

The background of the entire page is a close-up, slightly blurred image of the American flag, showing the stars and stripes in a diagonal orientation.

**DMC  
2001**

**The 2001  
Defense Manufacturing Technology  
Achievement Award**

# The Defense Manufacturing Technology Achievement Award

The Director of Defense Research and Engineering and the Joint Defense Manufacturing Technology Panel (JDMTP) seek to recognize and honor those individuals most responsible for outstanding technical accomplishments in achieving the vision of the Department of Defense (DoD) Manufacturing Technology (ManTech) Program. That vision is to “Realize a responsive world-class manufacturing capability to affordably meet the warfighters’ needs throughout the defense system life cycle.”

This annual award is made to the individual(s) or small group(s) of individuals from the government and/or private sector most responsible for a specific innovative manufacturing technology achievement which has had a significant impact on one or more of the following: (a) rapid transition of defense-essential or defense-unique technologies; (b) affordability; (c) cycle time; (d) readiness; (e) quality; and/or (f) decoupling cost from volume.



Enhanced Manufacturing Processes  
for Body Armor Materials

# The 2001 Defense Manufacturing Technology Achievement Award

The manufacturing technology projects that were considered for the 2001 Defense Manufacturing Technology Achievement Award were completed and/or demonstrated in FY00 or FY01 and were funded by the DoD ManTech Program. Those six nominees were:

- ◆ Boeing Supplier Lean Enterprise - U.S. Navy Pathways Transformation Pilot
- ◆ Composites Affordability Initiative - Phase 2 - Room Temperature Paste Bonding for Continuous Assembly
- ◆ Development of Manufacturing Technology for the MACS Combustible Case
- ◆ Enhanced Manufacturing Processes for Body Armor Materials
- ◆ Rotary Wing Structures Technology Demonstration – Sikorsky
- ◆ Small/Medium Enterprise Initiative (SMEI) Demand Pull Supplier Pilot

Nominations were made by the JDMTP subpanels. The “Selection Committee” consisted of the four JDMTP principals, the ODUSD (S&T) ex-officio member of the JDMTP, and senior Service and Defense Logistics Agency representatives.



**Joint  
Defense  
ManTech  
Panel**



# The 2001 Defense Manufacturing Technology Achievement Award Recipient

## Enhanced Manufacturing Processes for Body Armor Materials

### Government / Industry Team Members:

James MacKiewicz, U.S. Army Natick Soldier Center

Janice Knowlton, U.S. Army Natick Soldier Center

Robert Monks, Simula Safety Systems Inc.

Richard Palicka, CERCOM Inc.

Thanks to the dedicated and outstanding efforts of this team, the Soldiers and Marines who may be in harm's way participating in Operation Enduring Freedom will be wearing the best ballistic protection available in the world today!

The Interceptor body armor jacket could stop 9mm handgun bullets in their tracks. Now, because of the work of this team and the success of this ManTech project, two



highly effective, lightweight ceramic armor materials have been developed and implemented which vastly enhance the Interceptor's capabilities. Siliconized silicon carbide and boron carbide plates that can stop rifle or machine-gun fire—which was not possible with this jacket in the past—are now available to insert in the jacket's pockets. Simula, with a production capacity of 5,000 plates per month, has already delivered 45,000 of its siliconized silicon carbide plates and is under contract to deliver 140,000 more; 12,000 of CERCOM's boron carbide plates have also been fielded. The new armor plates are 55% lighter than traditional body armor, and have a cost approximately 60% lower than the high performance armor plates that were available at the start of this project.

Also highly noteworthy is that this project exemplifies the "jointness" aspect of the ManTech Program. It utilized not only Army ManTech money but also significant funding contributions from Army and Marine program offices as well as from private industry.



Siliconized Silicon Carbide Plate in XS (11.5" x 7") size



# Army ManTech

## Enhanced Manufacturing Processes for Body Armor Materials



### Plate Forming: Siliconized Silicon Carbide



### Plate Forming: Boron Carbide



- **Objective:** Develop & Implement Economical Production of Ceramic / Composite Small Arms Protective Plates for Personnel Protection

- **Participants:**

- Army Natick Soldier Center
- PM, Soldier Systems
- Marine Corps
- Simula Safety Systems Inc.
- CERCOM Inc.



*Interceptor Body  
Armor Jacket*

- **Benefits:**

- Stops Rifle / Machine Gun Fire
- 55% Lighter, 60% Lower Cost Compared to Armor Plates
- Cost Avoidance (NPV): \$193M

- **Implementation:**

- Over 50K Plates Delivered & Fielded; 140K Plates on Contract
- Supports “Operation Enduring Freedom”