



DEFENSE STANDARDIZATION PROGRAM

CASE STUDY

Joint Committee on Tactical Shelters (JOCOTAS)

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This case study describes the efforts of the Joint Committee on Tactical Shelters (JOCOTAS) to standardize tactical shelters across all four armed services and how those actions have reduced the types of shelters the Department of Defense (DoD) uses. The benefits realized include reductions in research and development and logistics costs, a lighter logistics burden, easier transportation, and rapid deployment. Shelters currently being created and deployed by the Army, Air Force, Navy, and Marine Corps are usable by more than one service and make up the JOCOTAS-approved DoD standard family of tactical shelters.

The mission of JOCOTAS has continually evolved to support the changing requirements of the military services. In 2017, the JOCOTAS Joint Standardization Board (JSB) began coordinating with the Joint Expeditionary Basing Working Group (JEBWG). A joint JOCOTAS-JEBWG team evaluated the roles and responsibilities of each organization, found areas for collaboration, and will consolidate activities in 2018. This new organization will be known as Joint Standardization Board (JSB) for Expeditionary Shelters and Basing Equipment (JSB-ESBE).

Joint Committee on Tactical Shelters



BACKGROUND

The U.S. military is required to deploy anywhere in the world in varying terrains and weather conditions, often with little warning or time for preparation. The variety of conditions makes it essential that tactical shelters protect soldiers properly in a wide range of environmental conditions. Tactical shelters must be mobile, provide adequate work and living space, and enable the tasks required for successful operations, such as command and control, communications, logistics, and other support activities.

- **Rigid wall shelters**—pre-sized structures (non-expandable and expandable shelters) that are transported by land, sea, or air. These shelters require minimal site preparation and no specialized setup.
- **Soft wall shelters**—include air-supported and frame-supported fabric structures that are transported and then erected or assembled on site.
- **Hybrid shelters**—a combination of rigid wall and soft wall shelters that are transported and erected or assembled on site.

WHAT IS A TACTICAL SHELTER?

A tactical shelter is a mobile, transportable structure designed for a functional requirement. It supplies an environmentally controllable space for human habitation and use or permanent equipment storage or operation. Tactical shelters are categorized under three different types:¹

Increasingly, shelters must also furnish ballistic protection, energy efficiency, and contingency basing to properly support the evolving military requirements presented by current military operations.

¹ The following are items that are not considered tactical shelters and are not included in the DoD standard family of tactical shelters:

- Containers used exclusively for cargo transportation, for example, milvans, conex containers, bulk general purpose cargo, and refrigerated containers
- Structures that cannot be redeployed in their original shipping configuration, are designed as a permanent single-use item, and require non-organic elements to deploy
- Vans
- Enclosed semi-trailers.



PROBLEM

In the early 1970s, each armed service had its own shelter development program, resulting in more than 100 different special purpose shelters employed to meet the needs of the services. Shelter research and development (R&D) was left to the services and usually undertaken on an immediate-need basis to address specialized service-specific requirements. Tactical shelters were often produced in small numbers at high cost and, with no required specifications, in many configurations and designs.

These practices resulted in inefficient application of Department of Defense (DoD) R&D and procurement resources and a shelter inventory catalog that grew constantly without accounting for changing requirements and trends. The lack of standardization and interchangeability of parts led to more spares requirements and a larger logistics footprint. Shelters were also difficult to transport due to incompatibility with commercial transportation, including container ships.

These factors incentivized DoD to standardize the R&D and procurement of shelters with the goal of reducing and eliminating nonstandard and substandard shelters from DoD's inventory.

APPROACH

In 1974, DoD directed a service-wide review of shelter development activities, resulting

in the recommendation to establish a joint committee for eliminating, or substantially curtailing, the proliferation of shelters and duplication of R&D efforts by the services.

In 1975, the Office of the Secretary of Defense convened the Joint Committee on Tactical Shelters (JOCOTAS) with the following goals:

- Establish a DoD standard family of tactical shelters.
- Maximize and enforce the use of the DoD standard family of tactical shelters.
- Actively advocate for the creation and fielding of state-of-the-art shelters and ancillary equipment.
- Share information and any available resources to eliminate duplication of shelter technology development efforts; work toward common solutions for problem areas.
- Establish standards for shelters to ensure structural and environmental performance and compatibility with commercial and military transportation and material handling assets.
- Create a forum for interaction between JOCOTAS and industry.

The activities of the committee can be broadly categorized into three areas:

- **Standardizing R&D.** JOCOTAS implemented an initiative to eliminate duplication of R&D efforts by analyzing and deconflicting service



R&D submissions. This enabled the committee to find planned projects that could be consolidated for resource savings, incentivizing standardized and coordinated tactical shelter research across the services.

- **Establishing a family of DoD standards for tactical shelters.** Creating a new DoD standard family of shelters included adopting a new class of standard shelters designed to adequately address the needs of all services and across the varied environmental conditions found in theatres of deployment, conflict, and areas of military engagement.
- **Promoting and implementing the use of tactical shelters through a joint forum.** JOCOTAS also provides a forum for technical interchange among DoD, commercial industry, and academia via joint working group meetings. Industry and academia are considered critical partners in shelter development, identifying emerging technologies and improving materials to meet new shelter requirements while reducing costs. Leveraging the convening power of DoD and affiliated agencies to shape the direction of research, JOCOTAS combined the innovative solutions devised by industry with research findings of academic institutions to create practical solutions for the warfighter.

Using this joint DoD-service-agency-industry approach, JOCOTAS has succeeded in specifying the criteria to be used for determining standard shelters.

Shelters considered standard by JOCOTAS have the following characteristics:

- Adopted by a military service through a Milestone C decision with full material release
- Demonstrated interoperability with existing DoD standard shelters and ancillary military equipment and material handling
- A competitively procurable technical data package (drawings or specifications)
- Government DoD technical manuals prepared in accordance with MIL-STD-40051-2C "Preparation of Digital Technical Information for Page-Based Technical Manuals (TMs)"
- Total life-cycle management coordinated through a program or product manager.

In 1995, soft wall and hybrid shelters were brought under the purview of JOCOTAS, ensuring that shelters developed by the Army, Air Force, Navy, and Marine Corps are usable by more than one service, and all of them are included in the JOCOTAS-approved DoD standard family of tactical shelters.

RESPONDING TO THE EVOLVING DOD MISSION

The JOCOTAS mission has changed and expanded over the years to address the evolving needs of DoD and the armed services.



In 2006, the Defense Standardization Program Office (DSPO) chartered the JOCOTAS Joint Standardization Board (JSB) to enable senior-level visibility for standardization and interoperability initiatives and establishing non-government or DoD standards (in accordance with DoD Manual 4120.24, "Defense Standardization Program Procedures").

This expanded the JOCOTAS mission to include

- improving interoperability of joint and coalition forces;
- providing materiel development standardization considerations to program offices and buying commands;
- holding a forum for recommending, creating, and coordinating joint policy doctrine;
- defining joint doctrine, tactics, techniques, and procedures;
- establishing standardized parts and components that have lowered costs, reduced inventories, shortened logistics chains, and improved readiness;
- creating joint solutions to issues that affect the tactical shelters and expeditionary basing domains; and
- furnishing the interface for commercial-military integration.

In 2015, the JOCOTAS JSB membership revised the charter to expand its purview in response to DoD Directive 3000.10, "Contingency Basing Outside the United States," to encompass a wider variety of base camp and airbase equipment in addition to soft and rigid wall

shelters. The DoD defense standardization executive approved the revised charter, identifying JOCOTAS as the "JSB for Tactical Shelter and Expeditionary Basing Systems." Expeditionary basing provides the infrastructure, installation services, and facilities for bases and camps in worldwide locations to support DoD expeditionary operations. Standardizing services and operations of expeditionary basecamps provides both increased effectiveness and reduced costs.

PAYOFFS

Using this joint DoD-service-agency-industry has resulted in significant payoffs. Standardization of tactical shelters approved for use across the military services has led to tremendous efficiencies in the logistics and inventory of shelters, while also reducing development costs. The tactical shelters used by the services now are assured to be top quality, supplying warfighters with affordable, standardized, and supportable systems that ensure U.S. armed forces can successfully deploy to combat zones with increased safety. Tangible payoffs of the JOCOTAS program include the following:

- Reduction in the types of tactical shelters that exist among the services from more than 100 to 21.
- Elimination of R&D duplication, saving millions of dollars by simplifying logistic supportability costs, and supplying an avenue for multiservice buys of shelters.
- Reduction in specialized design and tooling requirements, resulting in greater

industry involvement, better quality, higher production rates, and greater economies of scale.

- Significant decrease in the large logistics burden created by numerous specialized shelters.
- Development of ASTM E-1925, "Specification for Engineering and Design Criteria for Rigid Wall Relocatable Structures," to ensure that shelters are made of approved materials, meet safety requirements, and are compatible with commercial transportation systems.
- Adoption of International Organization for Standardization (ISO) handling, structural, and dimensional standards for container vessel shipments, enabling rapid worldwide deployment.
- Lower long-term deployment costs realized by recovering deployed structures and reusing them, thereby eliminating wasted dollars on permanent construction that is later abandoned.

SHELTER TECHNOLOGY ADVANCEMENTS

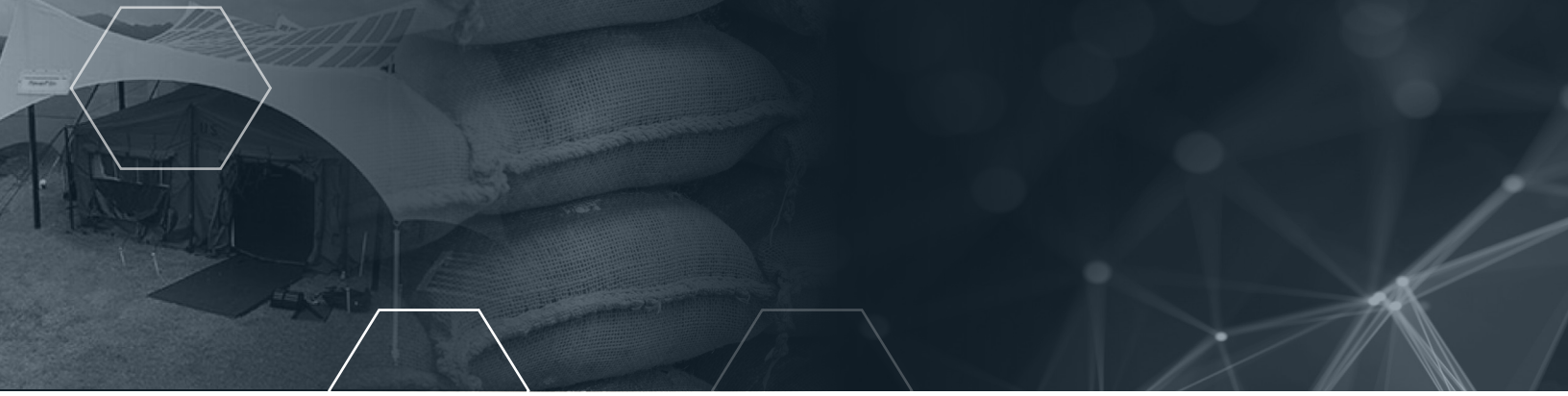
The JOCOTAS program has brought together the diverse shelter community, uniting the armed services, the Defense Logistics Agency, the R&D community, academia, and industry developers in coordinated efforts that have led to a standard family of shelters that supports all of DoD while maximizing efficient use of resources. They have cooperated on technology development initiatives over the years, including partnering

on joint projects or leveraging and transferring technologies.



Some of the current JOCOTAS requirements for future shelters include the following improvements:

- Energy efficiency
- Transportability
- Weight reduction
- Corrosion resistance
- Interoperability (standard interfaces shared by all the services and used by all manufacturers)
- Producability (shelters that can be produced by a variety of manufacturers)



- Commonality and standardization across shelter types (for example doors and fittings)
- Compliance with legacy performance requirements
- Affordability.

JOCOTAS has also introduced significant advances in DoD's tactical shelter technology:

- **Energy-efficient, motion detectors** for turning lights on and off, and thermal insulation panels and pads that can also provide ballistic protection.
- **LED lighting:** An easy technology to adopt and showed an immediate reduction on power usage of 45 percent or more.
- **Solar power photovoltaic arrays:** The armed services have teamed, researched, developed, and produced flexible

photovoltaic arrays that convert energy from the sun into electrical power. These photovoltaic arrays have been integrated into shelters for both shade and electric power that can be converted to alternating current for immediate use or stored in batteries. Each service has tailored this technology for their own applications.

- **Ballistic protection:** The Expeditionary Shelter Protection System uses state-of-the-art ballistic panel technology to transform vulnerable tents in expeditionary base camps into fortified shelters where soldiers can work, eat, and rest safely.
- **AirBeam technology:** AirBeams are replacing the metal and carbon-fiber poles and support pieces that form the framework for traditional tents. AirBeams are air-inflated fabric structures that provide lighter weight designs, rapid and self-erecting deployments, enhanced mobility, and fail-safe collapse. AirBeam shelters support command and control operation centers, base camp, aircraft and vehicle maintenance, medical, chemical/biological and decontamination, and industrial applications.





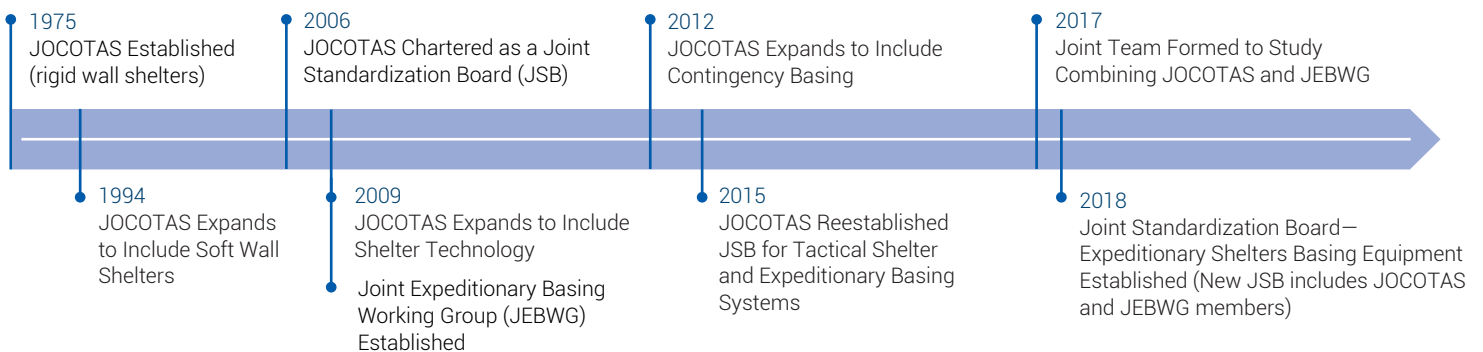
- **Deployability:** AirBeam structures are easy and quick to erect, taking eight soldiers only about four hours to set up a 150-man camp. With a diesel-powered compressor, soldiers can inflate the four AirBeams of a 32 x 20-foot tent to 60 pounds per square inch in about 10 minutes. When deflated, AirBeams take up less space and are lighter than traditional tent frames, making them more deployable. Due to the AirBeam technology, the Army Medical Research and Materiel Command is buying Tent Extendable Modular Personnel Temper AirBeam shelter to replace aging rigid frame tents. The new tents are 50 percent lighter, cutting 17 tons from the weight of a 148-bed field hospital, and the air-supported shelters can be erected by four soldiers in about 15 to 30 minutes, which is 85 percent quicker than the older medical tents.

- **Chemical and biological shelters:** Among the earliest AirBeam tents were chemical and biological (chem-bio) protective shelters developed for the Army. The chem-bio shelters serve as emergency treatment centers for personnel exposed to chemical and biological weapons. Because they lack metal frames, the shelters weigh 66 percent less than their predecessors, take up 25 percent less space when stored, and can be folded to fit in the back of a Humvee.

JOCOTAS PROGRESSION TOWARD THE FUTURE

In 2009, the Joint Expeditionary Basing Working Group (JEBWG) was chartered to examine engineering standards and determine where opportunities existed to capitalize on equipment commonality and interoperability in a deployed

Timeline of JOCOTAS Events





SEP 19 2018

MEMORANDUM FOR JOINT COMMITTEE ON TACTICAL SHELTERS

SUBJECT: Joint Standardization Board for Expeditionary Shelters and Basing Equipment


The attached charter establishing the Joint Committee on Tactical Shelters (JOCOTAS) as the Joint Standardization Board (JSB) for Expeditionary Shelters and Basing Equipment (ESBE) under the Defense Standardization Program (DSP) is approved. The objective of the DSP is to achieve common, mutually satisfactory solutions to shared requirements and problems.

The JSB will:

- Develop and improve joint processes and procedures to facilitate the design, development, and acquisition of expeditionary shelters, structures and basing equipment/systems that maximize interoperability to the greatest extent possible.
- Authorize, approve, and manage the development and maintenance of specifications/standards (IAW DODM 4120.24, Defense Standardization Program Procedures) that ensure adequate operational and environmental performance and compatibility with commercial and military transportation and material handling assets.
- Promote the use of standard parts/components to reduce cost, reduce inventories, shorten logistic chains, and improve readiness. Establish an effective Department-wide forum for interoperability, coordination, planning, and decision-making.

I appreciate your leadership in the DSP's efforts to achieve standardization and interoperability for expeditionary shelters and basing equipment.

My focal point for JSBs is Mr. Lloyd Thomas III, Defense Standardization Program Office, (571) 767-7588, Lloyd.Thomas@dla.mil.


Kristin J. Baldwin
Defense Standardization Executive

Attachments:
As stated

CHARTER
JOINT STANDARDIZATION BOARD
FOR
EXPEDITIONARY SHELTERS AND BASING EQUIPMENT

1. **Name of committee:** DOD Joint Standardization Board (JSB) for Expeditionary Shelters and Basing Equipment (JSB-ESBE)
2. **Category and type of committee:** Joint DOD
3. **Date established:** New JSB charter (replaces JSB for Tactical Shelter and Expeditionary Basing Systems)
4. **Authority:**
 - a. DOD Manual 4120.24 "Defense Standardization Program Procedures," September 24, 2014
 - b. DOD Directive 3000.10 "Contingency Basing Outside the United States," January 10, 2013
5. **References:**
 - a. DOD Instruction 5105.18 "DOD Intergovernmental and Intragovernmental Committee Management Program," Incorporating Change 1, August 7, 2012
6. **Duration:** The need for this JSB is on a continuing basis. However, it will be terminated upon completion of its mission or five years from the date this charter is approved, whichever is sooner, unless extended by the Defense Standardization Executive.
7. **Mission:** JSB-ESBE brings together DOD organizations and experts involved in expeditionary shelters and basing equipment (ESBE) and serves as an advisory body to the Service Headquarters, Joint Staff, and Office of Secretary of Defense for all matters relating to ESBE. Although each Service retains the authority to develop and procure assets as necessary to support its missions, JSB-ESBE has two fundamental functions:
 - a. minimize duplication of effort across the Services with regard ESBE development and acquisition;
 - b. advocate the use of standard ESBE to promote interoperability, improve supportability, and reduce life cycle cost.
8. **Responsibilities:** To carry out its mission, JSB-ESBE assumes the following responsibilities –
 - a. Establish and amend, when necessary, the JSB's scope; roles and responsibilities; authorities and references; and procedures and processes (to include operating procedures and action plans).
 - b. Identify, catalog, and promote a standard collection of state of the art ESBE for DOD use.

Figure 1: Charter: Joint Standardization Board for Expeditionary Shelters and Basing Equipment Page 1 and 2

environment. JEBWG acts as an advisory group to the four service headquarters and the joint staff for all matters relating to base camp/airbase equipment, and focuses on minimizing duplication of effort across the services and creating a coordinated and synchronized approach to life-cycle management for base camp equipment.

In 2017, seeing the potential for increased coordinated efforts to support both shelter development and expeditionary basing, JOCOTAS and JEBWG members formed a team to evaluate the unique roles and responsibilities of each organization and identify areas for coordinated efforts. The recommendation of the team was to create a single Joint Standardization Board (JSB) for Expeditionary Shelters and Basing Equipment (JSB-ESBE).

The JSB-ESBE brings together DoD organizations and experts involved in expeditionary shelters and basing equipment (ESBE) and serves as an advisory body to the service headquarters, joint staff, and Office of Secretary of Defense for all matters relating to ESBE. Although each service retains

- c. Share information and available resources between the Services to minimize duplication of effort with regard to ESBE.
- d. Promote interoperability in the development of ESBE solutions, both within and between Services. When Service-specific variants or non-standard ESBE prove to be necessary, promote interoperability to the greatest extent possible.
- e. Promote the use of standard parts/components to reduce cost, reduce inventories, shorten logistic chains, and improve readiness.
- f. Establish, promote, and continually improve upon joint processes and procedures that facilitate ESBE design, development, and acquisition activities.
- g. Promote the use of standards and specifications during the development of ESBE that ensure adequate operational and environmental performance and compatibility with commercial and military transportation and material handling assets.
- h. Interface with industry, academia, and government agencies as needed to keep pace with and stay informed of technological progress.
- i. Establish and maintain consistent documentation of JSB proceedings.

9. Definitions: The purview of JSB-ESBE is defined as follows –

- a. **Expeditionary shelters:** Transportable structures designed to meet a functional requirement. They provide an environmentally controllable space for human habitation and use, and/or integrated equipment storage and operation.
 - i. Rigid wall shelter: A pre-sized structure (either non-expandable or expandable) comprised entirely of rigid structural components. The shelter is transported by land, sea, or air, and requires minimal site preparation and no specialized set up.
 - ii. Soft wall shelter: A pole or frame (either rigid or inflatable) supported fabric structure that is transported and then set up or assembled on site.
 - iii. Hybrid shelter: A structure comprised of a combination of rigid and fabric components that is transported and then set up or assembled on site.
- b. **Basing equipment:** The equipment required by the Services to establish an expeditionary or temporary base for operations and life support. Such equipment includes hygiene systems, environmental control systems, water production and distribution systems, waste/wastewater handling systems, and field feeding systems.
- c. **Exclusions:** Equipment that are not considered ESBE and are thus not covered by this charter are as follows –
 - i. containers used exclusively for cargo transportation;
 - ii. structures that cannot be reconfigured in their original shipping configuration;
 - iii. structures designed as permanent single use items;

- iv. vans and enclosed semi-trailers;
- v. Special Operations Forces equipment;
- vi. force protection equipment;
- vii. aerospace ground equipment;
- viii. fuel support equipment;
- ix. weapon system peculiar support equipment;
- x. assets covered under other JSBs or DOD issuances.

10. Membership:

- a. **Chair:** The JSB-ESBE Chair is Director, Defense Standardization Program Office, unless otherwise delegated.
- b. **Executive Secretary:** The Chair will name an Executive Secretary to arrange and facilitate meetings, prepare agendas, document and distribute meeting minutes.
- c. **Membership:** The JSB is comprised of representatives from all affected Military Departments and Defense Agencies.
- d. **Technical Working Groups (TWGs) and Chairs:** The JSB-ESBE Chair may establish TWGs, as necessary, to carry out the JSB's mission. The process for establishing TWGs and their respective Chairs is defined in the JSB-ESBE operating procedures.

11. Meetings: JSB-ESBE and its TWGs convene as follows –

- a. Meetings are scheduled by the JSB-ESBE Chair or by the Executive Secretary, if so delegated, to accommodate maximum membership attendance. The JSB-ESBE Chair has the authority to schedule additional meetings or set up sub-committees, as necessary, to carry out the JSB's mission. The Chair presides over JSB-ESBE meetings and reviews the results of TWG meetings.
- b. At a minimum, JSB-ESBE meetings are held semi-annually to execute the responsibilities described above and resolve disputes.
- c. TWG meetings are scheduled by the TWG Chair as necessary. The TWG Chair presides over TWG meetings and reports meeting highlights to the JSB-ESBE Chair.
- d. The JSB-ESBE Chair will invite government participants involved with or interested in ESBE to attend meetings, to include personnel from technology and materiel developers, capability developers and requirements agencies, procurement agencies, and technology integrators and engineering support services. The JSB-ESBE Chair may consider invitations to non-government participants as necessary.

Figure 2: Charter: Joint Standardization Board for Expeditionary Shelters and Basing Equipment Page 3 and 4

the authority to develop and procure assets as necessary to support its missions, JSB-ESBE has two fundamental functions:

1. Minimize duplication of effort across the services with regard to expeditionary shelters and basing equipment development and acquisition.
2. Advocate the use of standard expeditionary shelters and basing equipment to promote interoperability, improve supportability, and reduce life-cycle costs.

In 2018, the new JSB-ESBE charter was approved and is shown on pages 10 and 11.

SUMMARY

For the foreseeable future, the military will operate in austere environments using expeditionary base camps as projection platforms. The JSB-ESBE will continue the mission to bring together DoD organizations and experts involved in expeditionary shelters and basing equipment and will serve as an advisory body to the service headquarters, joint staff, and Office of Secretary of Defense for all matters relating to expeditionary shelters and basing equipment.

