FY17, \$90 million was spent on a Dismounted Reconnaissance Systems (DRS) effort within the larger Chemical/Biological Defense program. DRS provides personnel protection from current and emerging hazards through the detection and identification of threats; sample collection; decontamination and marking activities; and hazard reporting.

Released in early 2019, the FY20 defense-wide budget request for the Chemical/Biological Defense – Situational Awareness procurement program included approximately \$1.6 billion in funding through FY24.

In July 2019, at the Indianapolis 500, an advanced network of sensors provided security officials real-time awareness of any potential weapon-of-mass-destruction/terror threat. The demonstration marked the first time that DARPA's SIGMA+ network integrated radiological and chemical sensors with biological threat sensors from the Department of Homeland Security's Countering Weapons of Mass Destruction (CWMD) Office.

In October 2021, Chemring Sensors and Electronic Systems was awarded a \$99.1 million U.S. Army contract for 165 Enhanced Maritime Biological Detection modification kits, 165 initial fielding packages, and 102 external controller subsystems to modernize the Joint Biological Point Detection System (JBPDs). Work on the contract is expected to be completed by Dec 25, 2027.

In November 2021, the U.S. DoD awarded Security 1 Solutions a \$119.3 million, five-year contract to provide protection of facilities, physical assets, and all other related operational activities for designated locations within the National Capital Region. This contract included chemical biological, radiological, and nuclear (CBRN) protection and detection, and other key functions.

Funding

	U.S. FUNDING							
	FY23 QTY	FY23 AMT	FY24 QTY	FY24 AMT	FY25 QTY	FY25 AMT	FY26 QTY	FY26 AMT
P-1 (DoD)								
Chemical/Biological Defense								
Situational Awareness	-	145.1	-	159.8	-	215.0	-	239.6

Biological Standoff Detection System (BSDS)

P-1 (DoD)	FY27	FY27	FY28	FY28	FY29	FY29
	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>
Chemical/Biological Defense Situational Awareness	-	268.9	-	262.6	-	279.1

All \$ are in millions.
 Source: FY25 U.S. DoD P-1 Descriptive Summaries

Worldwide Distribution/Inventories

The Joint Biological Standoff Detection System is being developed under the direction of the U.S. Department of Defense.

Forecast Rationale

The U.S. Joint Biological Standoff Detection System (JBSDS) is just one component of a family-of-systems approach to multiservice chemical/biological defense and situational awareness. The procurement budget through which JBSDS and other systems are purchased will see steady funding through the defense-wide Chemical/Biological Defense Situational Awareness program.

Production of the JBSDS and supporting systems will uphold the U.S. government's plan to prepare for potential chemical/biological weapons attacks. Technology will be designed for fixed sites or for

mounting to a variety of platforms and will be capable of detecting biological weapon attacks in near real time.

The Pentagon sees JBSDS as just one aspect of a much larger network of biological detection systems that will be adapted to every service in numerous applications. The JBSDS will augment and integrate with these various other systems.

The FY25 defense budget's Chemical/Biological Defense Situational Awareness program, through which many detection systems are purchased, includes over \$1.2 billion in funding through FY29.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR UNIT PRODUCTION												
Designation or Program	High Confidence					Good Confidence			Speculative			Total
	Thru 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	
MFR Varies												
JBSDS <> United States <> Multi-agencies												
	1,481	140	160	140	120	100	120	130	120	100	100	1,230
Total	1,481	140	160	140	120	100	120	130	120	100	100	1,230