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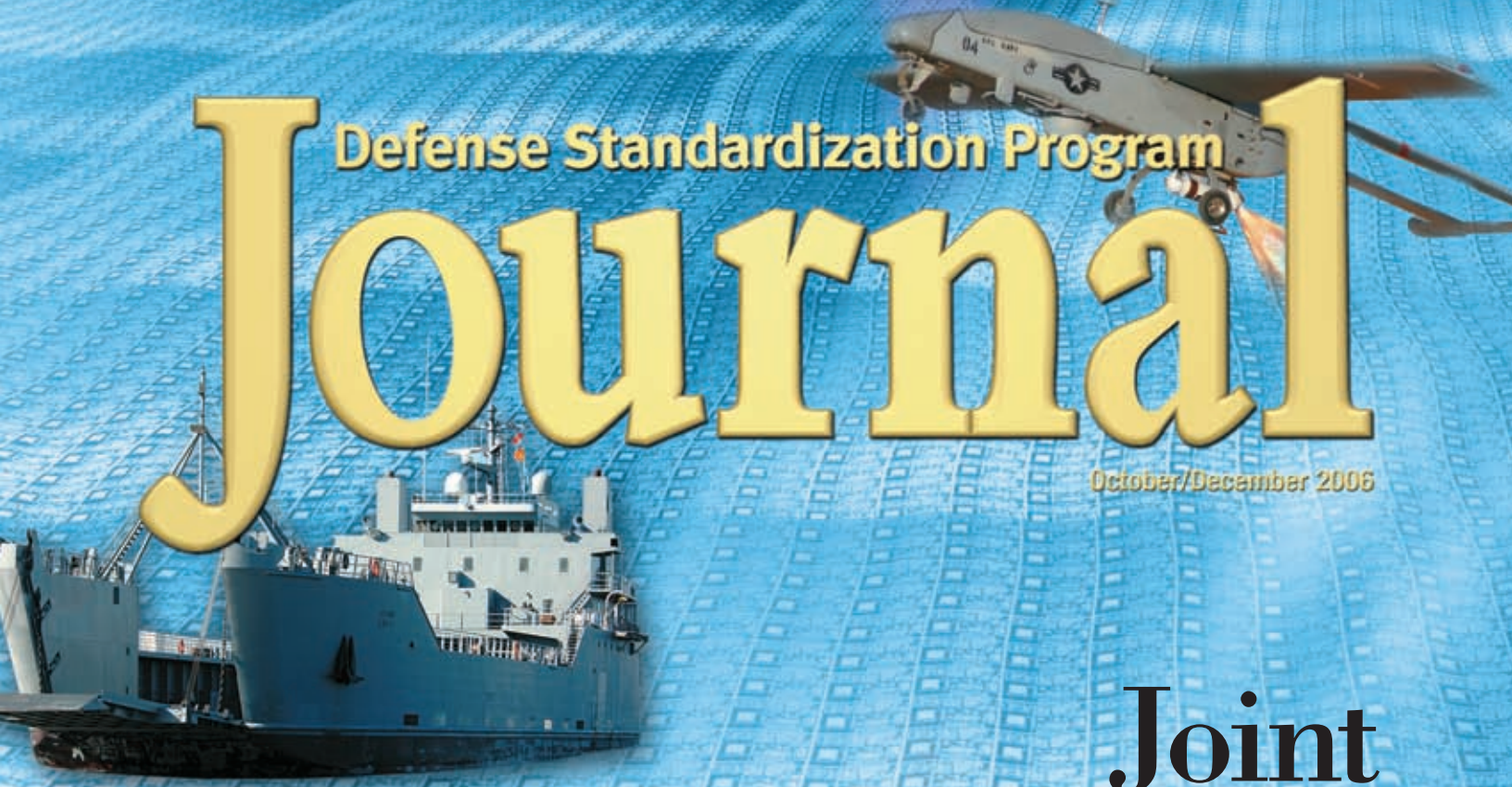

Joint Standardization Boards

Tactical Shelters

Power Source Systems

Intermodal Equipment

Tactical Unmanned Aircraft Systems

Microelectronics and Semiconductors

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Contents *October/December 2006*

1 **Director's Forum**

3 **Intermodal Equipment**
Standardizing to Promote Compatibility, Interoperability, Interchangeability, and Commonality

9 **Tactical Unmanned Aircraft Systems**
Embracing Standards to Achieve Interoperability

13 **Tactical Rigid-Wall, Soft-Wall, and Hybrid Shelters; Special-Purpose Covers; and Shelter Accessories**
Bringing New Ideas and Tools to Bear in a New Environment

20 **Power Source Systems**
Improving Battery Selection and Management

25 **Microelectronics and Semiconductors**
Leveraging the Work of the Defense Microcircuit Planning Group to Meet New Challenges

Departments

31 **Events** 32 **People**

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Joint Standardization Boards

At our last Defense Standardization Program (DSP) conference in May 2006, we unveiled a new entity—Joint Standardization Boards (JSBs). Understandably, the audience had a number of questions about the purpose of the boards and how they would fit in with the existing DSP infrastructure.

The JSB concept came out of the strategic planning efforts, several years ago, of the DSP Infrastructure Integrated Product Team, which was led by the Air Force. One of the team's key findings was that many standardization efforts in DoD took place outside of the DSP and, all too often, there was a lack of connectivity between the DSP and the technical organizations engaged in standardization activities or interested in pursuing standardization.

These disconnects lessened the potential benefits that could be derived from an enterprise-wide approach to standardization. In some cases, parallel, independent standardization efforts were occurring in each of the services, which may have benefited the individual service, but could have resulted in a lack of standardization and interoperability across DoD. In other cases, standardization efforts were happening in only a single service when there was obvious need and opportunities throughout DoD. In yet other cases, the lack of a JSB-type structure stymied standardization opportunities because there was no official venue that sanctioned a "coalition of the willing" to come together. In all cases, visibility was lacking; standardization decisions were made and communicated among limited communities instead of the broader DoD-wide enterprise.

The new JSB structure can help address these issues. Although some Lead Standardization Activities (LSAs) under the DSP have taken the initiative to establish working groups to work on DoD-wide standardization opportunities, most LSAs have not. Also, standardization opportunities exist in newly emerging technologies—for example, unmanned aircraft systems—yet no LSA is addressing them. And standardization opportunities for some technologies cut across multiple LSAs. The new JSB structure allows for technical organizations and others outside of the traditional DSP framework to come together to work

Gregory E. Saunders
Director, Defense Standardization Program Office

etary, open architecture uses numerous internal standards—including the Global Positioning System and the Joint Mapping Tool Kit—and external standards such as the following:

- Moving Picture Experts Group-2 Digital Video
- American National Standards Institute/Society of Motion Picture and Television Engineers 170M Analog Video
- Variable Message Format/U.S. Message Text Format
- MIL-STD-2500A/B for image formats.

The Army and Navy are working closely together on the VTUAV Fire Scout program. Costs have been reduced and commonality between the two services' air vehicles stands at 92 percent. The Army's VTUAV Fire Scout and its next buy of the Shadow 200 tactical UAS and the Extended Range/Multi-Purpose Warrior UAS will use the "One System" GCS with STANAG 4586 Edition 2 software.

Standards, such as STANAG 4586, provide benefits from a cost and economic viewpoint as well as increased battlefield effectiveness through the use of available nonorganic support assets. Future examples of the latter would be the use of Army UAV assets to support Marine Corps counterinsurgency operations in Iraq or to support Canadian coalition maneuver elements in Afghanistan. STANAG 4586, via the command control interface, will also enhance information sharing by providing data to multiple users of Command, Control, Communications, Computers, and Intelligence systems.

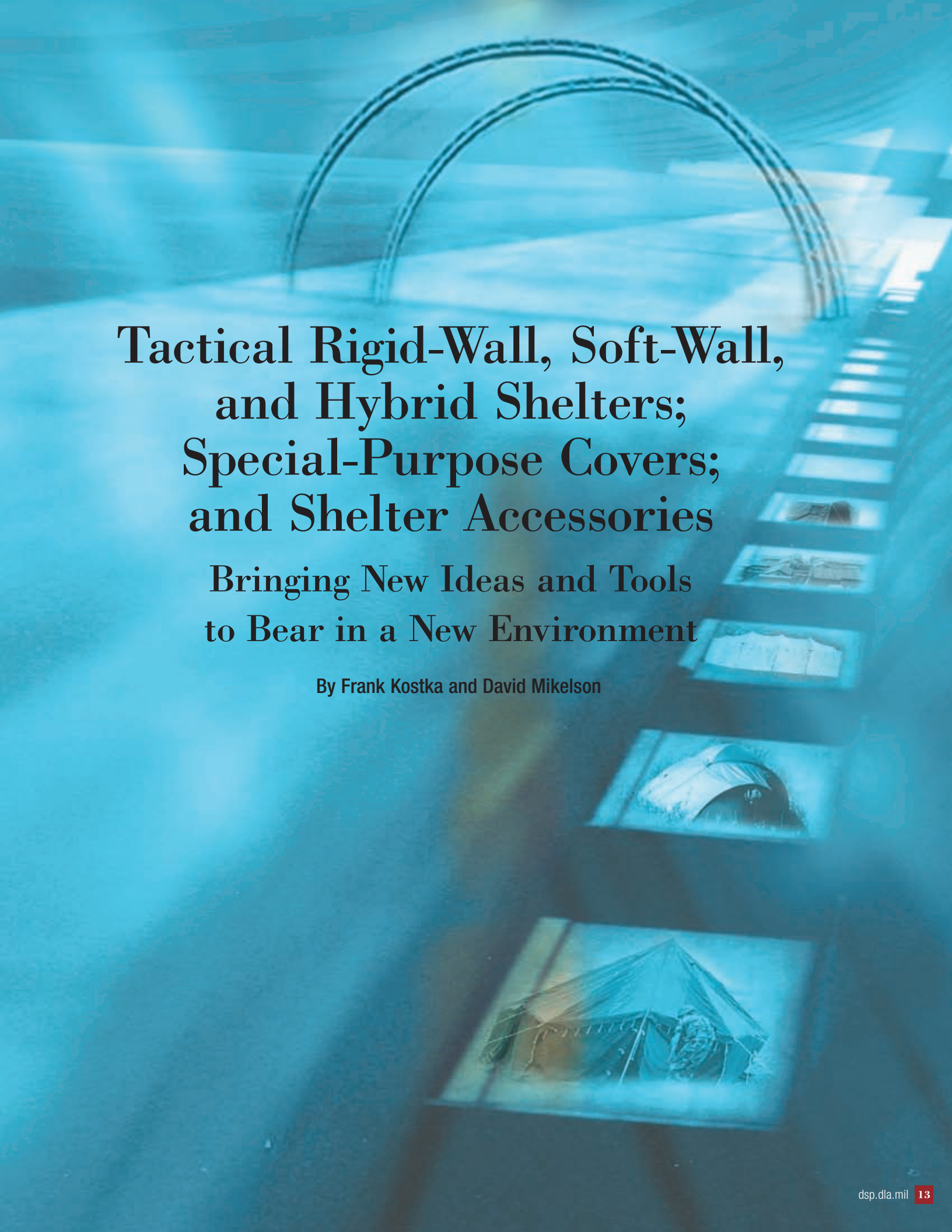
STANAG 4586 also facilitates the introduction of new technologies in air vehicles and payloads because the effect on the GCS is minimal. For example, STANAG 4586 enables the integration of a vehicle-specific module with the GCS or the addition of new payload messages to the data link interface. Another important aspect of STANAG 4586 is the decoupling of the control station from the air vehicle. The military services will be able to acquire air vehicles independent of other elements of the UAV system (e.g., the control station). In other words, the control station can be sustained, upgraded, and produced in multiple configurations independent of other elements of the system.

People sometimes assume that mandating standards can stifle innovation and increase costs. Standards, by themselves, do not guarantee interoperability. Instead, the keys to achieving interoperability are common implementation, verification, and certification through proper testing. The benefits will be vast when the creativity of our warfighter is matched to this new capability of interoperable systems. One must look only toward the vibrant and dynamic information technology sector and the way it embraces and leverages standards to see that we are following the right path for unmanned aircraft systems.

About the Authors

Andrew Kirschbaum works for D.P. Associates. He currently supports the Navy and Marine Corps Unmanned Air Systems Program Office as a senior analyst for unmanned aerial systems. In addition, Mr. Kirschbaum is the editor of STANAG 4586.

Steve Daniel supports the Navy and Marine Corps Unmanned Air Systems Program Office as the Integrated Product Team lead for concepts of operations. He is also the custodian for the STANAG 4586 document and chairs the STANAG 4586 Custodian Support Team.



Tactical Rigid-Wall, Soft-Wall, and Hybrid Shelters; Special-Purpose Covers; and Shelter Accessories

Bringing New Ideas and Tools to Bear in a New Environment

By Frank Kostka and David Mikelson

On June 8, 2006, the DoD Standardization Executive, James Hall, formally chartered the Joint Committee on Tactical Shelters (JOCOTAS) as the Joint Standardization Board (JSB) for Tactical Rigid-Wall, Soft-Wall, and Hybrid Shelters; Special-Purpose Covers; and Shelter Accessories. The JSB is empowered to

- create and enhance joint processes for improved development and acquisition of shelters offering common solutions and interoperability,
- manage and maintain specifications and standards, and
- establish a DoD-wide forum for interoperability coordination, planning, and decision making.

During its first year of operation, the JSB will develop a detailed organization plan for approval by senior JOCOTAS board members and the DoD Standardization Executive; hold two meetings, concurrent with JOCOTAS and ASTM International working group meetings, for DoD participation; and identify standardization projects focused on achieving JSB goals.

Challenges for the Shelter JSB

In addressing its standardization mission, the JSB faces three major challenges:

- Lack of new formalized service requirements
- Plethora of commercial off-the-shelf (COTS) products competing for the defense dollar
- Lack of formal science and technology programs to develop and deliver standardized shelters, special-purpose covers, and accessories to the warfighter.

Service requirements documents are necessary to initiate and fund developmental programs. The lack of such documents, plus the tendency to place a low priority on shelters, makes it difficult to establish a formal program to keep pace with the shelter needs of today's warfighters. The clearest indications of this phenomenon are the current buying practices of field commanders. In the 2006 Defense Logistics Agency (DLA) JOCOTAS production budget, approximately 45 percent of the next 5 years' projected procurement activity involves COTS shelters. When added to shelter buys made directly with the vendor, total dollars expended on COTS products over the next 5 years could easily exceed $500 million.

Two of the COTS shelters have been formally adopted by the services as Military Adaptation of Commercial Items. Other buys may fill gaps created by surges in demand that cannot be met by the traditional industrial base during wartime. The total impact on standardization cannot be fully defined because the DLA contracts are awarded on an indefinite-quantity basis; actual buys will depend on a variety of variables. What *can* be stated is that the funds expended on non-standard items

dwarf the costs associated with the formal development of a military shelter system. Life-cycle costs also are likely to increase due to a lack of competition during acquisition, non-competitively procured spare parts, interoperability and battlefield performance issues, and issues related to long-term durability.

In the absence of formal shelter and shelter-related science and technology programs, the services are using the Small Business Innovative Research program and industry interest, aided by congressional support, to pursue four areas:

- Barrier materials that mitigate environmental, detection, chemical/biological agent, and ballistic threats
- Structures that support barrier materials, reduce setup time and labor, and cut shipping weights and volumes
- Anchorage systems that secure shelters from extreme weather and blast waves
- Energy management technologies that reduce systems' logistical footprints.

In the 2006 Defense Logistics Agency (DLA) JOCOTAS production budget, approximately 45 percent of the next 5 years' projected procurement activity involves COTS shelters.

Ongoing Activities to Enhance the Standard Shelters

Three key initiatives, which are either underway or proposed, will advance the development and delivery of standardized cutting-edge shelter and shelter-related capabilities to the warfighter.

CONFIGURATION OF STANDARD ITEMS INTO SHELTER SYSTEMS

Natick Soldier Center (NSC), in Natick, MA, has been working on several innovative methods to bring improved products to the field while maintaining standardization. One example is the development of a modular command post that can range in size from 256 to 3,000 square feet. NSC integrated a variety of standard shelters with the Standard Integrated Command Post System (SICPS) furniture and lighting. NSC also added an electrical distribution system; heating, ventilation, and air conditioning units; and advanced solar covers. It then packaged the components into shipping containers specific to the mission.

Force Provider Light 150-Soldier Forward Base Camp

As a result of this endeavor, the shelters better meet the needs of commanders of organizations such as rear or support elements, which typically require more space than highly mobile units. Moreover, this endeavor eliminated the need for units to purchase non-standard shelters to obtain sufficient space. Finally, because the modular command post does not use interconnected 11- by 11-foot SICPS tents, leakage problems, due to the sloping roof, have been eliminated. (Highly mobile operations continue to use the SICPS tents, but leakage is an acceptable tradeoff for quick setup and teardown.)

TRANSITION OF NEW TECHNOLOGY INTO EXISTING SYSTEMS

Two features that are highly valued by shelter users are fast setup and minimal personnel requirements. NSC has worked over the past 15 years to develop inflatable composite technology to meet this need. "Airbeams"—tubular structures inflated by a compressor—replace metal frames, significantly reducing the shipping weight and volume and, most dramatic, reducing the number of hours required to erect a structure by 70 percent. Airbeams were first fielded in 2002 as part of NSC's Chemical and Biological Protective Shelter program.

Another program in which NSC demonstrated inflatable composite technology is Force Provider, DoD's premier 550-soldier Base Camp System. This program, under the Product Manager–Force Sustainment Systems, expanded to include a new forward 150-soldier system. High-speed setup with a minimal workforce was

JOCOTAS June 2006 Meeting Features Base Camp Setup

critical to the program's success. Teaming together, the organizations recently demonstrated a 150-soldier camp at Fort Lee, VA, based on inflatable composite technology. The entire camp—which included field feeding, water purification, laundries, showers, and billeting—was set up in less than 4 hours. Several high-ranking Army officers observed the demonstration and gave the program the green light to move forward.

DEVELOPMENT OF AN INTEGRATED STANDARDIZATION STRATEGY

The key proposed initiative is to develop a strategy for integrating standard military and COTS shelters, recognizing that COTS shelters will continue to be used to fill gaps resulting from unmet military requirements. The following are some standardization activities that should be pursued to ensure that the mix of shelter assets in the field can be used as building blocks to meet a hierarchy of needs:

- Streamline inter-service use of standard shelters accepted by a single service without a major "paper" exercise. Currently, a separate type classification is required.
- Broaden the Family of Standard Shelters to create a Standard Family of Integrated Shelter Systems that includes power distribution, lighting, environmental control, and command post and quality-of-life furniture. This activity builds on work in progress.
- Establish performance and safety requirements, validated with standard ASTM test procedures, for categories of tents, both DoD and commercial.

- Incorporate standard design features, fabrics, and interoperability requirements in the various tent categories.
- Integrate emerging technologies into standard shelters and the commercial marketplace as appropriate.

Next Steps

Over the past 30 years, JOCOTAS has brought the DoD shelter community together to foster the development of standard components and systems that meet the warfighter's needs economically. During that period, many changes have occurred in acquisition practices that present challenges and opportunities for future standardization.

Where does JOCOTAS, as the JSB for shelters, go from here? The JSB needs to take a pragmatic approach to advance the standardization of both rigid-wall and soft-wall shelters. The JSB proposed the following tasks for FY07:

- *Expand the standard shelter manufacturing base.* The JSB, working with DLA, must identify companies that can provide dual manufacturing capability (commercial and military) to support the procurement of shelters to meet surge requirements.
- *Prepare a building code for military shelters.* The code must be based on current military performance specifications, linked to recognized national building codes, and validated using ASTM test methods.
- *Develop a design package that identifies standard military interoperability features needed on commercial shelters.*

The advent of a Joint Standardization Board focused on shelters will facilitate the application of new ideas and tools to ensure that systems and equipment needed by the warfighter will be available, interoperable, and sustainable.

About the Authors

Frank Kostka is the executive secretary of JOCOTAS. At Natick Soldier Center, he leads the Collective Protection Directorate. The directorate develops shelter technology and provides engineering services to a DoD customer base. Mr. Kostka has been involved in all aspects of shelter development since joining the organization in 1982.

David Mikelson has served for the past 16 years as chairman of the JOCOTAS Technical Working Group. In addition, he has served for the past 25 years as vice-chairman of ASTM E06.53 Subcommittee for Materials and Processes for Durable Rigidwall Relocatable Structures and assumed the E06.53 chairman's duties in October 2006. Mr. Mikelson is a widely recognized expert on tactical rigid-wall shelter design, construction, testing, repair/refurbishment, and materials and processes. He also has extensive background in shelter ancillary equipment and shelter transport equipment.

Evolution of JOCOTAS

JOCOTAS was formed in 1975 under the direction of the Office of the Secretary of Defense. It was originally established under a Joint Service Regulation that was later augmented by a charter approved by the Office of the Under Secretary of Defense. The duties of JOCOTAS are as follows:

- Advance the state of the art in shelter design and shelter ancillary equipment
- Search for common solutions to identified user needs
- Reduce and eliminate duplication of shelter research, development, test, and evaluation (RDT&E)
- Create a standard shelter family and maximize its use within DoD
- Share information and expertise to solve shelter problems
- Work to promote evolutionary change in processes used for shelter development
- Assist the services with procuring shelters in the most streamlined and cost-effective way
- Ensure that shelters are compatible with commercial and military transportation equipment for worldwide deployment
- Provide a forum for interaction between JOCOTAS and industry (JOCOTAS sponsors a minimum of two Technical Working Group meetings every year and, every 2 years, sponsors a JOCOTAS/industry meeting and exhibition)
- Prepare, and update annually, a 5-year multi-service shelter RDT&E and production plan
- Publish, and update periodically, *Department of Defense Standard Family of Tactical Shelters*.

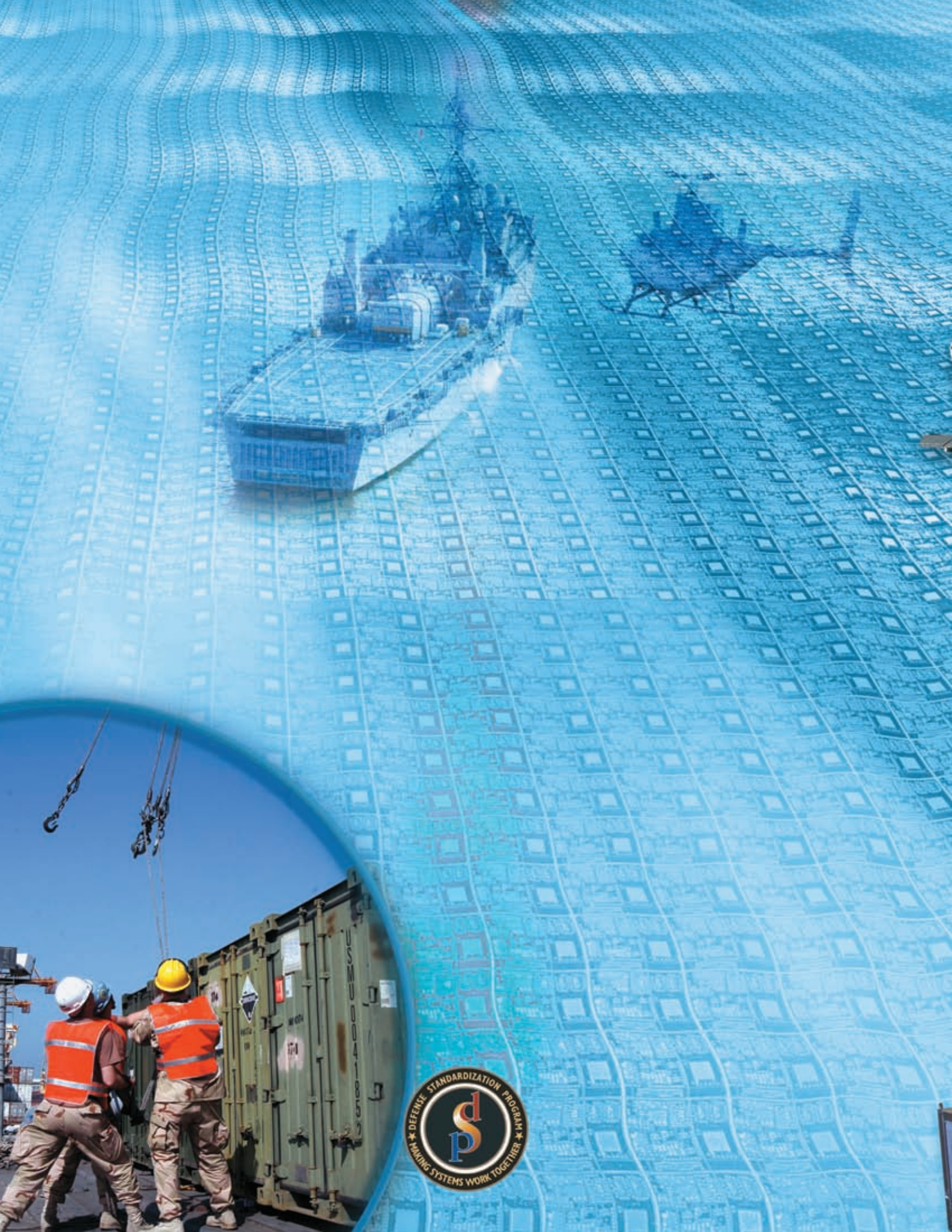
During the first 20 years of operation, JOCOTAS concentrated its efforts on rigid-wall tactical shelters that are deployed worldwide and readily transportable by air, land, and sea. Before JOCOTAS was formed, more than 200 types of rigid-wall tactical shelters existed among the four services, creating a huge logistics burden. JOCOTAS succeeded in reducing the standard family of rigid-wall tactical shelters to 20 items.

In 1995, JOCOTAS expanded its purview to include soft-wall and hybrid shelters, and added voting member representation from the Defense Logistics Agency, the primary DoD acquisition organization for soft-wall shelters. An excellent resource for military tent information is http://warfighter.dla.mil/special/basecamp/index.jsp.

JOCOTAS took the lead both in transitioning existing military shelter specifications to voluntary consensus standards and in developing new voluntary consensus standards under the auspices of the ASTM E06.53 Subcommittee on Materials and Processes for Durable Rigidwall Relocatable Structures. Thus far, 28 voluntary consensus materials, processes, and end-item shelter specifications have been established. (See http://www.astm.org/cgi-bin/SoftCart.exe/COMMIT/SUBCOMMIT/E0653.htm?L+mystore+weta5733+1156486652.)

JOCOTAS also developed the reinspection criteria and new repair procedures for the Army, Navy, and Marine Corps families of ISO shelters. The reinspection criteria are included in DoD MIL-HDBK-138, *Guide to Container Inspection for Commercial and Military Intermodal Containers*. The new repair procedures are being incorporated into the technical manuals for each shelter type. JOCOTAS also was instrumental in changing the Defense Ammunition Center and School course instruction to include the training of personnel in the inspection of ISO shelters and ISO shipping containers for conformance to the International Convention for Safe Containers.

JOCOTAS is chaired by Anthony Melita, Deputy Director, Defense Systems, Land Warfare and Munitions, within the Office of the Under Secretary of Defense (Acquisition, Technology and Logistics). For a list of the JOCOTAS officers and principal voting members, see page 45 of *Department of Defense Standard Family of Tactical Shelters* (available at http://nsc.natick.army.mil/media/print/JOCOTAS.pdf).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