# Defense Standardization Program

# JOURNAL

## For the Defense Standardization Program Community

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## Inside...

*DoD policy is to promote standardization of materiel, facilities, and engineering practices to improve military operational readiness, reduce total ownership costs, and reduce acquisition cycle time.*

*DSP Mission: Identify, influence, develop, manage, and provide access to standardization processes, products, and services for warfighters, the acquisition community, and the logistics community to promote interoperability, reduce total ownership costs, and sustain readiness.*

# War is Hell, but War Without Standardization Is Really Hell!

Air Marshall Sir John Slessor of World War II fame wrote that "War without allies is bad enough; with allies, it is hell." While his "tongue-in-cheek" comment pertained to the strategic, tactical, and political complexities of coordinating the forces of different countries, he may very well have been talking about different forces trying to work together without standardized equipment and supplies. The annals of warfare are replete with disastrous examples of what can happen without materiel standardization.

**Gregory E. Saunders**
**Director, Defense Standardization**
**Program Office**

During the Napoleonic Wars, the coalition of British, Prussian, Austrian, and Russian forces usually failed to press home their numeric and materiel advantages over the French forces because of communication difficulties and a lack of cannon, small arms, and ammunition standardization. While nothing could have saved the ill-fated campaign in Gallipoli in 1915, the fact that units making the joint landing used different rifles and ammunition did not help the situation. In 1940, the Belgian army may have been more successful against the Germans if the ammunition the British supplied had fit their empty rifles.

During the Second World War, a certain degree of standardization occurred because the U.S., as the "arsenal of democracy," supplied many of its allies with materiel. After the war, however, as allies began to rebuild their defense industries, standardization began to disappear. During a bombing, navigational, and reconnaissance competition organized by the U.S. Strategic Air Command in 1957, the British had to send 176 tons of support equipment to the U.S. so that their aircraft could participate, prompting a representative of the British Air Ministry to remark that the only thing that British and American aircraft had in common were the wheel chocks. Author Tom Clancy even pointed to the problems surrounding allied materiel standardization in his book Red Storm Rising when the Soviet Defense Minister said: "They [NATO] cannot standardize their weapons, and because of it their supply situation is in utter chaos."

While much remains to be done, there has been sig-

nificant improvement in recent decades in the area of materiel standardization thanks to the dedicated efforts of standards engineers participating on the committees of NATO, ABCA, ASCC, and other groups. Ammunition, fuel, and lubricants are some key logistics support areas where we and our allies have achieved some high degrees of standardization, but there are many other examples.

In September 2000, a Turkish submersible rescued sailors from the Italian submarine Prini as part of the NATO search and rescue exercise Sorbet Royal 2000. The rescue was possible because NATO submersibles have a standard-sized hatch that is compatible with all NATO submarines. One can't help but wonder if perhaps some of the sailors onboard the Russian submarine Kursk could have been saved just a month before this exercise if there had been similar standardization.

Another NATO success story we reported in the August 2001 issue of the Journal related to the development of five NATO Standardization Agreements (STANAGs) to harmonize environmental safety tests for munitions and explosives for the U.S. and our allies. These NATO standard test methods eliminate or minimize the need to perform costly retesting caused by differing national and international test methods and procedures. For the Patriot Missile Program alone, the savings will be over $147 million and for the Theater High-Altitude Area Defense

(THAAD) Program, there will be savings in excess of $271 million. A major allied standardization success story in the making is the Multifunctional Information Distribution System (MIDS), a cooperative program between the U.S., the United Kingdom, France, Germany, Italy, and Spain to develop a low-cost, interoperable data link between NATO allies' aircraft and air-based, ground-based, and ship-based command and control centers that is secure and jam-resistant. Today, most NATO aircraft communicate using unsecured analog radios that provide only interactive voice communications. This severely limits the sharing of combat data among

dardization efforts.

Of course, as many allied standardization success stories as we can highlight, there are also many examples of interoperability shortfalls. As the DoD report to the Congress on the lessons learned from the military operation in Kosovo indicated, NATO effectiveness was hampered by a lack of systems interoperability, and "the inability to pass high-fidelity digital data was a shortfall in every phase." There were also in-flight refueling problems, and several allied aircraft were not equipped with the necessary Identification Friend or Foe equipment to distinguish them from hostile aircraft. This lack of interoperability result-

define the technical requirements, but also because they help mitigate some non-technical interoperability obstacles. Technically speaking, U.S. allies today could enjoy a much higher level of command and control interoperability if everyone used the Joint Tactical Information Distribution System (JTIDS). While this system is installed on several U.S. systems, it is only present in a few British and French systems. The interoperability barriers are the high costs associated with buying, installing, and maintaining JTIDS, and the fact that the U.S. is the only place of manufacture. The STANAGs, however, don't define a hardware solution. They define interfaces and performance requirements that allow for the development of the MIDS, which will not only be affordable and reliable, its compact size will allow retrofitting with existing systems and will allow our allies to share in development and production benefits essential to preserving their own industrial bases.

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coalition partners. This limitation is going to disappear or lessen in the not too distant future; however, because of the interoperability requirements established by STANAG 4175 for the MIDS and by STANAG 5516 for the data link 16. Once operational, MIDS will dramatically improve aircraft situational awareness by providing an integrated air picture, targeting data, and the locations and heading of friendly and enemy aircraft. By the year 2010, U.S. fighters and bombers (including the Joint Strike Fighter), Eurofighter 2000, Rafale, Sea Harrier, THAAD, U.S. Navy surface ships and submarines, the German Frigate 124, and many more U.S. and allied air, land, and sea based systems will share interoperable command and control systems because of NATO stan-

ed in the U.S. flying a disproportionate share of the air missions. The DoD Kosovo report, however, offered more than just lessons learned. There were suggestions for improving allied interoperability in the future. One significant suggestion was for making interoperability improvements by focusing on standards, and not hardware. In the past, standardization was often the result of allies buying U.S. equipment. However, if we want our allies to invest more in interoperability in the future, there must be some economic incentive for them as well. This is an area where standards can help.

Returning to my earlier example of MIDS, the two key NATO Standardization Agreements are important not only because they

With the growing emphasis on coalition warfare, standardization between the U.S. and its allies has emerged as an important, complex issue that offers significant advantages, but also poses great challenges. Recognizing this importance, we have devoted much of this Journal issue to just a few of the ongoing multinational treaty organization standardization efforts. Because of the value, please hold onto this edition for future reference. While standardization and standards are not a cure-all for the operational and materiel issues facing the U.S. and its allies, perhaps if Sir John Slessor were alive today, the progress we have made might make him reconsider his view that working with allies is hell.

# DoD and Military Departmental Policies and Procedures on Participation of the Acquisition Community in International Standardization Agreements (ISA) Activities

By John Tascher,
Defense Standardization Program Office

## NOTE: PLEASE SEE LIST OF NATO ACRONYMS ON PAGE 52

There are numerous policy documents that guide and direct international standardization activities. Though some of these are fairly old, with only an updating of the organizational codes, the principles and policies still apply. Two of the more important documents are a DoD Directive and an instruction from the Chairman of the Joint Chiefs of Staff.

DoD Directive 2010.6, "Standardization and Interoperability of Weapons Systems and Equipment within the North Atlantic Treaty Organization," was issued in March of 1980. The Directive:

- Assigns ASD (ISA), now USD (AT&L), as the office of primary responsibility for standardization of material;
- Encourages development of equipment procured for U S forces in NATO to be standardized or at least interoperable with equipment of other members of NATO, and
- Establishes close and parallel relationships with NATO organizations and NATO allies for the development of compatible doctrine and operational concepts.

CJCSI 2700.01, "International Military Rationalization, Standardization and Interoperability (RSI) between the US and its Allies and Other Friendly Nations," is dated January 30, 1995. This Instruction:

- Assigns Director for Operational Plans and Interoperability of the Joint Staff (J-7) as office of primary responsibility,
- States areas to focus on (C4, cross-servicing of aircraft, etc.),
- Assigns responsibilities of Lead Service or Defense Agency (component that has primary agreements interest in equipment, doctrine, procedure being submitted for standardization),
- Provides for principal delegate to ISA committees, and
- Stipulates staffing procedure used in formulating US position on draft agreement and in ratifying and implementing agreements.

In spite of this guidance, up to now, there has been little consistency among the military departments regarding DoD participation in the development, ratification, and implementation of International Standardization Agreements (ISAs) used in acquisition. The Defense Standardization Council recognized that due to this lack of consistent approach, potential disconnects and problems could occur. Examples of such problems are cancellation of MIL documents used to implement ISAs, participants not trained in MilSpec/Acquisition Reform, and no guidance for participants on ISA committees. The Council endorsed the need for central authorities and common processes, a DoD-wide set of criteria for ratification, a common ratification procedure, a standard procedure for withdrawing ratification of ISAs, and a completed index of ratified ISAs. The Under Secretary of Defense (Acquisition, Technology and Logistics) issued a policy to address these issues. This policy now forms Chapter 6 of DoD 4120.24-M, Defense Standardization Program Policies and Procedures. The policy applies to ISAs implemented through defense standardization documents and to ISAs related to materiel acquisition. The key goals of the policy are to ensure proper procedures for ratification of ISAs, provide for the implementation of ISAs, ensure consistency with acquisition reform, and make documents visible and available.

ISAs used in acquisition are often referred to as materiel ISAs. A materiel ISA is a record of agreement among several or all of the members of a multinational treaty organization, which may be used—directly in a solicitation or contract or indirectly through an implementing document—to acquire compatible, interoperable, interchangeable, or identical systems, subsystems, components, parts, software, and supply items for allied defense

forces.  Materiel ISAs include not only products but also test methods to verify compliance, and engineering practices and processes used in the design, manufacturing, and maintenance of those products.  Materiel ISAs are usually implemented through incorporation into Defense or Federal standards and specifications, but may be self-implementing and can be cited directly in solicitations, contracts, or other acquisition documents. Elsewhere in this issue of the Defense Standardization Program Journal you may read about service activities and policies for materiel ISAs, but all ISA committee participants and users should become familiar with the DoD policies and procedures.  A few of the areas that are covered in Chapter 6 of the Defense Standardization Manual are highlighted below.

The Military Departments are developing service specific guidance for the implementation of Chapter 6 of DoD 4120.24-M.  In addition to specifying policy and procedures, the chapter specifies responsibilities for the various participants in the development and use of ISAs:  Departmental Standardization Offices (DepSOs), the National Delegates (often called Heads of Delegation), Office of Primary Responsibility for International Standardization Offices, and the Preparing Activities.  Participants in groups developing material ISAs must become familiar with Chapter 6 and the departmental implementation guidance.  Several important participant responsibilities are described below.  The Military Departments will determine the responsibilities of the participants.

• For all ISAs intended for use in acquisitions, participants must consult with their Standardization Executive on issues such as whether to participate in developing, or whether to ratify specific ISAs,
• The United States should only participate in the development and ratifications of ISAs that will improve the effectiveness of multinational forces when operating together, or that will ensure compatibility, interoperability, interchangeability, or commonality for US-supplied materiel, and that will not conflict with acquisition policy.
• When these conditions are met, participants should ensure appropriate support for his or her work on the ISA group, and coordinate the proposed ISA to ensure that it is technically correct and adequate and meets identified needs of the U. S. military.
• The participant recommends to his or her Standardization Executive whether to ratify an ISA intended for use in acquisitions and will include a plan for implementing the ISA.  All US-ratified ISAs must either be self-implementing or have a US implementing document.
• US-ratified ISAs are sent to the DoD Single Stock Point in Philadelphia for indexing and entry into the Acquisition Streamlining and Standardization Information System (commonly referred to as ASSIST), database.

In the following three articles, the Army, Navy, and Air Force each provide details on procedures and responsibilities within their department for participating in the development of ISAs.

# John Tascher



*John Tascher*

John Tascher began his career with the Federal Government in 1965 - first with the Library of Congress, then in succession:  the National Institute of Standards and Technology, the US Metric Board, the Department of Commerce, and he came to the Department of Defense in 1985.  He has worked in a variety of areas and now works primarily with the Defense Standardization Program's international standardization programs.

# International Standardization for the 21st Century-An Army View

**By Harrell Barnett and Karim Abdian**
**Army Departmental Standardization Office**

*Recent research has revealed that the Spanish Armada of 1588 - which was composed of vessels built and equipped in several countries - was armed with cannons having numerous different calibers. Ammunition could not be supplied interchangeably among the ships. Failures and delays in resupply left the great fleet open to the hit-and-run attacks of England's defenders.  This failure of interoperability and logistics commonality so diminished the huge Spanish advantage in firepower that an outnumbered English force prevailed.  The history of the Western World was ineradicably altered by a failure to recognize the importance of standardization and interoperability.*

While domestic specifications and standards are necessary to ensure interoperability among U.S. forces, international standardization agreements (ISAs) are fundamental to interoperability in a coalition environment.  Interoperability is one of the primary goals of the military operational capability outlined in DoD's Joint Vision 2020 and the Chairman of the Joint Chiefs of Staff made interoperability a key performance parameter to be included in operational requirements documents (ORD).[1]   Joint Vision 2020 describes interoperability as "the foundation of effective joint, multinational, and interagency operations."  It further identifies interoperability as "a mandate for the joint force of 2020 - especially in terms of communications [and] common logistics items. . ."

The concepts of interoperability and logistics commonality within a coalition that are so important in modern military planning grew out of the Allied experience in World War II. International standardization as we know it began in 1947, when Supreme Allied Commander General Dwight  D. Eisenhower and British Field Marshall Bernard L. Montgomery agreed that the levels of cooperation, interoperability, and standardization achieved during the war should be maintained and extended.  A formal agreement reached in December 1949 gave birth to the ABCA Program, whose members are the United States of America, Great Britain, Canada, and Australia.  New Zealand was added as an associate member in 1965.  In pursuit of its objective to achieve the highest possible degree of interoperability among the signatory Armies, the ABCA Program has produced a large number of materiel and doctrinal Quadripartite Standardization Agreements (QSTAGS) which have been ratified and implemented by the U.S. Army.

Today, ISAs are negotiated between the U.S. and myriad international organizations representing allied countries.  The NATO Military Agency for Standardization (MAS), established in 1951, fosters standardization among the members of the alliance to increase the operational effectiveness of its forces.

The Army supports the United States MAS delegation, USDELMAS, at NATO headquarters in Brussels, Belgium, representing U.S. National and Army views at international meetings and forums.

The recently revised DoD 5000 series acquisition documents emphasize the crucial nature of interoperability by requiring program managers (PMs) to identify their interoperability requirements and their strategies for meeting them.  Army PMs function within the materiel acquisition process model[2] depicted in figure 1.  At the process entry points of milestones A, B, and C, PMs must identify any ISAs that apply to their programs, along with the implementing documents, if any.



**Figure 1. Opportunities to Implement ISAs In Acquisition**

According to DoD Regulation 5000.2R,[3] "All acquired systems shall be interoperable with other U.S. and allied defense systems as defined in the requirements and interoperability documents. The PM shall describe the treatment of interoperability requirements . . ."[4] Two key points are:

- The acquisition strategy must be approved at milestones B and C.
- The PM must identify requirements or constraints that impact interoperability specifically involving ISAs.

The question is, "How will the Army's PMs accomplish this?" One effort to provide useful information to help the PMs meet this

policy memorandum established the policy, responsibilities, and procedures for each stage of participation, ratification, and implementation of ISAs, including the requirement that the consent of the Acquisition Executive and Standardization Executive be obtained during the ISA ratification process. This guidance is now incorporated in the Defense Standardization Program (DSP) policy and procedures manual, DoD 4120.24-M.

The focal point for international standardization activities within the Army is the Office of the Deputy Chief of Staff for Operations and Plans. This organization is responsible for managing

regates those that are materiel-related and intended for acquisition use and ensures that their implementing standardization documents, if any, are performance-based and conform to the principles of MilSpec Reform documented in DSP policy.

The Army is currently realigning some ISA functions. When these actions are completed, and the resources necessary for the work are provided, the Army will be better able to ensure that the tenets of acquisition reform are followed in the international arena. Furthermore, the Army's PMs will be better able to meet their policy obligations to ensure joint and coalition interoperability. This evolution in the scope of the standardization program is critical to the success of the Army's transformation into the force that meets 21st Century challenges - challenges that were summed up in "National Security in the 21st Century:

"Militaries are transforming and thus creating uneven and divergent capabilities. Communication and other interoperability requirements become increasingly difficult, even while coalition operations become more prevalent. The Army is transforming itself to meet the challenges of interoperability in a coalition environment."

## Today, ISAs are negotiated between the U.S. and myriad international organizations representing allied countries...

mandate is the comprehensive database currently being developed by the Defense Standardization Program Office and made available through the ASSIST[5] On-Line service managed by the Document Automation and Production Service.

PMs must be alert to a further issue, the policy issued by the Under Secretary of Defense for Acquisition, Technology and Logistics that states, in part: "It is essential that U.S. ratification of an ISA, which impacts defense acquisition, be contingent upon the ISA being compatible with the tenets of acquisition reform."[6] This policy is intended to prevent the reemergence of pre-acquisition reform practices in solicitations and contracts that are contrary to the tenets of performance-based procurement. An attachment to the

the varied activities required to achieve development, coordination, ratification, and implementation of ISAs developed by working groups of NATO MAS, the ABCA, and the Air Standards Coordinating Committee (ASCC).

These working groups are staffed with subject-matter experts who understand the technical ramifications of achieving joint and coalition interoperability. The U.S. National Points of Contact for each participating working group are responsible for initiating required actions to revise or develop ISA implementing documents.

Ratification drafts of ISAs and related documents are forwarded through the Army Standardization Executive (ASE) to the Departmental Standardization Office (DepSO). The DepSO seg-

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[1]Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3170.01A, "Requirements Generation System."

[2]From DODI 5000.2, Change 1, January 4, 2001 "Operation of the Defense Acquisition System."

[3]"Mandatory Procedures for Major Defense Acquisition Programs (MDAPS) and Major Automated Information Systems (MAIS) Acquisition Programs," January 1, 2001.

[4]Ibid, Part 2, Acquisition Strategy, paragraph 2.7.2, Interoperability.

[5]Acquisition Streamlining and Standardization Information System.

[6]Under Secretary for Defense for Acquisition, Technology and Logistics memorandum addressed to the Secretaries of the Military Departments, January, 15 1999.

# The Other Side of Standardization-The Navy and Operational Standardization

By David Peveler, International Standardization Program Coordinator at the Navy Warfare Development Command in Newport, RI

## No Mil-Stds, MilSpecs, or ISOs? How can this be Standardization?

Welcome to the world of "operational" standardization--the other side of the standardization problem. This world doesn't revolve around Military Standards, Military Specifications, or technical standards of any kind, but rather the development of common doctrine, tactics, techniques and procedures to utilize the weapons and systems provided by the material/acquisition world. A significant number of the standardization agreements produced by the various international military standardization organizations such as the North Atlantic Treaty Organization Air Standardization Coordinating Committee (ASCC), or American-British-Canadian-Australian Army Program (ABCA) are operational in nature. Just within NATO, over 750 operational agreements exist. Although seldom thought of together, operational and material standardization are in reality two sides of the same coin – one without the other is wasted.

The United States negotiates the majority of its international military standardization agreements within the framework of
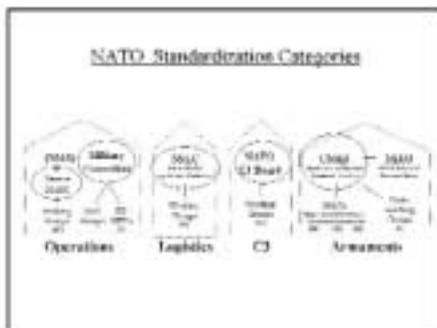


NATO; and since the procedures within the Department of the Navy are similar, this article will use NATO examples for the sake of simplicity. Within NATO, four tasking authorities create Standardization Agreements (STANAGs): the Military Committee, the Conference of National Armament Directors, the Senior NATO Logisticians Conference, and the NATO Command, Control and Communications Board, with the majority of the STANAGs generated by the first two tasking authorities.

> *The Department of the Navy has the second largest air force in NATO and the United States Marine Corps is the third largest army...*

Within the Military Committee, the NATO Standardization Agency (NSA, formerly the Military Agency for Standardization or MAS) coordinates the four Service boards (Air, Army, Joint, and Navy) that cover the "operational" standardization issues. Within the Conference of National Armament Directors, a parallel organization consisting of the NATO Army Armaments Group, the NATO Air Force Armaments Group, the NATO Naval Armaments Group, and the Conference of National Armament Directors Cadre Groups develops material and acquisition related agreements. The Senior NATO Logisticians Conference provides oversight in logistical matters while leaving the "operational" logistic

issues to the NATO Standardization Agreement Service Board working groups for resolution. The Assistant Secretary of Defense (Acquisition, Technology and Logistics) and the Joint Staff J-4 represent the U.S. on the Senior NATO Logisticians Conference. The Command, Control, Communication (C3) standardization falls under the NATO C3 Board (NC3B) with U.S. representation from the Assistant Secretary of Defense (Command, Control, Communication, and Intelligence), the Joint Staff J-6, and the Military Communications and Electronics Board. The Department of the Navy input to both the Senior NATO Logisticians Conference and the NC3B flows through the Joint Staff. As shown in the diagram, each of these tasking authorities works within a stovepipe, and this separation between the operational and material sides of standardization at NATO is mirrored in the U.S., particularly within the Department of the Navy.

By its very nature, international standardization within the Department of the Navy is more complex than in the other services. Within the realm of NATO and the other international organizations with which we interact, naval issues generally mean ships, air

issues generally involve air forces, and land issues involve armies. But, as a colleague is very fond of pointing out – the Department of the Navy has the second largest air force in NATO and the United States Marine Corps is the third largest army. Therefore, the Department of the Navy is, or should be, vitally interested in the work of just about every operational and material working group or working party that exists.

Keeping track of such a broad scope of work is difficult and is something with which the Department of the Navy has struggled. What would be a difficult job under the best of conditions has become even more so after a decade of reorganization, disestablishment and physical relocation of key commands, decentralization of responsibilities, and the lack of current instructions.

The Interim Department of the Navy International Standardization Organization Manual, authored by **CAPT** *Payne Kilbourn*, the Navy Delegate to the NATO Standardization Agency from 1999 to this past August, consolidates the international standardization responsibilities delineated in other Department of the Navy directives, updates the names to reflect current commands, and provides a framework of coordination procedures. This manual designates four managers, each responsible for a number of assigned working groups. Managers have a wide range of responsibilities but the two most important ones are to ensure adequate Department of the Navy representation in all Navy related working groups, and a coordinated formal Navy concurrence with each STANAG prior to U.S. ratification.

**Responsibilities.** The Navy Warfare Development Command (NWDC) is responsible for the management of the majority of the

NATO Standardization Agency Naval, Air and Joint Board working groups, a few Army Board groups, and the Air Standardization Coordinating Committee working parties. The Marine Corps Combat Development Command (MCCDC) is responsible for all of the various NATO Standardization Agency and Conference of National Armament Directors ground combat related working groups, as well as the American-British-Canadian-Australian Army program (ABCA). The Navy's Senior National Representative (OPNAV N096N) serves as the manager for the remainder of the Conference of National Armament Directors groups (NATO Air Force Armaments Group) and is the primary link between the material related working groups and the Navy's acquisition community.

Finally, the last of the four International Standardization Organization Manual managers is the Navy Delegate to the NATO Standardization Agency who is the single point of contact between the other three managers and NATO, as well as serving as the manager for assorted NATO working groups that do not fit neatly into the Navy, Marine, or material areas. He maintains a database of delegates, provides guidance and support for Navy delegates, has access to the central NATO STANAG registry, signs U.S. ratifi-

MANAGEMENT SCHEME

Navy Department ISO

NWDC  MCCDC  SNR

NDEL

NWDC – Navy Warfare Development Command
MCCDC – Marine Corps Combat Development Command
SNR – Senior National Representative (Navy)
NDEL – Naval Delegation to NATO/NSA
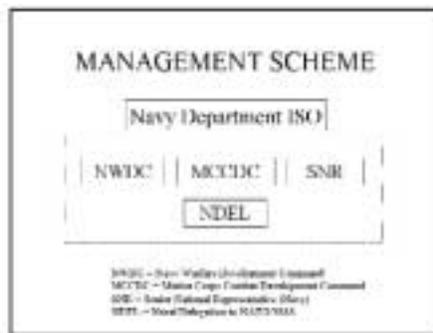
cation letters for Naval Board STANAGs, and is the funnel through which everything Navy

enters and leaves NATO. The key to the increasing success of this system is constant coordination between the four "managers."

Operational standardization within the Department of the Navy is the responsibility of the first two managers listed above NWDC and MCCDC. Naval Board STANAGs, for which the Navy is the lead in providing the U.S. ratification position, are reviewed by three groups of people for three distinct purposes. These are:

* The subject matter experts from various operational, training, and support commands, including the Head of Delegation to the parent-working group, review them for content.
* The Navy Judge Advocate General's International Law Department (OPNAV N3/5), the Navy's Senior National Representative (OPNAV N096N), and the Department of the Navy Standardization Officer (DepSO) review them for policy, legal, material, or acquisition implications, as appropriate.
* The Air Force, Army, and Marines review them as part of interservice coordination. Since the national ratification position is an interservice position, comments and recommendations from the other services are always required.

The Naval Warfare Development Command collates, resolves differences, and provides a national ratification position to the Navy Delegate to the NATO Standardization Agency who then drafts and signs the official ratification letter to NATO.

STANAGs from the Air and Army Boards follow the same process but with a scaled back interservice coordination process that involves only the Marines and Navy. The Marine Corps Combat Development Command collects

the comments on STANAGs related to working groups they manage and provides the Navy position to the lead agency, while the Navy Warfare Development Command does the same for the STANAGs from their working groups.

Problems still exist. The links between the International Standardization Agreements (ISAs) and the U.S. implementing directives are weak. Continuity within working groups is a problem since a large number of Navy Head of Delegations and delegates are active duty, and hence rotate shortly after they get comfortable in the position. Electronic distribution and the increasing utility of the International Military Standardization Work Management System (IMSWMS) have helped ensure that draft ISAs and publications get to the right people; but there is yet room for improvement. Distribution of promulgated Allied Publications has taken a giant step forward with the recent creation of the Allied Publication Electronic Library, which is a three CD-ROM set of classified and unclassified Allied Publications of interest to the Navy that is distributed twice yearly. Funding for working group participation is, and will always be, a problem in the world of tight budgets. In spite of these continuing problems, "operational" standardization within the Department of the Navy is improving.

The Department of the Navy International Standardization Organization Manual has worked for two years but where do we go from here? Does Navy want a centralized or a decentralized system? Both have advantages and disadvantages. A decentralized system, similar to the current Interim Manual structure, is more flexible and responsive, with decisions made at the lowest appropriate level, but requires a concerted effort at coordination between managers. A centralized system can provide the top-down guidance currently missing, with the directive power to make things happen, but can add additional layers and delays to the process. This question is currently under consideration within the Navy international standardization community with a wide range of options being considered, such as:

* Create a central International Standardization Organization (ISO) that would absorb the responsibilities currently split among the four managers.
* Retain the current decentralized Interim Department of the Navy International Standardization Organization Manual organization, and formalize it with a Secretary of the Navy Instruction.
* Leave it as is and continue to rely on informal coordination among the existing managers.

Whichever solution is chosen, operational standardization within the Department of the Navy will continue to require hard-working dedicated personnel willing to be flexible and do what is required to get the job done.

# David Peveler



*David Peveler*

David Peveler, a retired Naval Officer, has been the International Standardization Program Coordinator at the Navy Warfare Development Command in Newport, RI, for the past two years. His responsibilities include the Department of the Navy management of thirty-three operational working groups of NATO's Air, Army, Joint Service, and Naval Boards as well as acting as the Navy's central point of contact for ratification review of ABCA QSTAGs and ASCC Air Standards.

# Material International Standardization Agreements:
# A Process Improvement Work in Progress

By: John Heliotis, Air Force Departmental Standardization Office
Chris Ptachik, Modern Technologies Corporation

## Introduction

*The process of developing, implementing, and complying with defense-related material International Standardization Agreements (ISAs) is vital to achieving interoperability of United States systems and equipment with that of forces from allied and coalition nations during joint operations. The recent policy emphasis on ISAs by the Under Secretary of Defense (Acquisition, Technology & Logistics) addresses a number of issues and gaps in the process emerging after MilSpec Reform. The Air Force recognized that there would be problems with ISAs as a result of MilSpec and overall acquisition reform and conducted a series of ISA reviews in 1995-98. The reviews are shown in chronological order in Figure 1. This article summarizes from an Air Force perspective: the way the ISA process was before MilSpec Reform, where the process and the Air Force are now, and the way ahead.*
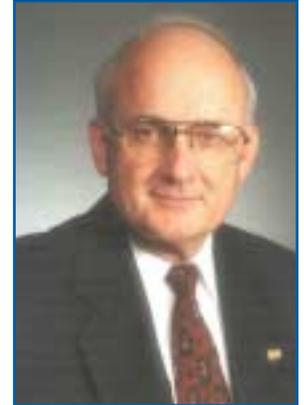


Mr. Heliotis          Mr. Ptachik

## The Way It Was

The Air Force began its initial look at the ISA process early in MilSpec Reform. In August 1994, the Air Force Standards Improvement Executive formed a Process Action Team to recommend initiatives for reengineering the Defense Standardization Program within the Air Force. A sub-group of this Process Action Team, the ISA Sub-group, began work in December 1995 to address Air Force material ISAs. Its primary focus was in four areas: policy governing ISAs; organization responsible for developing and updating ISAs; the process for developing and implementing ISAs; and the impact of MilSpec Reform on material ISAs to which the Air Force subscribes. The ISA Sub-group briefed the results of its findings in March 1997 and concluded that:

1. Acquisition reform, by virtually eliminating military specifications and standards as traditional implementers of material-related ISAs, may cause degradation of US-Allied interoperability.

2. The ISA ratification and implementation process did not appear to be linked to the requirements process for Air Force acquisition programs.

3. Material interoperability ISAs existed to which the Air Force may not be compliant.

4. The Air Force ISA implementation process was tenuously linked to Defense Standardization Program policy.

To follow up on these conclusions, Headquarters Air Force Materiel Command conducted an ISA Compliance Study to review the processes used by selected Air Force acquisition programs for complying with ISAs. This study (May to September 1997) reviewed eighteen Air Force programs in the acquisition or sustainment phase with operational potential within NATO. The review identified material ISAs and implementing documents that were potentially applicable to each selected program, and then traced user requirements for NATO-related interoperability and logistic support through the ISA processes shown in Figure 2. Overall, the study found that program offices were generally not aware of ISA requirements and that compliance with applicable ISAs was largely due to the coincidental use of military specifications and standards that implemented the ISAs. Other findings from the study included:

1. Program contractual documents only called out 49% of material ISAs applicable to the eighteen programs (Figure 3).

2. User requirements documents did not adequately state needed international interoperability capabilities.

3. The requirements generation and acquisition management policies and processes needed updating and execution needed improvement.

Following the ISA Compliance Study, an ISA Compliance Process

Action Team was formed and began its work in November 1997. Its objective was to evaluate and develop a comprehensive plan to correct policy and process issues that inhibited Air Force operations, planning, requirements, acquisition, and logistics communities from complying with material ISAs. The team completed its work in June 1998. The final report included the following two findings:

1. Major Commands, Commanders in Chiefs, and Headquarters, USAF, are required by existing Mission Need Statement/Operational Requirements Document develop-

ISA implementation process to ensure recognition of ISA obligations and the identification of program deviations from an applicable ISA baseline.

c. Identify systems non-compliant with material ISA requirements and any actions needed to bring these systems into compliance.

d. Provide adequate tools to support the development of and compliance with USAF international standardization and interoperability obligations (e.g., the USAF International Military Standardization Work Management System).

e. Develop/conduct Road-Show

*Following the ISA Compliance Study, an ISA Compliance Process Action Team was formed and began its work in November 1997.*

ment policy to consider international interoperability. However, there is no interface between the Air Force's requirements and standardization processes.

2. The Process Action Team attributed USAF non-compliance with ISA obligations to process deficiencies created by the lack of centralized management of ISA compliance for the Air Force and the absence of an USAF advocate for operational, material, and administrative ISAs, (including "industrial base" standards for design criteria, test methods, and quality assurance).

To correct the problems identified, the ISA Compliance Process Action Team made the following recommendations:

a. Correct unusable material ISA implementing documents.
b. Modify the requirements and

Training.

f. Revise Air Force policy and DoD and CJCSI documents to reflect the Process Action Team recommendations for policy and process corrections.

g. Forward proposals to DoD for possible implementation DoD-wide.

### Where the Process and Air Force are now.

The Air Force has responded in a number of ways to update its ISA policy and processes. The Air Force InternationalStandardization Office published Air Force Instruction 60-106, USAF International Military Standardization Program, in December 1997 to guide USAF International Military Standardization activities and address a number of policy and process issues identified by the

ISA Subgroup. In June 1998, the Air Force International Standardization Office released an initial Interoperability Survey to the Air Force Major Commands and Working Group Heads of Delegation to identify operational deficiencies in need of ISA development support. Then, Headquarters Air Force Materiel Command, Directorate of Engineering and Technical Management, launched an ISA web page in October 1998 to assist the engineering and standardization communities in resolving material ISA problems. The web page contained a snapshot of ISAs as of 1 October 1998. It provided Air Force program offices with a functionally indexed listing of Air Force subscribed to NATO and Air Standardization Coordinating Committee ISAs and their implementing documents to aid in determining their program applicability. In addition, it identified to Defense Standardization Program preparing activities the MilSpec implementers and any ISA implementation problems resulting from MilSpec Reform. Also, in October 1998, the Directorate of Operational Requirements revised Air Force Instruction 10-601, Mission Needs and Operational Requirements Guidance and Procedures, to emphasize Program Manager consideration of ISAs and Major Command consideration of allied/coalition standardization and interoperability requirements during the development of Mission Need Statements and Operational Requirements Documents. In April 1999, the International Standardization Office moved from the Directorate of Operations and Training to the Directorate of

Operational Requirements to give increased focus to interoperability and material ISAs during mission area planning and Mission Need Statement/Operational Requirements Document preparation. Also in April 1999, the Air Force began a one-year effort to assess the acquisition compliance of twelve Air Force weapon system/subsystems programs with interoperability-related material ISAs. In June 1999, the Air Force issued Acquisition Policy Memorandum 99-1, "Using Specifications and Standards," that re-enabled the use of military specifications and standards as ISA implementers in procurement solicitations.

DoD has also taken steps to address the policy links and tools issues. In March 2000, the Defense Standardization Program revised DoD 4120.24-M, Defense Standardization Program Policies and Procedures, to ensure that material ISA development, ratification, and implementation was coordinated with the standardization community. In September 2000, the Air Force joined the Defense Standardization Program's Interoperability and Logistics Readiness Integrated Product Team to support the development of an ISA database with a work breakdown structure index. In January 2001, the Under Secretary of Defense (Acquisition, Technology and Logistics) changed DoD 5000.2-R, Mandatory Procedures for Major Defense Acquisition Programs (MDAPS) and Major Automated Information System (MAIS) Acquisition Programs, to add emphasis on interoperability and consideration of applicable ISAs early in the design phase as part of the systems engineering process.

ISAs will get added emphasis

with the Under Secretary of Defense (Acquisition, Technology and Logistics) direction on June 6, 2001, for the development of a Joint Materiel Standards Roadmap (JMSR). The office of the Air Force Standardization Executive is participating in development of the JMSR with the Defense Standardization Program Office
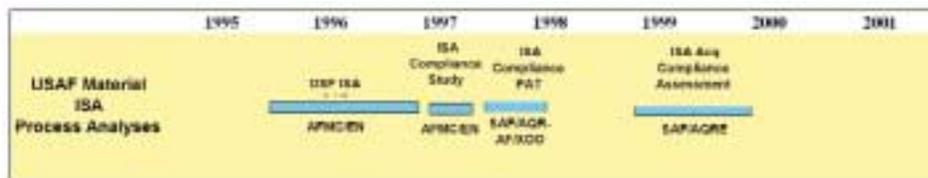


Figure 1, USAF Materiel ISA Reviews – Materiel ISA compliance in USAF programs emanates from four major policy areas: International Military Rationalization, Standardization, and Interoperability; the Defense Standardization Program; Requirements Generation; and Systems Acquisition.
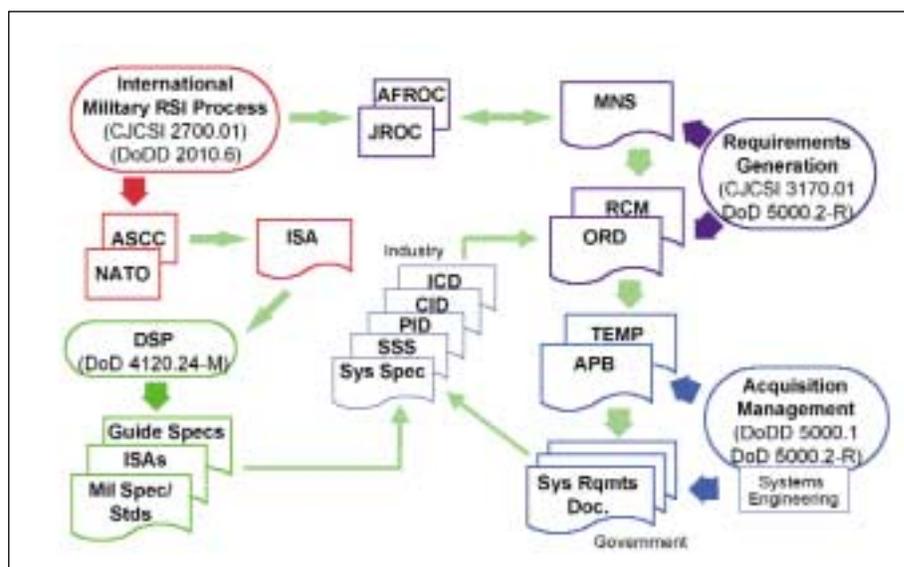


Figure 2 – Material International Standardization Agreement Key Policies and Processes. The ISA process must ensure that materiel standards for international interoperability are identified in the requirement and acquisition management processes.
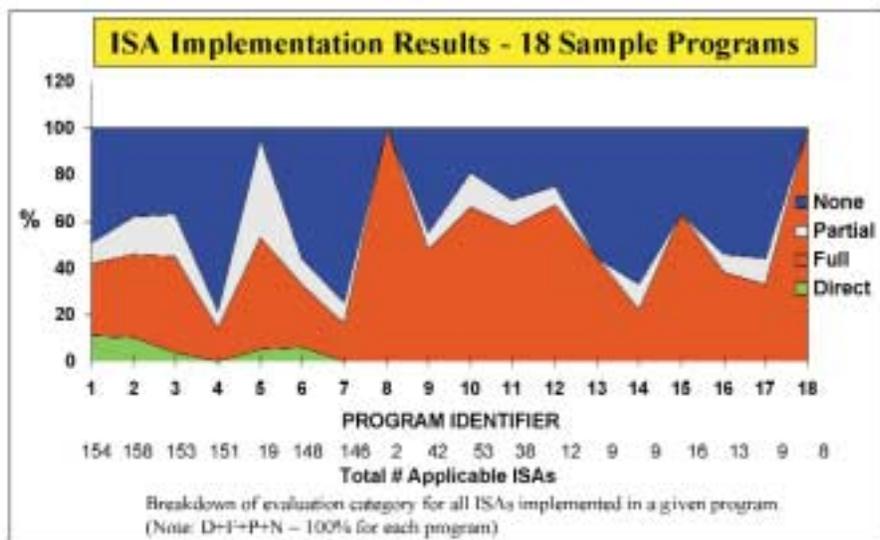


Figure 3. ISA Compliance Study Results. Compliance with applicable material ISAs was largely due to the coincidental use of implementing military specifications and standards.

and personnel from the other Services. The JMSR Terms of Reference states that it will document material standards needed for the design of new and major modifications of systems, subsystems, and equipment in support of warfighter interoperability and focused logistics requirements for joint and coalition operations. As a result, material ISAs will be a key source of requirements for the JMSR.

### The Way Ahead

Despite the progress in identifying problems with ISAs and the process, the Air Force still has work to do to ensure the material ISA process runs smoothly. The Air Force Departmental Standardization Office and Air Force International Standardization Office are preparing revisions to key Air Force standardization program policy and instructions. Revisions to Air Force Policy Directive 60-1, Operations and Resource Standardization; Air Force Instruction 60-101, Operations and Resources; and Air Force Instruction 60-106, USAF International Military Standardization Program, should soon be released as draft documents for comment. The process for Air Force Standardization Executive involvement in the ratification and implementation of material ISAs will occur through the Departmental Standardization Office as part of the normal process covered by Air Force Instruction 60-106, USAF International Military Standardization Program and CJCSI 2700.01 Instruction, International Military Agreements for Rationalization, Standardization, and Interoperability (RSI) between the US and its Allies. Responsibility

to determine needed Working Group participation, and to coordinate study and ratification of draft ISAs is assigned to the Heads of Delegation with International Standardization Office support. The Departmental Standardization Office can monitor all Air Force lead service working group activity and participate through the web-based International Military Standards Work Management System developed by the Air Force. The Heads of Delegation or International Standardization Office routinely include the Departmental Standardization Office on communications involving Working Group participation and validation, ratification and implementation of material ISAs. Should issues arise within the acquisition community, the Departmental Standardization Office is well positioned to assist in their resolution. Heads of Delegation are responsible for developing coordinated US positions, and the International Standardization Office and the Air Force representative to the NATO Standardization Agency review them before they are presented. The Departmental Standardization Office will assist, when necessary, in resolving conflicts with other Departments and Agencies involving material ISAs. The Heads of Delegation are also responsible for coordination with the appropriate preparing activity for individual military specification and standard implementers to ensure there is an implementation plan that supports ratification of material ISAs. The Departmental Standardization Office monitors and assists when required. The current informal interfaces between the Air Force International Standardization Office and Departmental

Standardization Office for material ISAs development, ratification and implementation are being formalized, where appropriate, in Air Force Policy Directive 60-1 and Air Force Instructions 60-101 and 60-106 revisions.

Other actions to improve the material ISA process will require more effort and resources. The resolution of MilSpec implementer conflicts will require a focused and coordinated effort by the Air Force Departmental Standardization Office and the other Military Departmental Standardization Offices. Many USAF subscribed to material ISAs are implemented by military specifications and standards prepared by other Departments. The Air Force Departmental Standardization Office plans to update the earlier analysis to determine the progress made by Heads of Delegations and preparing activities over the past three years in correcting implementer problems and establish specific actions to complete the effort. Other material ISA process issues remaining from the USAF material ISA reviews have not yet had a complete vetting. Some of these issues include:

1) Will DoD mandate and verify use of applicable ISAs and related implementation documents in programs?

2) Should DoD institutionalize a process in the US and with its allied and coalition partners to identify deviations from the use of applicable material ISAs for specific systems?

3) Should the Joint Staff review and approval of the NATO Standardization Programme be uniformly considered as US validation of the standardization initiatives for the purpose of budgeting and assigning resources to working groups

for material ISA development?

### Summary

Air Staff and Major Command personnel have been extensively involved since 1995 in identifying and addressing issues with the development, implementation, and compliance with material ISAs. That involvement reflects a continuing U.S. Air Force commitment to its ISA obligations, responsive support to warfighter interoperability and logistics supportability requirements, and top quality systems engineering practices. It is clear that much remains to be done and correcting ISA problems is still a process improvement work in progress.

# Summary of Major International Standardization Agreements (ISA) Bodies

**By John Tascher,
Defense Standardization Program Office**

Since World War II, we have seen that the multi-national warfighting and peacekeeping actions require the widest possible fielding of interoperable systems. Regardless of the size of the unit, coalition forces must be able to integrate their actions with units from other nations. This is pertinent to acquisitions, since delaying corrective action to achieve interoperability increases costs and risks deploying a non-compliant system or platform.

To work toward development and fielding of interoperable systems, the Department of Defense participates in many international standardization organizations. The five major organizations involved in the development and issuance of international standardization agreements are:

- North Atlantic Treaty Organization (NATO)
- American, British, Canadian, Australian (ABCA) Armies
- Air Standardization Coordinating Committee (ASCC)
- Australian, Canadian, New Zealand, UK, US (AUSCANNZUKUS) Navies
- Combined Communications-Electronics Board (CCEB)

Each of these five organizations are involved, at least to some extent, in the development of materiel International Standardization Agreements. A materiel ISA is a record of agreement among several or all of the members of a multinational treaty organization, which may be used directly in a solicitation or contract, or indirectly through an implementing document – to acquire compatible, interoperable, interchangeable, or identical systems, subsystems, components, parts, software, and supply items for allied defense forces. Material ISAs include not only products but test methods to verify compliance and engineering practices and processes used in the design, manufacturing, and maintenance of those products.

Following is a summary of the background, structure, standardization process, types of ISAs, and current activities for each of the five ISA bodies.

# North Atlantic Treaty Organization (NATO)

*US Mission to NATO, Office of the Defense Advisor PSC 81, Box 60*
*Headquarters Blvd. Leopold III 1110 Brussels, Belgium*
*Tel 32-2-724-3066*
*fax 32-2-724-3441*
*DSN 314-356-3066,*
*E-mail:  James.MacStravic@benelux.army.mil*
*Web site:  http://www.nato.int/*

## NOTE: PLEASE SEE LIST OF NATO ACRONYMS ON PAGE 52

### Background

The North Atlantic Treaty of April 1949 brought into being an alliance of independent countries (19 Nations as of January 2002) with a common interest in maintaining peace and defending their freedom through political solidarity and adequate military defense to deter and, if necessary, repel all possible forms of aggression against them. Numerous partnership for peace nations also participate in NATO activities.

The top level organization in NATO is the North Atlantic Council (NAC) which is composed of the Ambassador or Permanent Representative from each member Nation.  Under the NAC are the Secretary General and the International Staff, national Military Representatives, the Chairman of the Military Committee and the International Military Staff.  Each Nation has a national delegation composed of advisors and officials who represent their country on different NATO committees.   There is a military organization and a civilian organization in NATO under the NAC.  On the civilian side, the International Staff comprises the Office of the Secretary General, five operational divisions, including the Defense Support Division.  The Assistant Secretary General for Defense Support serves as the permanent chairman of the Conference of National Armament Directors (CNAD) and the NATO C3 Board.  The Defense Support Division provides staff support for the standardization activities of the Major Armaments Groups and the cadre groups, all under the CNAD (see below).  The U.S. Mission staff, composed of both military and civilian personnel, supports U.S. participation in the CNAD and NATO C3 Board groups.

In a similar fashion, in order to assist and advise the North Atlantic Council on military affairs, senior military officers serve as national Military Representatives and as members of the Military Committee (MC), the highest military authority in NATO.  The International Military Staff serves as staff support for the MC. The U.S. military representative staff, composed of military staff, supports U.S. participation in the MC.

The NATO Committee on Standardization (NCS), co-chaired by the Assistant Secretary General for Defense Support and the Director of the International Military Staff, provides coordinated advice to the NAC on overall standardization matters.  The NATO Standardization Agency is responsible to the NCS for the coordination of issues between all fields of standardization.  The NSA also supports the Joint and Single Service Boards, each of which acts as a Tasking Authority for Operational Standardization, including doctrine, as delegated by the Military Committee (see below).  The Senior NATO Logisticians' Conference (SNLC), which is a Tasking Authority dealing with consumer logistics, reports jointly to the civil and military sides of NATO.

For participants in standardization working groups, the representation is reasonably comprehensive and accurate. Recognize, however, that it is too simplified to show various nuances. For instance, the MC is actually subordinate to the NAC, not co-equal as the figure seems to suggest. Also, there are many more principal committees at NATO than just the few circled in the figure.
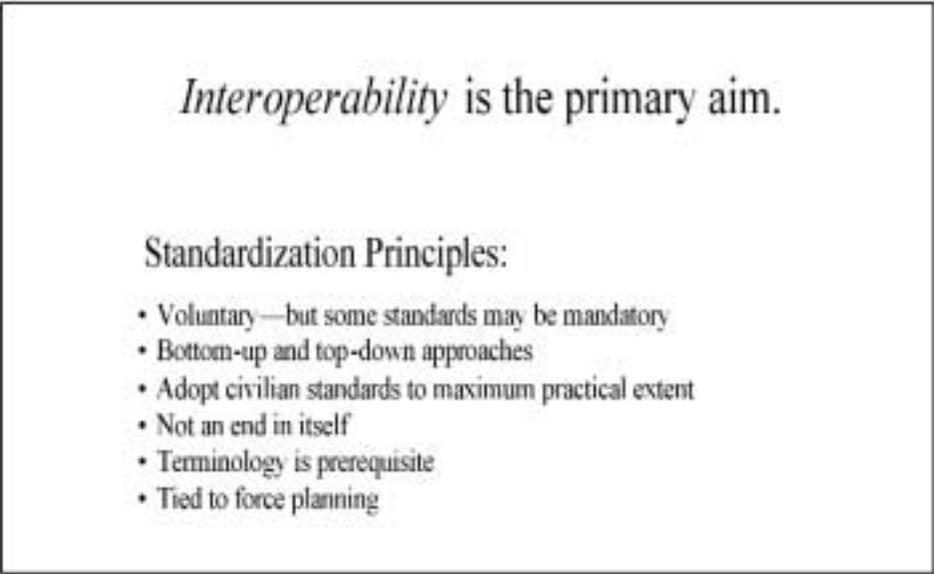
**FIGURE 1. NATO Standardization Policy**



**FIGURE 2. LEVELS OF STANDARDIZATION**

## Standardization Process

NATO's standardization policy is summarized in Figure 1

Several standardization concepts are explained in NATO publication AAP-6(V), "NATO Glossary of Terms and Definitions." It defines standardization this way: "The development and implementation of concepts, doctrines, procedures and designs to achieve and maintain the required levels of compatibility, interchangeability or commonality in the operational, procedural, materiel, technical and administrative fields to attain interoperability."

As the definition indicates, the goal of standardization is interoperability, which is defined as follows:

"The ability of alliance forces, and when appropriate, forces of Partner and other nations, to train, exercise and operate effectively together, in the execution of assigned missions and tasks." The terms "bottom-up" and "top-down" refer to the origin of decisions on what to standardize. On a biannual basis, NATO generates a list of alliance standardization requirements, based on input from Supreme Allied Commander, Europe (SACEUR) and Supreme Allied Commander Atlantic (SACLANT). This is a top-down list that is farmed out to various groups to tackle. On the other hand, groups themselves generate standards based on their own assessment of NATO and national needs. This is the bottom-up approach.

NATO defines three levels of standardization. Figure 2 shows these in order from least to greatest degree of interoperability. The definitions in Figure 2 are paraphrases of the actual

definitions, which are as follows:
• Compatibility: The suitability of products, processes or services for use together under specific conditions to fulfill relevant requirements without causing unacceptable interactions.
• Interchangeability: The ability of one product, process or service to be used in place of another to fulfill the same requirements.
• Commonality: The state achieved when the same doctrine, procedures or equipment are used.

## Standardization Categories Within NATO

NATO military standardization is accomplished by hundreds of different groups. Figure 3 shows the four main categories of military standardization, which reflect NATO terminology:
• Operations (material, doctrine, and procedures)
• Armaments (what the U.S. defense community would call acquisition and procurement)
• C3 (command, control, and communications)
• Logistics.

The number in parentheses at the bottom of each category is the number of its regularly meeting working groups.
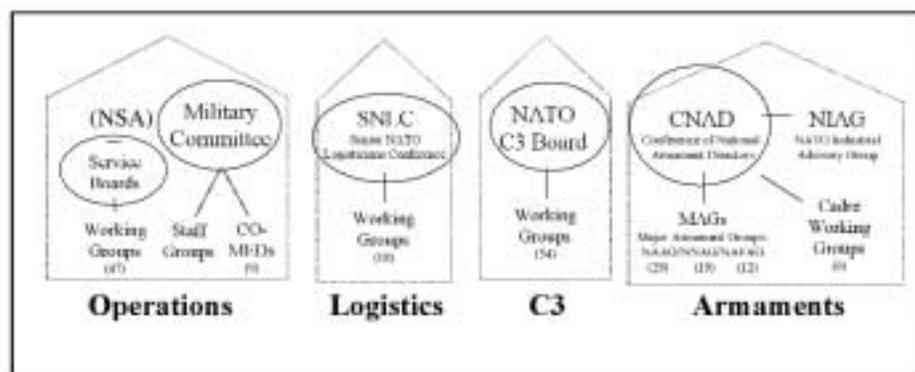


**FIGURE 3. NATO STANDARDIZATION CATEGORIES**

Working groups report to tasking authorities, which are circled in the figure. Tasking authorities direct and coordinate the effort of their subordinate working groups. A tasking authority, such as the CNAD, is a group of high-level representatives from each NATO nation that meets periodically to review, assess, and direct standardization in its area. The US National Armament Director is the Under Secretary of Defense for Acquisition, Technology and Logistics.

Some tasking authorities have subordinate tasking authorities—for example, one of the Major Armament Groups (MAGs) under the CNAD is the NNAG, the NATO Naval Armaments Group. The specific hierarchy of tasking authorities and working groups in each category will be explained in the next few pages.

### Operations

Four tasking authorities direct operational military standardization: the three service boards (Army, Naval, Air) and the Joint Service Board (Figure 4). The NATO Military Committee charters them, but does not direct their work.
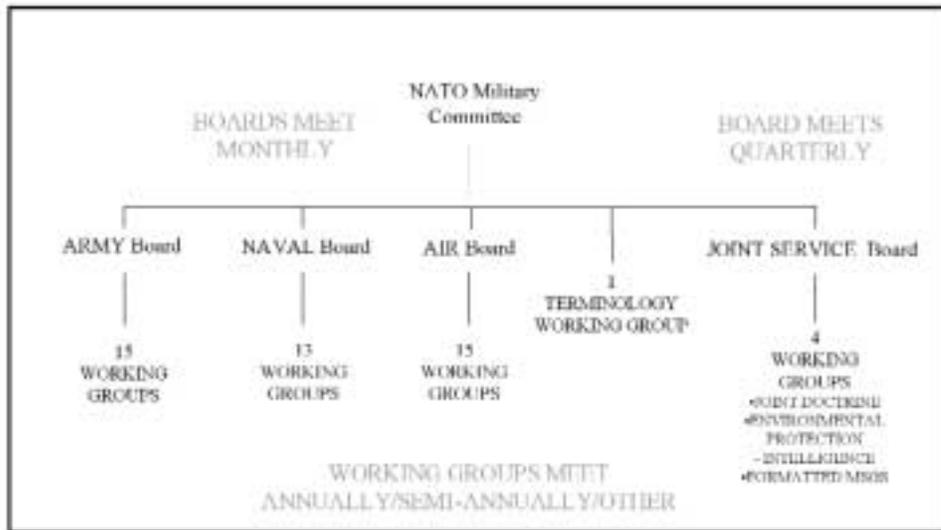
**FIGURE 4. OPERATIONAL STANDARDIZATION**

## NSA Working Groups

A NATO staff organization, the NATO Standardization Agency (NSA), provides staff support for the service boards and the working groups. It is important to understand that these groups work for their service boards, not the NATO staff. NSA was formerly called the Military Agency for Standardization (MAS). U.S. staff officers, representatives of the U.S. military representative to NATO at NATO Headquarters, attend most of these working groups. They coordinate issues with the appropriate "J-code" on the joint staff. Some of these groups handle day-to-day business of the Military Committee, and hence they are quite active. The Military Committee itself meets at least once a week.

## Logistics

Standardization in logistics does not have the hierarchical structure of the other categories. However, the Senior NATO Logisticians Conference (SNLC) does provide major oversight. The SNLC, in NATO parlance, addresses matters of "consumer" logistics to enhance the performance, efficiency, sustainability, and combat effectiveness of alliance forces. Two people represent the United States at the SNLC: the Director for Logistics of the Joint Staff (referred to as J4) and a representative from the office of the Under Secretary of Defense for Acquisition, Technology and Logistics).

The major NATO commanders, Supreme Headquarters Allied Powers Europe (SHAPE), and SACLANT, play a significant role in working both "consumer" and "operational" logistics issues.

## Command, Control, and Communications

Standardization in the C3 arena is centralized under the NATO C3 board. The board has a standing working group consisting of national C3 representatives at the 06 level (Colonel or Navy Captain), that coordinates C3 issues. Most of the nine sub-committees under this tasking authority have working groups under them.

U.S. representation to the C3 Board is shared between the Director of C4 of the Joint Staff (J6) and ASD(C3I) (the Assistant Secretary of Defense for C3I). Both the U.S. mission staff under the defense representative the U.S. military representative staff provide senior officer representatives to the C3 meetings.

Essentially, all C3 work from the U.S. perspective is staffed and coordinated through an established secretariat staff of the U.S. Military Communications and Electronics Board (MCEB). Military Department and Defense Agency input to C3 standardization is worked through the MCEB and by coordination between action officers.

## Armaments

The armaments category involves many groups (not all are shown in figure 5) and is concerned with research, development, and production of military equipment and weapon systems. The NATO Defense Support Division Staff, part of NATO's International Staff provides support to these groups.

The U.S. representative to the CNAD is the USD(AT&L). The U.S. mission to NATO, under the U.S.
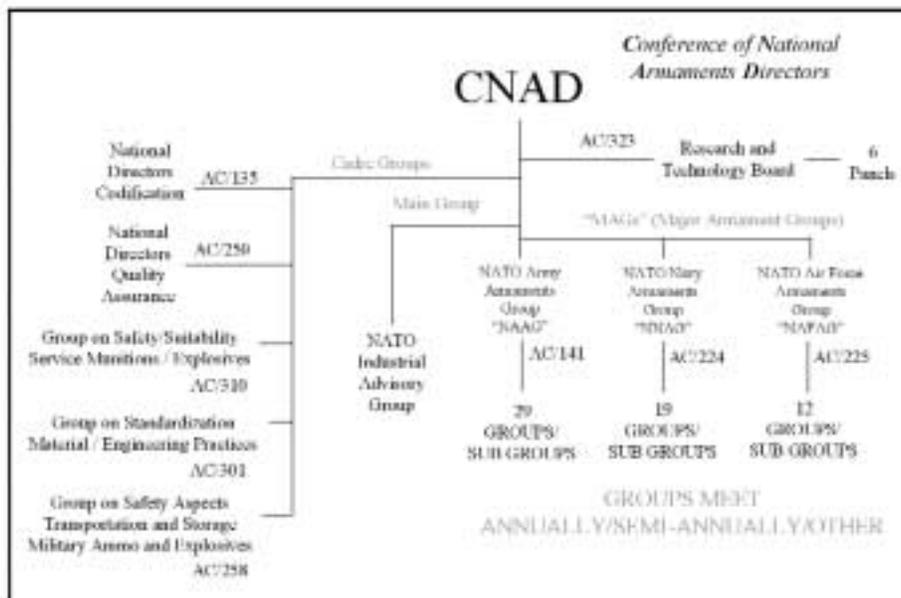


**FIGURE 5. ARMAMENTS STANDARDIZATION**

ambassador to NATO, oversees U.S. participation. The U.S. mission has a defense advisor, representing the Office of the Secretary of Defense (OSD), who is charged with overseeing U.S. participation in these working groups. The defense advisor is supported by a staff of senior U.S. military officers and civilian personnel.

Under the CNAD, there are subordinate tasking authorities. The Major Armaments Groups (MAGs) task groups in different areas. Like the working groups under the service boards in the MAS arena, the working groups under the MAGs deal with single-service and interservice armaments issues.

The cadre groups work to standardize general aspects related to acquisition and procurement, for example, fuses and munitions under Alliance Committee 310. The Research and Technology Board directs and coordinates NATO research, development, testing, and evaluation, and provides a forum for exchanging information on new developments in the R&D field. The Industrial Advisory Group is a forum for getting industry input.

The Alliance Committee (AC) alphanumeric designations are NATO's numbering scheme for the cadre groups. Even though these groups are considered acquisition and procurement groups, they often get involved in operational, logistics, or C3 standardization. This is a key point. Coordinating the work of these groups with groups in other categories that are working on similar subject matter is left to the

group itself. Such group-to-group coordination is difficult.

The cadre groups are also supported by various agencies within the Military Departments.

### Coordinating Positions Within the US Department of Defense

Within the United States, standardization efforts are coordinated through a variety of organizations within the following four major areas.

### 1. Operations

Operational agreements are coordinated in the United States using the lead agency (or lead service) concept (see Figure 6). In this arrangement, one of the U.S. services—depending on which NATO service board has authority over the working group—coordinates the drafting, ratification, promulgation, and implementation of an agreement.
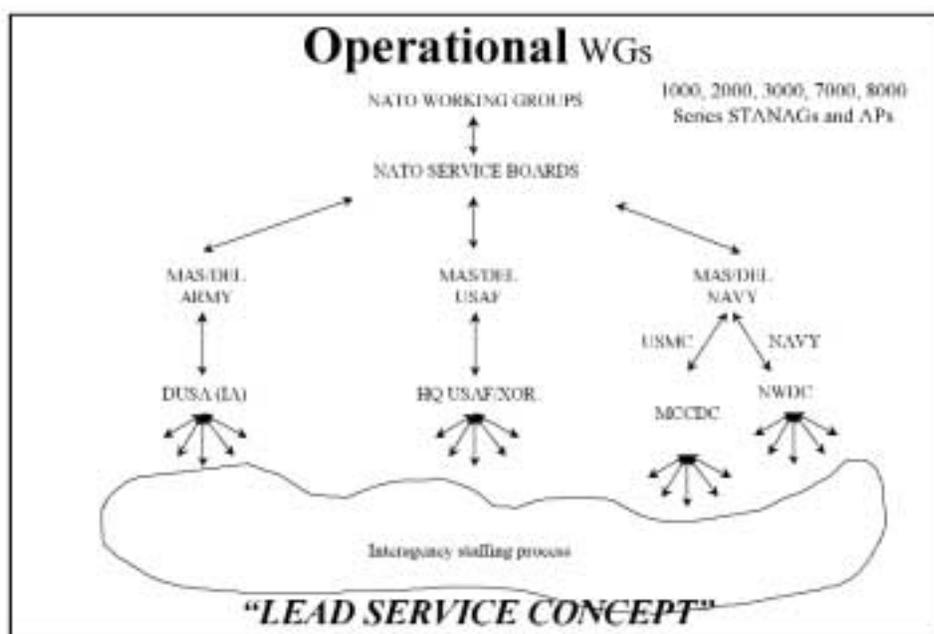


**FIGURE 6. COORDINATING OPERATIONAL AGREEMENTS**

For example, a standardization agreement generated by the Air Operations Working Group is coordinated by the U.S. Air Force.

Each working group has a head of delegation, a U.S. expert who attends the working group meeting. Other delegates may also attend to support the head of delegation. Between meetings, the head of delegation directs inter- and intraservice coordination to finalize U.S. positions on draft agreements.

### 2. Logistics

The Joint Staff (J4) represents the United States at the Senior NATO Logisticians Conference and coordinates national positions for most of the logistics work at NATO. The U.S. mission defense advisor and the U.S. military representative at NATO each have staff officers to assist in working NATO issues in the logistics arena.
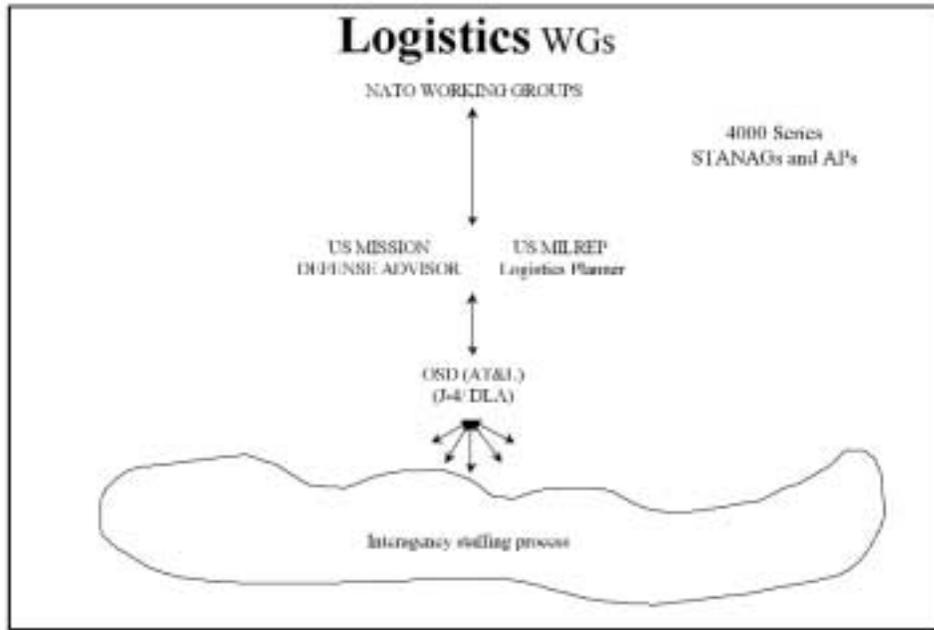
**FIGURE 7. COORDINATING LOGISTICS AGREEMENTS**

## 3. Command, Control, and Communications

The Military Communications and Electronics Board, (MCEB), coordinates standardization of C3 issues (Figure 8). It is chaired by the Joint Staff (J6) with members including the Assistant Secretary of Defense for C3I, the Defense Information Systems Agency (DISA), and the Director of the Space, Information Warfare, Command and Control Directorate. Each of the services is a member.
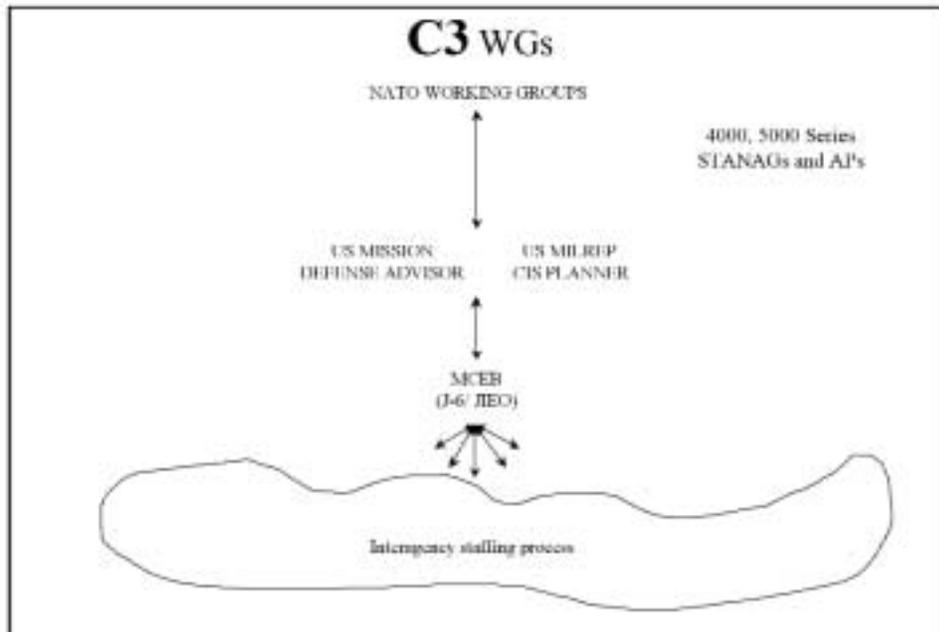


**FIGURE 8. COORDINATING C3 AGREEMENTS**

The MCEB staffing process in the United States is well defined and generally flows smoothly. The MCEB secretariat manages the coordination processes for the MCEB. This secretariat has offices within J6 spaces in the Pentagon.

The Joint Interoperability and Engineering Organization (JIEO) under DISA acts as the executive agent for

staffing and coordination of the MCEB.

## 4. Armaments

At the U.S. level, the Deputy Undersecretary of the Army for International Affairs and the Army Materiel Command (AMC) manage and direct the Army's participation in the NATO Army Armaments Group (NAAG), and the Secretary of the Air Force for IAQ manages the Air Force's participation in the NATO Air Force Armaments Group (NAFAG) (the SAF/AQR is the Principal). At Navy, the OPNAV N096, wearing a second hat as the Navy's senior national representative, manages the Navy Department participation in the NATO Navy Armaments Group (NNAG) and its subordinate working groups (see Figure 9).
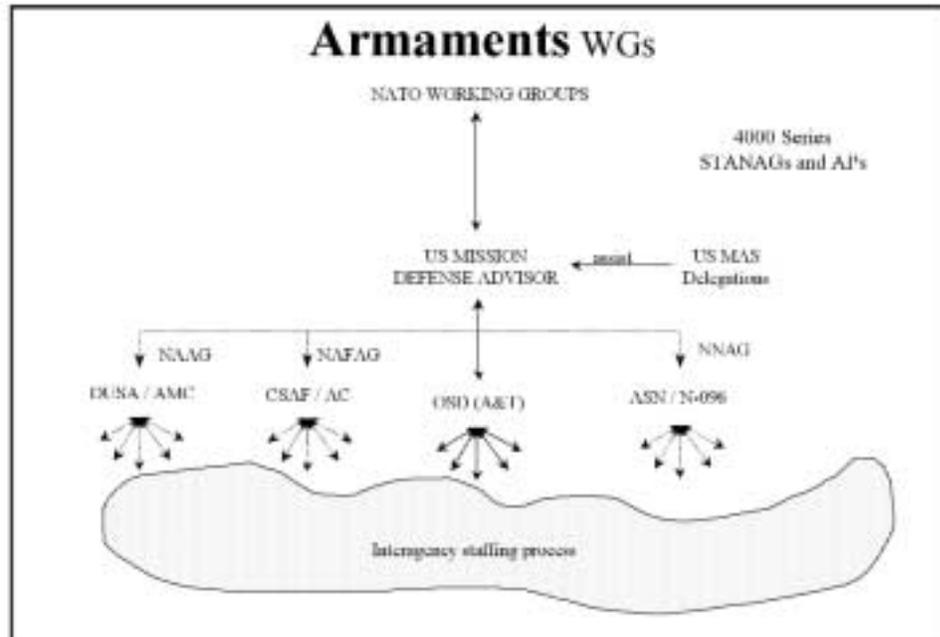


**FIGURE 9. COORDINATING ARMAMENTS AGREEMENTS**

Navy department personnel also participate actively in armament groups other than those under the NNAG. The US lead for all armaments standardization is the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)).  Each Military Service and Agency has a Departmental Standardization Office (DepSO) that performs the coordination, with the Defense Standardization Council (DSC) providing oversight of the entire process.  The DepSOs and the DSC members are listed on the Defense Standardization Program Home Page (www.dsp.dla.mil).

### Types of ISAs

Working groups write standardization documents. Most often, the document is a STANAG (standardization agreement), which is written in a formal, prescribed NATO format.  Though not strictly enforced, there is a general numbering scheme for STANAGs, as shown in Figure 10.

Some working groups also generate Allied Publications, such as ATP-1 (Allied Maritime Tactical Instructions and Procedures), AMP-07 (Helicopter Mine Countermeasures Manual), and APP-04 (Allied Maritime Structured Messages), to name just a few. For each Allied Publication there is a related STANAG that records each nation's ratification and implementation of the Allied Publication.

Working groups occasionally use Military Committee documents, identified as MC xxx (where xxx is a 2 or 3-digit number), as the final form of an agreement. Examples include MC 376, NATO Control of Merchant Shipping and Fishing Vessels and MC 226/3, NATO Requirements for Communications Security Equipment/Systems. Procedures governing STANAGs are found in NATO publication AAP-3. The STANAG life cycle, as shown in Figure 11, is a five-step process:
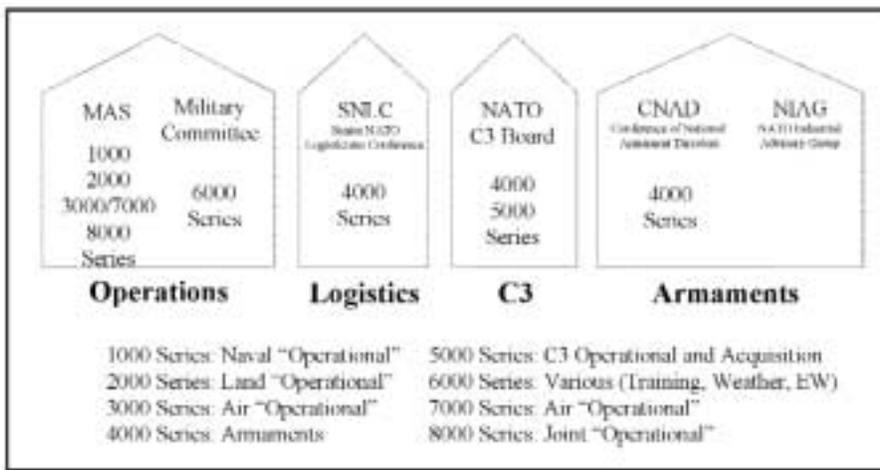
**FIGURE 10. DOCUMENTATION OF NATO STANDARDIZATION**

- Draft—NATO working groups, in which U.S. agency experts participate, agree on a draft. This is usually done by consensus, although it only takes a majority of nations to agree to the draft agreement.
- Ratify—The tasking authority reviews the draft and forwards it to nations for formal acceptance, known as ratification. Most agreements are considered to become a NATO document when a majority of nations ratify them.
- Promulgate—The NATO staff supporting the tasking authority promulgates the agreement to nations once a sufficient number of nations have ratified. The number of ratifications required to achieve promulgation is established by the tasking authority, but 8 Nations are required.
- Implement— Implementation is usually done by ensuring that the STANAG provisions are included within existing U.S. military specifications and standards or directives. In the case of an agreement that



**FIGURE 11. STANAG LIFE CYCLE**

must be implemented at a given time—such as new IFF (identification friend or foe) codes—the NATO staff identify an implementation date, and nations ensure that the agreement is implemented on the specified date.

- Review—By NATO rules, each agreement must be reviewed at least every three years, although biennial review is the norm.

There are two groups of key players in this process for each agreement. The first group is the agency experts who work out the draft; the second is the departmental international agreement authority that approves committing the United States to abide by the requirements of the agreement.

With 19 member nations and numerous Partnership for Peace nations participating on many groups and committees, NATO standardization seems very complicated. However, NATO has made substantial progress to improve cooperation and eliminate duplication in research, development, production, procurement, and support of defense systems.

# American British Canadian Australian Armies (ABCA)

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## Background

The ABCA program began in 1947 when American General Dwight D. Eisenhower and British Field Marshall Bernard Montgomery agreed that the levels of cooperation and standardization achieved during World War II should be maintained and extended. America, Britain, and Canada were the original members, and they were joined by Australia in 1963. New Zealand became an associate member through Australia in 1965.

Since that original agreement, the ABCA program has produced over 1,000 standardization agreements, known as Quadripartite Standardization Agreements (QSTAGs) and Quadripartite Advisory Publications (QAPs). These have helped the armies of America, Britain, Canada, Australia, and New Zealand to operate effectively together during the conflicts and peacekeeping operations they have undertaken since World War II.

The original aim of the ABCA program has been refined several times to reflect the demands of a changing world. However, its underlying aim has always remained basically the same, that is, the achievement of levels of standardization by:

- Ensuring the fullest cooperation and collaboration among its armies
- Achieving the highest possible degree of interoperability among its armies through materiel and non-materiel standardization
- Obtaining the greatest possible economy by the use of combined resources and effort.

## Organizational Structure

Most of the program's standardization work is carried out by its 13 Quadripartite Working Groups (QWGs), each of which covers a different specialization:
- Air Defense Artillery (AD Arty)
- Army Operational Research (AOR)
- Communications and Information Systems (CIS)
- Doctrine, Command and Staff Procedures (DC&SP)
- Electronic Warfare/SIGINT Support (EW SIGINT Spt)
- Engineers (Engr)
- Fire Support (FS)
- Health Service Support (HSS)
- Intelligence (Int)
- Logistics (Log)
- Maneuver (Man)

- Material Acquisition—Technical Support (MATS)
- Nuclear, Biological and Chemical Defense (NBCD)

However, QWGs are not confined to their particular specialization and contribute to some or all of the eight functional areas that will be described later in this chapter. QWG responsibilities include completing standardization tasks, exchanging information, and providing support to ABCA exercises.

## Standardization Process

The ABCA program complements, but does not duplicate, the work of NATO, bilateral, and international commercial organizations. If the program identifies a standardization task, it is up to the armies to decide which organization is best suited to carry it out.

The program addresses Army and joint issues that impinge on the land battle, primarily at the tactical level.

## Types of ISAs

The end result of a standardization task is generally a Quadripartite Standardization Agreement (QSTAG) or a Quadripartite Advisory Publication (QAP).

A QSTAG is a formal agreement between ABCA armies (ideally among four but two is acceptable) which defines the levels of standardization to be achieved and maintained in specified materiel and non-materiel fields.

Once armies agree to the production of a QSTAG, the QWG appoints a Custodian Army to draft the agreement and look after its subsequent upkeep and amendment. During the preparation stage, the Custodian Army circulates drafts of the QSTAG to other ABCA armies for their input.

Once armies have agreed on the final draft of the QSTAG, it is sent to the Primary Standardization Office (PSO) to obtain each Army's ratification details, national implementing documents, date of implementation and any reservations. When implementation details have been received from at least two armies, the QSTAG is considered to be ratified. Subsequently, the QSTAG is reviewed regularly by the QWG to check its continuing validity.

A QAP is used when formal agreement between armies to achieve and maintain levels of standardization in specified materiel and non-materiel fields is not necessary but, when the listing of national data would provide an aid to mutual understanding (i.e., QAPs are for guidance only). QAPs are dealt with in the same way as QSTAGs except they are neither ratified nor implemented by armies. Once armies agree on the final draft of a QAP, it is sent to the PSO to issue to the armies. As with QSTAGs, QAPs are reviewed regularly by the QWG.

## Recent Activities

The ABCA has developed the second edition of the Coalition Operations Handbook, and a Coalition Operations Lessons Learned Database. Every two years, the ABCA Program conducts exercises and other activities between the Armies to address standardization issues and evaluate the abilities of the Armies to operate effectively in coalition.

# Air Standardization Coordinating Committee (ASCC)

ASCC Management Committee
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## Background

The Air Standardization Coordinating Committee (ASCC) has been working for the air forces of Australia, Canada, New Zealand, the United Kingdom, and the United States since 1948. Its principle objective is "to ensure member nations are able to fight side-by-side as airmen in joint and combined operations."

The ASCC objective is achieved by the standardization of doctrine, operational procedures, materiel, and equipment. ASCC also exchanges technical information and arranges the free loan of equipment between member nations for test and evaluation purposes. The results of these tests are usually distributed to all nations.

The ASCC is a unique forum in which experts from the five nations improve coalition aerospace power effectiveness in both peace and war. Through collective agreements, and in cooperation with other international standardization organizations, members strive to ensure there will be no doctrinal, operational, technical, or materiel obstacle to full cooperation among the forces of the member nations, and to ensure the greatest possible economy of effort.

## Organizational Structure

The ASCC nations have standardization representatives at three levels: national directors who are one or two star Generals; the Management Committee made up of Lieutenant Colonel equivalents; and the assistants for standardization who are Lieutenant Colonel or Major equivalents.

## Standardization Process

Ten specialist working parties (WP) carry out the tasks of the ASCC. The number of members attached to each WP varies from 5 to 60. The directive and synopsis for each WP, along with a listing of current projects and documents, is published in the ASCC task order. WP management plans, detailed project sheets, and a record of WP activity is recorded in the WP meeting reports. The following are the 10 ASCC working parties:
- WP 15—Aviation Fuels, Lubricants, Associated Products and Gases
- WP 20—Air Armament
- WP 25—Aerospace Engineering, Maintenance and Logistics
- WP 44—Integrated Airlift Systems
- WP 45—Air Operations and Doctrine
- WP 61—Aerospace Medicine, Life Support and Aircrew Systems
- WP 70—Mission Avionics

- WP 80—Reconnaissance and Imagery Intelligence
- WP 84—NBC Defensive Measures
- WP 90—Airfield and Airspace Management

WPs bring together subject matter experts from each of the member nations, and are tasked with developing standardization agreements, exchanging information, and sponsoring Test Project Agreements.

## Working Party Structure

At the national level, each working party has one coordinating member who is responsible to the assistant for standardization for national issues and to the working party standing chairman for actions arising from working party meetings. National WP delegations are led by the coordinating member, who coordinates and administers national input to the WP.

## Types of ISAs

## Air Standards and Advisory Publications

The working parties develop internationally agreed Air Standards (AIR STDs) that are incorporated into each nation's operating procedures. If a document is more of a guide to interoperability, an Advisory Publication (ADV PUB) is produced. The ASCC has some 400 published AIR STDs and ADV PUBs.

## Information Publications

Information Publications (INFO PUBs) are documents that contain information for the prime purpose of exchange between members of a working party. The information it contains may support further WP activity, but is not of a nature that requires formal distribution.

## Test Project Agreements

Part of the ASCC Charter allows for the free exchange of equipment between member nations. These loans are for research, development, test, and evaluation leading to standardization and possible purchase. They are implemented as test project agreements (TPAs).

## Other Publications

The Management Committee maintains the ASCC instructions, which detail the organizational structure, administrative procedures, and each member's function and responsibilities.

## Current Activities

The ASCC validates its products through exercises. It now has projects on standardization of turbine fuels, electronic hazards to aircraft, computer readable military material markings, and moving target indicator data standards.

# AUSCANNZUKUS Naval C4

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## Background

The AUSCANNZUKUS organization arose in 1960 from dialogue between Admiral Arleigh A. Burke of the U.S. Navy and Admiral Lord Louis Mountbatten of the Royal Navy. Their intention was to align naval communications policies and prevent, or at least limit, any barriers to interoperability with the imminent introduction of sophisticated new communications equipment. AUSCANNZUKUS matured to the current five-nation organization in 1980, when New Zealand became a full member.

This organization works closely with Washington-based management groups of the Combined Communications Electronics Board (CCEB), The Technical Cooperation Program (TTCP), American, British, Canadian & Australian (ABCA) armies, and the Air Standardization Coordinating Committee (ASCC). Its purpose is to provide an information infra-structure to enable allied commanders, at any level, access to information to accomplish their assigned tasks.

The AUSCANNZUKUS Naval C4 organization achieves its mission by:

- promoting interoperability between member nations by adopting standards and agreeing to minimum operational capabilities;
- exchanging information on issues of interoperability;
- providing a forum to highlight issues to national authorities; and
- using national resources cooperatively to resolve long-term, complex interoperability matters.

AUSCANNZUKUS is a consensus-based body with no authority to impose decisions on member nations.

## Organizational Structure

The current AUSCANNZUKUS organization consists of the Supervisory Board, C4 Committee, and various other subordinate groups. The organization is headed by a flag-level Supervisory Board drawn from national policy or operational requirement authorities. The board meets annually to endorse policy and resource allocations proposed by the C4 Committee (C4C), and to provide top-level guidance to the organization.
Subordinate to the Supervisory Board is the C4C, which meets biannually to resolve technical and operational interoperability issues in response to Supervisory Board tasking. The C4C is responsible for establishing priorities and making recommendations to the Supervisory Board to ensure that essential elements for AUSCANNZUKUS interoperability are identified, addressed, and resolved.

## Standardization Process

The AUSCANNZUKUS works closely with other Washington-based interoperability forums, to enhance operational effectiveness during joint and combined operations and to make efficient use of limited resources. Its meetings are held in the Washington, D.C., area as needed, but normally every four to six weeks. Liaison officers from other interoperability forums have a standing invitation to attend these meetings.

Ad hoc working groups may be formed to address specific interoperability issues in detail. Currently, two groups are established: Networking Working Group (NWWG) and the Joint Warrior Interoperability Demonstration (JWID) Working Group.

The management of work undertaken by the organization is coordinated using the AUSCANNZUKUS Organization Work Plan. The work plan details the objectives to support the organization's mission. It is reviewed biannually by the C4 Committee, and endorsed annually by the Supervisory Board. The objectives are broken down into tasks and subtasks, and are used as the basis for the organization's program of work. The current work plan can be found at http://auscannzukus-navalc3.hq.navy.mil/plan.htm.

### Types of ISAs

AUSCANNZUKUS makes available guidance and information on various subjects under the heading "Important Documents." They include Organization and Terms of Reference (Handbook 1), Naval Command, Control and Communications (C3) Interoperability (Handbook 2), and Guidelines for Maritime Information Management (Handbook 5).

It has released a series of documents by the Networking Working Group under three subject areas: concept of operations, standard operating procedures, and technical operating instructions. The organization also publishes annual final reports of Joint Warrior Interoperability Demonstrations (JWID), an annual U.S. J6-sponsored multiservice, multiagency demonstration of interoperability between fielded and emerging C4I systems.

### Current Activities

Recent and current activities include major work with JWID, development of Allied Maritime Tactical Wide Area Network by 2002, development of Coherent Information Management Strategy, and Allied Pacific Network.

# Combined Communications-Electronics Board (CCEB)

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### Background

The CCEB is a five-nation joint military communications-electronics (C-E) organization whose mission is to coordinate any military C-E matter referred to it by a member nation. The member nations of the CCEB are Australia, Canada, New Zealand, the United Kingdom, and the United States. The CCEB board consists of the senior representatives for command, control, communications, and computers (C4) in each of the member nations.  The US member is J-6 of the Joint Staff.

In 1986, the CCEB agreed to broaden its terms of reference to include communication and information systems in support of command and control.

The CCEB has adopted the following vision statement:

The CCEB is committed to maximizing the effectiveness of combined operations by the definition of a Combined Information Environment. This will enable users to share, creatively apply and add value to collective information and knowledge, constrained solely by policies defined by originators and recipients.

The mission of the CCEB is "to maximize the effectiveness of the joint and combined operations by optimizing information and knowledge sharing."

The CCEB's role is to examine military communications-electronics issues to ensure allied interoperability. This it undertakes in association with research and single-service forums, striving to establish a framework for interoperability. While the CCEB does not control national procurement initiatives or mandate the use of particular standards, the standards, policies and procedures that the CCEB develops will strongly influence future equipment acquisition.

## Organizational Structure

The nominated senior C4 representatives of the individual national joint military C-E organizations are known as principals. The term "board" is used to describe the collective principals; the term "CCEB" is used to describe the organization as a whole, which consists of component groupings: principals, Executive Group (EG), Washington Staff (WS), and working groups.

Collectively, the principals, EG, and WS consider any military C-E matter referred to it by a participating nation or international organization. Their work concentrates on determining which aspects of interoperability are suited for CCEB processes, and maintaining the currency of existing policies, standards and procedures in Allied Communications Publications (ACPs).

## Frequency Planners

Frequency planners are specialist national staff responsible to the principals for coordinating the management and planning of the radio frequency spectrum. Their efforts are directed toward ensuring adequate provision of the frequency spectrum and space orbital access for the forces of the CCEB nations in peace or war.

Spectrum requirements are met so as to ensure that communications-electronics equipment, including weapons and other systems, can operate efficiently without causing interference to, and without suffering interference from, other friendly systems or sources, and as far as possible taking into account enemy electronic activities.

## Working Groups

The working groups (WGs) are normally established as either a standing body or an ad hoc group to consider specific CCEB issues that are short-term in nature. The current WGs are the following:

• Tactical Communications Task Force (TCTF)
• Combined Interoperability Technical Architecture Working Group (CITA WG)
• CCEB Messaging and Directories Environment Implementation Task Force (CMDE ITF)
• Certificate Management Infrastructure Working Group (CMI WG).

International subject matter experts, frequency planners, and WGs consist of national specialist representatives who convene under an internationally rotating chairmanship, and report to and receive tasking from the EG on behalf of the principals.

## Standardization Process

As the only joint or combined organization whose focus is entirely on C4 interoperability, the CCEB is uniquely positioned to provide C4 leadership within the joint and combined environment. In exercising its leadership, the CCEB coordinates and harmonizes its efforts with those of the single-service forums with regard to C4. It will either take the lead in issues of interest or provide expert technical support to single-service organizations.

Where appropriate and when agreed, an individual CCEB country may be designated as lead nation on a particular issue. This may occur when a nation has the most pressing need to set a standard for a national project.

The CCEB nations recognize that interoperability within the NATO alliance is an essential operational issue for three of the member nations. Therefore, to the greatest possible extent, they strive to harmonize standards, practices, and procedures with those of NATO. The aim of the CCEB is to set the architecture, standards, and operational procedures such that the totality of the various capabilities fielded over time will act increasingly as a virtual single system.

The CCEB also provides a forum to align requirements for C4 capability programs among the five nations. The management plan provides the road map for progressing toward the CCEB's vision, but actual interoperability will only occur if nations use CCEB-developed standards in their procurement programs.

## Types of ISAs

Although it will be necessary for the CCEB to develop some military standards, notably in the areas of military messaging where insufficient standards exist, the standards selected for approval by the CCEB will follow the trends of nations to adopt commercial standards and products to meet military requirements. The onus on the CCEB will be first to define the various common capabilities for which agreement is needed and then to follow a process of selection, ratification, and publication of associated standards and procedures.

Where appropriate, CCEB nations may agree to accept a national solution for a particular requirement. This may occur when there is no ready solution to an allied problem, and acceptance of a national solution by other nations will permit interoperability.

The standards needed to ensure the gradual building of a virtual single combined information system will be founded on ACP 140, Combined Interoperability Technical Architecture (CITA), which the CCEB publishes and maintains.

Except for certain areas that may require unanimous agreement and ratification by the CCEB principals, the material is published as guidance documents to accelerate the visibility of CCEB intentions within nations and organizations that are concerned about combined interoperability. Where unanimous agreement and ratification are required, or the contents have the potential to significantly impact the nations, CCEB-developed material will normally be published as an ACP.

## Current Activities

Recent and current activities include Lessons Learned on Secure E-mail policies and procedures, ACP 140 on Combined Interoperability Tech Architecture, ratification of ACP 142 on Protocol for Multicast Messaging Under EMCON Conditions, and Battlespace Spectrum Management publication.

# International Standardization Agreement (ISA) Toolkit

By Joseph A. Delorie
Defense Standardization Program Office

Just as standardization benefits US Armed Forces by minimizing acquisition, training, maintenance and other support costs, and by maximizing safety and interoperability in joint operations, so also does standardization benefit coalition warfare. To this end, the Department of Defense (DoD) has entered into a number of international standardization agreements (ISAs) with the defense ministries of other member nations of several international treaty organizations. These organizations include the Air Standards Coordinating Committee (ASCC); the American-British-Canadian-Australian Armies (ABCA); the Australia Canada New Zealand United Kingdom and United States Naval C4 Organization (AUSCANNZUKUS); the Combined Communications-Electronics Board (CCEB); and the North Atlantic Treaty Organization (NATO).

The Defense Standardization Program (DSP) has developed (or is developing) several tools to aid the defense acquisition community in implementing our responsibilities in the ISA arena. These tools are aimed at providing information, supporting participation in the development and staffing of ISAs, making documents more readily available, and organizing the retrieval of materiel-related ISA information in an organized, value-added manner.

Nearly 400 DoD employees are involved with the development and coordination of ISAs that specify materiel requirements, operational doctrine, or adminis-trative procedures. A few of these employees work at this full time. For the majority, however, participation on a technical committee of an International Treaty Organization may be one of many duties. Besides the employees directly involved in the creation and staffing of ISAs, thousands of others involved in defense acquisition may need to refer to ISAs or associated implementing documents to support an acquisition. Sometimes, an acquisition employee may need to speak with someone in DoD who has specific knowledge about a particular technical requirement in an ISA document. The good news is that some tools already exist within the

*The Defense Standardization Program has developed (or is developing) several tools to aid the defense acquisition community in implementing our responsibilities in the ISA arena.*

framework of the DSP to meet those needs, and all of the tools can be accessed from the DSP Home Page (www.dsp.dla.mil). The latter part of this article will describe a planned new tool to meet the increasing challenge of operating in a coalition environment.

**ASSIST Database** – Delivering Documents to Your Desktop
ASSIST, operated and maintained by the Defense Automation and Production Service (DAPS), is the official source for all DSP documents. Since October 1, 1998, when the ASSIST-Online website was launched, users have been able to access document images of most active and inactive DSP documents, and download them to their desktops, without charge. The ASSIST-Online provides direct, online access to over 104,000 digital document images in Adobe Portable Document Format (PDF), and more document files are added to the collection with each daily update to the website. Included in this exhaustive document collection are copies of US-ratified ISAs. Although most documents in the ASSIST database are unrestricted and may be accessed by any user, ISAs are controlled-distribution items, and access is limited. Appropriate privileges are required to download or order controlled distribution documents. First-time users of the ASSIST-Online must complete the online registration form to establish a unique account, and to obtain a user logo and temporary password. Once the online registration form is submitted, the new account is established, and the user receives the assigned logon by return e-mail. After personnel at DAPS validate the account, the user receives a second e-mail message assigning a temporary pass-

word. Users are encouraged to change their temporary passwords once they log onto the system by clicking on the "User Profile" menu option in the left-frame menu and then selecting "Account Profile Maintenance" link.



*Figure 1, ASSIST-Online Login Page*

Personnel at DAPS verify the registration data and use it to establish the correct type of account (Military, Federal Government, Commercial), to manage subscriptions effectively, and to comply with information assurance security regulations. Registration data is also considered when establishing appropriate privileges for access to controlled-distribution documents.

To aid occasional users who may only want to verify the currency of an existing document in their possession, during 1999 we added the ASSIST-Quick Search, which lets users locate and download documents without having to pre-register to obtain a user logon and password. We also added the Assist-eAccess, a module that enables outside applications to access documents in the ASSIST official repository. For example, the Defense Technical Information Center (DTIC) offers its Scientific and Technical Information (STI) community access to ASSIST docu-

ments through the DODISS Search tool on the DTIC STINET website. The newly designed ASSIST-Online (Figure 1) can be accessed at http://assist.daps.mil.

ASSIST-Online includes more than documents. Users also have direct access to related DoD databases including DSP standardization projects (SD-4), Standardization Directory (SD-1), Data Item Descriptions (DIDs), and HAZMAT/ODC data. Using powerful search and hyperlink features in ASSIST-Online, users may locate and view diverse standardization data across each of these integrated systems.

Information about specific ISAs can be found in two places within the ASSIST-Online. The "Document Analysis" module provides general information about each document in the ASSIST database on the Document Profile – General page, including identifying a point of contact (POC) for different document management responsibilities and letting users know if a project is open against the document. An "open project" would indicate that the documents may be in the process of revision or cancellation. General information includes such things as the document title, scope, status (active, inactive, or cancelled), date, federal supply class (FSC) or standardization area, distribution statement, and whether there is an associated QPL or QML. The POC section identifies the Lead Standardization Activity, Preparing Activity, and any Custodians.

For each ISA, there is additional information in the "ISA Profile" module, which is a separate menu option in the left-hand frame of the ASSIST-Online. The ISA Profile identifies such additional details as the date the ISA was ratified by the U.S., the sponsoring Treaty Organization, the U.S. DoD sponsor, the date the ISA was promulgated (which is usually different from the date of the document), any U.S. reservations, and the type of ISA (e.g., materiel, operational, or administrative). The ISA Profile provides the U.S. national point of contact. Finally, the ISA Profile identifies documents used to implement the ISA within DoD. If any of them are available in the ASSIST, the implementing documents will appear as hyperlinks. Clicking on one of them will take users to the Document Profile page for that implementing document.

As of this writing, the ISA Profile information has only been entered into the ASSIST for a small percentage of the ISAs; however, the Military Departments will be reviewing the ISA documents for which they are responsible and completing this information during the coming year. To assist in this process, an enhancement was added to the ASSIST-Online that permits designated users to complete an electronic, web-based form to enter ISA Profile information into the ASSIST database. Employees at DAPS perform a quality review of the submitted data and, when approved, the information is added to the ASSIST database. This enhancement eliminated the need to complete and mail paper forms and it improves data integrity by forcing users, where possible, to enter mandatory information on the ISA screen by selecting from drop down lists of "acceptable" database entries.

The ISA maintenance utility also validates entries at the time they are recorded. This tool was designed to simplify the effort by personnel in sponsoring DoD organizations and to encourage the establishment of a more complete inventory of ISA data in the official ASSIST repository.

### Locating an Expert

Since many of the ISA Profiles have not yet been populated in the ASSIST database, DoD acquisition personnel wishing to discuss a particular ISA with a knowledgeable DoD expert can consult



*Figure 2, ISA Database Entry Page*



*Figure 3, WebGuard input form*

another ISA database developed by the Defense Standardization Program Office (DSPO). This database may be accessed from the DSP Home Page (click on "ISA DATABASE" in the left-frame menu), or go directly to http://dsp.dla.mil/isa (see Figure 2).

The ISA database describes the five international treaty organizations, and allows authorized DoD employees to extract from the database, contact information about DoD employees who participate on one of the technical committees or working parties. Not unlike non-government standards bodies, each of the International Treaty Organizations has a unique organizational structure, acronyms, and procedures. Sometimes an individual committee or working group within a body has its own procedures for coordinating and ratifying agreements. To help familiarize users with these International Treaty Organizations, the ISA database section of the DSP website provides some general information about each organization, as well as links to each organization's website. Although all users may access the ISA database and obtain general information about the role of the DSP in international standardization agreements, only DoD employees may extract data about specific personnel. To extract data from the ISA database, users must log into the Webguard application (see Figure 3) developed by the Defense Manpower Data Center

(DMDC). This application asks users to enter several items of information (social security number, date of birth, and last name), and then validates the entered data against several official DoD personnel databases maintained by DMDC. Once validated, the user is then redirected to the ISA Database entry screen, but this time will be allowed to extract data. A user may continue to perform searches and fully explore the site until he or she terminates the session by closing their Web Browser.

The ISA database provides information on DoD employees who participate on one or more technical committees involved in the development of ISAs, and provides official business-related contact information (name, organization, phone and fax numbers, and E-mail address) for each such employee. Although the general descriptive information about the Treaty Organizations is available to all users, since all of the participants belong to a military organization in one of the member nations, information about specific participants is restricted to authorized DoD employees only.

DoD employees who participate on one of the committees, sub-committees, or working parties of an International Treaty Organization are encouraged to register their participation in the DSP ISA Database. Click on "Add a Participant" in the ISA database left-frame menu, and then follow the instructions on each screen to complete the registration process. Employees who have already registered their participation but who have experienced a job change, or who have a new phone or fax number or new e-mail address, are also encouraged to visit the

ISA database and update their records.

There is an additional tool particularly useful to those engaged in developing new or revised editions of ISAs called the International Military Standard Work Management System (IMSWMS). As noted in Figure 4, this is a controlled access website. Users interested in emerging new ISAs, or revisions to current editions, may request a user logon and password from the Chief, Air Force International Standardization Office, (703) 696-8422, or by sending E-mail to asccmcus@pentagon.af.mil. Although developed and managed by the Air Force, the IMSWMS (now in version 3.1) is available to all DoD employees who have a need to monitor ISAs.

For the last two years, the DSPO has funded efforts to enhance the IMSWMS, since it has the potential of meeting a critical need in the DSP community. For one thing, the IMSWMS has a large library of U.S.-ratified ISAs (mostly NATO and ASCC documents), many of which have never been entered into the ASSIST. In the 4th quarter of fiscal year 2001, DSPO funded a
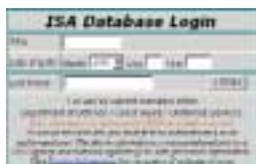


*Figure 4, IMSWMS Logon Page*

project to build an interface between the IMSWMS and the ASSIST-Online that will allow us to populate the ASSIST with all U.S.-ratified ISAs. This interface will also allow for the periodic, automatic migration of newly ratified documents from the IMSWMS to the ASSIST database.

The IMSWMS serves an international group of users from 21 nations involved in developing ISAs. As such, it is partitioned so that users from one nation may share their comments with each other, without exposing their opinions to other nations until they have come to a coordinated national position. The goals of the IMSWMS are to have an electronic workplace where users can access a secure system from anywhere in the world and to achieve efficiencies and effectiveness by using a common system.

The IMSWMS provides its registered users with a number of communication tools, to include the ability to send group e-mail messages to one or more committees or working parties for a particular treaty organization, or even create custom mail groups. You can also set up international video conferencing and you can post messages to a bulletin board. A planned future enhancement is the addition of a message board.

Some key features of the IMSWMS are that it links to international and national policy and reference documents; allows users to look up members of working parties and committees for the different international treaty organizations; and it has a large repository of promulgated documents. Working Group reference documents could include such things as Terms of Reference, Convening Order, Agenda and Minutes of meetings. The documents are available in one or more of three formats. Documents in coordination are posted in Microsoft Word format to facilitate commenting and proposing revisions. Promulgated document files may be in Word, in Adobe PDF format, or scanned (.tif format) images. To get the full functionality of the IMSWMS,

however, use the most current Web Browsers (Microsoft Internet Explorer 6 or Netscape 6.2), Adobe Acrobat Reader 5.0, and Java2.

One of the most useful features provided by the IMSWMS, and one not currently available in the ASSIST-Online, is online coordination of documents. Users can create draft international standardization agreements using pre-defined document templates. Originators can coordinate draft documents with other participating nations. Members of one nation can coordinate a national position on a draft within their own partition on the IMSWMS. National members can markup drafts and send comments back to the document custodian, and custodians can disseminate ratification requests.

Generally speaking, once the U.S.-DoD has ratified an international standardization agreement, it reflects a commitment on our part to implement that agreement or, as a minimum, to consider the requirements in the ISA and make a conscious decision to implement or disregard them when developing new weapon systems. The challenge for Program Management offices is how to accomplish that task.

### Program Managers' Tool (PMT)

As previously mentioned, the ASSIST database is the official source for all defense and federal specifications, standards, handbooks, and other standardization documents used in defense acquisition. Even so, we are aware that it is lacking many of the ISAs. Besides developing a link between the IMSWMS and the ASSIST, and soliciting other sources for copies of ISAs to add to the ASSIST document repository, DSPO has several other initiatives underway to

update the ISA profile information in the ASSIST database and to allow users to retrieve data in an organized way, so that we might meet our commitment to our coalition allies.

As part of the ISA document review mentioned earlier, the Military Departments will be determining if each ISA for which they are the sponsor still applies to the U.S. In those cases where an ISA may no longer apply, the Military Department will initiate action to withdraw U.S. ratification. In each instance where the ISA does apply, the Military Department will complete the ISA profile data. The Military Departments will also analyze each applicable ISA and, using the Work Breakdown Structure (WBS) format described in MIL-HDBK-881, enter the data into the ASSIST-Online using a "to be developed" input module for the Program Managers' Tool. The module should be available within the next few months.

To review and analyze all of the ISAs in this manner is an ambitious undertaking and it will take the Military Departments time to accomplish this task. Still, as the ASSIST database begins to be populated, Program Management Offices will be able to use a "to be developed" PMT output module to identify, down to WBS level 3, key ISAs and associated U.S. implementing documents that should be considered when building the requirements for a new system or a major modification to an existing system.

### The Road Forward

Standards are an important means for achieving the operational needs articulated in Joint Vision 2020 for Joint Service and Coalition interoperability and improved logistics readiness. Such is their importance that DoD 5000.2-R, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs," requires Program Managers to identify standards to ensure that interoperability, safety, and other requirements critical to operational effectiveness are met. The challenge for Program Managers and those organizations that support them is to be able to identify those standards. A necessary starting point is to ensure that we are fully considering U.S. ratified ISA requirements. The intent of the PMT is to give Program Managers the means to meet the challenge laid on them by DoD 5000.2-R. Especially at this time in history, cooperation with our allies is paramount. The tools described in this article are the DSP's contribution to facilitating that cooperation.

### Mr. Joseph A. Delorie

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# Weapon System Interoperability-It's More Than 1's and 0's
## or, How I Learned to Love the ISAs

By Ronald Zabielski, Defense Standardization Program Office

To most people, when they hear the word interoperability, they think of it in terms of being able to communicate with each other and share information. Interoperability means so much more than this. Interoperability is systems or key elements of systems being able to work with each other, not just communicate with each other. Interoperability is the "ability of systems, units, or forces to provide services to and accept services from other systems, units, or forces and to use the services so exchanged to enable them to operate effectively together" (Joint Publication 1-02).

Joint Vision 2020 and the DoD 5000 series documents all emphasize the importance of interoperability. In an effort to ensure interoperability with our allies, the DoD acquiring policy in DoD 5000.2-R requires the Program Manager (PM) to

identify any international standardization agreements (ISAs) and their implementing documents that apply to their program. There are thousands of ISAs; Materiel, Operational, Doctrinal, Administrative and other. A PM has a very difficult time (1) getting a listing and copies of these ISAs and (2) figuring out which materiel ISAs apply to his program.

As part of the systems engineering process for a weapon system, a Work Breakdown Structure (WBS) is developed. The PM prepares a WBS in accordance with the WBS guidance in MIL-HDBK-881. The WBS provides the framework for program and technical planning, cost estimating, resource allocation, performance measurement, technical assessment, and status reporting. The WBS displays the system as a product-oriented family tree composed of hardware, software, services, data and facilities. It relates the elements of work to each other and to the end product. The PM normally specifies contract WBS elements only to the level three for prime contractors and key subcontractors. MIL-HDBK-881 identifies the top three levels of the WBS for seven defense materiel categories (aircraft systems, electronic/automated software systems, missile systems, ordnance systems, ship systems, space systems, and surface systems).

The ratified materiel ISAs and their implementing documents can be evaluated, assigned to one or more WBS categories and further assigned to a level or levels of the WBS. The WBS structure can be augmented to include such items as medical or personal equipment.

It is important to PMs to know

which ISAs and implementing documents impact their weapon systems. Weapon systems that are already fielded can benefit by performing an analysis of the ISAs and implementing documents and determining where system deficiencies might exist if that weapon system was to be deployed in a coalition environment. PMs with systems in major modifications, or upgrade development will have the ability to see which ISAs and implementing documents have an influence on their design. The PM can make a conscious decision about the key ISAs that must be utilized in design, and possibly make contingency plans for those ISAs not utilized.

The following is an example of how an ISA can be evaluated and assigned to a WBS category/level. The North Atlantic Treaty Organization (NATO) is heavily involved in developing materiel Standardization Agreements (STANAGs). One such STANAG is Number 3837, Aircraft Stores Electrical Interconnection System." The aim of this agreement is to standardize the electrical interfaces between stores and aircraft. A store is any device for internal or external carriage, and

mounted on aircraft suspension and release equipment, whether or not the item is intended to be separated in flight from the aircraft. The US National implementing document is MIL-STD-1760C, "DoD Interface Standard for Aircraft/Store Electrical Interconnection System."

Prior to this standard, an aircraft and the stores which it carried were typically developed independently of each other or were developed exclusively for each other. This usually resulted in unique aircraft/store electrical interconnection requirements, the general proliferation of overall store interface designs, low levels of interoperability, and costly aircraft modifications to achieve required store utilization flexibility. This standard supports the goal of developing aircraft that are compatible with a wide variety of stores and stores that are compatible with a wide variety of aircraft among the Services, within NATO, and with other allies.

The following table shows where this STANAG and implementing document could have an impact on weapon systems tied to the WBS.

| Level 1 | Level 2 | Level 3 |
|---|---|---|
| Aircraft System | Air Vehicle | Airframe |
| | | Survivability |
| | | Reconnaissance |
| | | Armament |
| | | Weapons Delivery |
| | | Auxiliary Equipment |
| | Peculiar Support Equipment | |
| | Common Support Equipment | |
| | | |
| Missile System | Air Vehicle | |
| | Peculiar Support Equipment | |
| | Common Support Equipment | |
| | | |
| Ordnance System | Complete Round | |
| | Launch System | |
| | Peculiar Support Equipment | |
| | Common Support Equipment | |

## So how does this help the PM?

In the case of a fielded system (either an airplane or a store), he can quickly identify those areas that need to be looked at to see if the weapon system is compliant. In the case of a weapon system in development, the PM can turn this over to the design team to make sure that the system will be compliant. In either case, interoperability is greatly enhanced.

This is just one case of how an ISA can influence a weapon system. There are thousands of materiel ISAs of which many hundreds may have an impact on any given weapon system. There is currently no central repository of ISAs and no categorizing of the ISAs according to the WBS. The Defense Standardization Program Office and the Services are currently gathering all ISAs into a single repository (the Acquisition Streamlining and Standardization Information System [ASSIST]). An analysis of each ISA and its implementing document(s) will be done and they will be categorized into the WBS framework. Once done, a PM can enter the database and for any given level in the WBS get a listing of all the ISAs that might impact a particular weapon system and a list of all implementing documents. Furthermore, if the implementing document is a specification or standard, there will be a capability to view or download that implementing document.



*Pictured from left to right are Joseph Delorie and Gregory Saunders, Defense Standardization Program Office, discussing recent work-related events. Both were attending the World Standards Day evening awards banquet on October 10th, 2001, at the Women in Military Service for America Memorial in Arlington, Virginia.*



*Mary McKiel, EPA, and Steve Lowell, Defense Standardization Program Office, discuss upcoming standardization events at the 2001 World Standards Day evening banquet.*

Reserved for WSD Contest Winner photo will be inserted by the printer

*Dr. Prabhat Krishnaswamy is a Vice-President at the Engineering Mechanics Corporation of Columbus (www.emc-sq.com), Columbus, OH, and is also the Vice-Chairman of ASTM's Section D20.20.01-Standards for Plastic Lumber and Shapes. He can be reached at: kswamy@columbus.rr.com. Mr. Richard G. Lampo is a Materials Engineer at the U. S. Army Engineer Research and Development Center, Construction Engineering and Research Laboratory, Champaign, IL, and is Chairman of ASTM's Section D20.20.01 - Standards for Plastic Lumber and Shapes. He can be contacted at r-lampo@cecer.army.mil. Their winning paper can be seen at the Standards Engineering Society website -- available as a related link on our Home Page: www.dsp.dla.mil*

Reserved for CEO of Deere winning award photo will be inserted by the printer

*Pictured above is Mr. Robert W. Lane, President and CEO of Deere & Company, the 2001 recipient of the Ronald H. Brown Standards Leadership Award that was presented at the 2001 World Standards Day, October 10th, 2001. Mr. Lane's participation symbolized the year's theme, "The Environment," and recognized Mr. Lane's leadership in adopting an environmental management system (EMS) for Deere & Company that adheres to the ISO 14001 standard.*

In October 2001, the Department of Defense joined with its industry partners and many other Federal agencies to celebrate World Standards Day at the Women in Military Service for America Memorial in Arlington, VA. The event was a huge success. The WSD Committee selected Mr. Robert W. Lane, President and Chief Executive Officer of Deere and Company, to be the honorary chairman and recipient of the Ronald H. Brown Leadership Award. Mr. Lane received his award at the evening reception and banquet.

The award was named to honor former U. S. Secretary of Commerce, Ronald H. Brown, who died in a plane crash while on a trade mission to Central Europe. As the 2001 recipient, Mr. Lane joins previous winners of this prestigious award, many of whom are chief executives from corporations including Marriott Corporation, Tenneco, Boeing, Ameritech, AMP Inc., Motorola, Polaroid, and federal agencies such as the U. S. Department of Commerce.

WSD 2002 will be celebrated on Wednesday, October 16. The DoD will be participating fully with an exhibit. Watch for more WSD 2002 details on the DSP Home Page (www.dsp.dla.mil) or in future DSP publications.
(**Sharon Strickland**/DSP/703-767-6870)

# Aerodynamic Improvement to BSU-49/B Bomb Fin Draws DOD and Foreign Military Sales (FMS) Interest

By Henry J. Patterson Jr.
Naval Air Warfare Center
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## BSU-49/B FIN ASSEMBLY IMPROVEMENT PROJECT

The Defense Standardization Program Office has sponsored a project to upgrade the BSU-49/B Fin Assembly for improved performance and increased stability in high-speed low drag maneuvers. Aerodynamic improvements to the BSU-49/B promises increased compatibility with modern attack-fighter and fixed wing aircraft such as the F/A-18, AV-8, P-3B Orion and S-3A Viking and performance on par with the currently fielded BSU-86/B Bomb Fin.

During Desert Storm, BSU-49/B equipped MK 82 General Purpose Bombs were dropped from many fixed-wing aircraft in support of the ground offensive. The bombs were used against a wide variety of targets, including artillery, trucks, bunkers, Scuds, surface-to-air missile sites, antiaircraft artillery sites, early warning radars, and supply points. Although the BSU-49/B performed admirably, a design improvement is needed for use with the F/A-18 where field observations and flight tests have shown instabilities exhibited by the fin when engaged in high-speed, low drag delivery and delivery at steep angles of attack.

Upon project completion, the improved BSU-49/B Fin Assembly will offer improved low-drag stability and improved trajectory and ballistics action. The improved BSU-49/B Fin Assembly has promise to become the likely candidate for an alternate selection and replacement to the High Drag BSU-86/B Fin Assembly.

## DESCRIPTION OF HIGH DRAG FINS FOR MK 80 SERIES BOMB

High drag fins are used to stabilize MK 80 Series Bombs in flight by deployment of either extended mechanical fin spans or parachute devices. The high drag fin assembly is attached to the rear section of the bomb warhead. When activated after a high-speed, low-level release, the high-drag fin gives the bomb a nose down attitude during its descent and quickly slows the bomb. This retarding force, placed upon the bombs forward momentum, increases the distance between the weapon and delivery aircraft, thereby minimizing the possibility of damage from the bomb blast or bomb fragments. Separation of the bomb and fin assembly normally occurs after the bomb hits the ground or impacts with the water. The two types of high drag MK 82 Bomb fins used by Allied Forces and the U.S. Services are the mechanically controlled MK 14, MK 15, and the BSU-86/B Fin Assemblies and the parachute controlled BSU-49/B Fin Assembly.

### "Mechanical" Retarder
The basic MK 14, MK 15, and BSU-86/B mechanically controlled fin structure was designed in the early 1960's and is commonly referred to as the "Snakeye" fin. It is manufactured of extensively machined steel and has a forward motion-retarding medium consisting of four external metal vanes that serve as stabilizers in the low drag mode. In the high drag mode the vanes open and their surfaces containing angles and convolutes to maximize weapon stability drastically increase the drag coefficient and subsequently shorten the bombs forward range of flight. "Snakeye" fins were used by Navy aircraft to deliver mines into the waters around Iraqi naval bases during Desert Storm.

### "Ballute" Retarder
The second type of high drag fin is the BSU-49/B air-inflatable retarder tail assembly. The fin completed its final design in the early 1980's and contains a ballute (combination balloon and parachute) device that deploys shortly after weapon release. This model of high drag fin is built in the shape of a canister with the stabilizing fins placed in an X wing design. It employs a nylon chute containing preformed pockets that assist in withdrawing the chute from the canister and is made of high strength low porosity nylon fabric. Other than the X wing stabilizers, there are no other major structures on its outer surface. The pilot has the choice of either a high drag or low drag release mode depending on mission requirements. In the low drag mode the canister remains closed after release.

## PROJECT SELECTION OF "BSU-86/B" OR "BSU-49/B"

### Selection Process
A selection process identified the cost/benefit factors between choosing for improvement and upgrading either the BSU-86/B or BSU-49/B. The final selection consisted of the BSU-49/B for it is approved for use on many U. S. and Allied Force aircraft and presents the greatest potential for interoperability, re-design, production expediency, and compatibility with modern fighter and attack aircraft.

### Selection Factors
The following factors were used in the BSU-86/B and BSU-49/B selection process.
a. Interoperability; capacity to interface and interchange with aircraft of U.S. and Allied Forces.
b. Cost; targeted procurement cost should approach the norm of lower cost of inventoried fin models.
c. Availability; production history along with ease of manufacture and dates of last production runs are indicators of the improved fin's availability.
d. Compatibility; newer jet fighters and attack aircraft perform at higher speeds and execute tighter turns while flying through steeper angles of attack. The unitary body construction of the BSU-49/B provides for a higher level of mechanical and operational reliability by minimizing the surfaces that may develop harmonic vibration nodes that produces metal fatigue and possible fin failure. In addition, the uncluttered X wing design during carriage has a greater aerodynamic efficiency and a lower drag coefficient that equates to higher carriage speeds, increased aircraft performance, less fuel burned, and extended mission range.

### IMPROVEMENT PLAN FOR BSU-49/B
Improvements to the BSU-49/B are needed to decrease the fin susceptibility to turbulence and vertex forces occurring in the vicinity of the weapon at release. In the low drag mode, the instability oscillations that occur in a circular manner along the fin assembly's X-axes and Y-axes increase aerodynamic drag and reduce the forward momentum of the weapon making it fall short of its intended target and resulting in
possible damage and injury to supporting forces. An increase to surface area of the X wing components will dampen the problematic oscillations that occur in low drag release at high speeds and high angles of attack and will advance the aircraft's fin delivery envelope towards the BSU-49/B maximum delivery speed which is rated at 700 Knots Calibrated Air Speed.

### Fin Redesigned for Increased High-Speed Low Drag Stability.
### Six Wing Design
An assortment of design concepts, introduced to improve the stability of the BSU-49/B X wing design, were reviewed and only three-merited consideration for further test and evaluation. The three fin variants examined consisted of the six-wing design, the big fin design, and the extended span design. Each fin design objective is to increase the effective surface area in contact with the airflow thereby dampening the circulatory oscillations that produced fin instabilities. The six-wing design concept added an extra pair of stabilization wings in a symmetrical manner between the X wings adjacent to the fuze access door on the fin canister. Although the six-wing design performed well in dampening fin oscillations orthogonal to the surface plane of the added aerons and increased the overall effective surface area of the fin, it did not reduce the component of fin oscillations in the same plane as the added aeron surface. The six-wing design did not increase fin stability in both X-axes and Y-axes and therefore was removed from further consideration as a viable design concept.

### Big Fin and the Extended Span Fin
Two other fin modification variants, the Big Fin and the Extended Span Fin, offer more promise in stabilizing the fin released in the high-speed low drag configuration mode and are currently going through a developmental design validation phase with laboratory, wind tunnel, and developmental flight-testing scheduled.

### Proportionality Comparison Study
A baseline proportionality study includes the existing BSU/49-B fin rated for the MK 82 500-pound warhead and the BSU-85 High Drag "Ballute" fin rated for the MK 83 1,000-pound warhead. The objective of the comparative study is to yield baseline design data on the generalized dimensional characteristics the improved BSU/49-B may have if designed in proportion to the aerodynamic characteristics of the larger BSU-85/B Fin Assembly.

## Laboratory Test and Computer Simulation

Today's advances in computational fluid dynamic simulation and modeling reduce the steps involved in weapon aerodynamic design, development, and test. The BSU/49-B improvement project makes use of computational fluid dynamic simulation and modeling to select between the big fin variant and the extended span variant. The process of validating the proposed fin dynamic characteristics consists of the following steps in the computer simulation laboratory.

1. Examine and fill the database with known wind tunnel data for baseline models BSU-49/B and BSU-86/B.
2. Model baseline BSU-49/B, BSU-86/B, proposed Big Fin Variant, and proposed Extended Span Variant in Missile Datcom or a similar aerodynamic prediction code.
3. Prepare comparison plots of the aerodynamic coefficients for the two fin variant configurations. Check baseline results against wind tunnel data and make comparisons to existing BSU-49/B and BSU-86/B data.
4. Model and compare separation behavior of each fin variant configuration, including the BSU-86/B, from F/A-18 aircraft at flight conditions of interest (500-700 KCAS). This will examine the separation instabilities in close proximity to the aircraft during the first second of flight. The BSU-49/B instability problems observed in previous flight tests may be observed during the second and subsequent seconds of flight.
5. Perform a qualitative assessment, based on previous ballistic sensitivity studies, of the effects of the aerodynamic coefficient changes and separation behavior on the ballistics, trajectory and aim-point of the MK 82 warhead configured with the proposed Big Fin Variant and Extended Span Variant.

### Wind Tunnel and Flight Test

The wind tunnel and flight tests of the Big Fin Variant, and proposed Extended Span developmental models are scheduled to occur after the completion of laboratory and computer tests to select the fin variant that most closely exhibits the performance required of the newly designed fin.

## PROJECT MANAGEMENT

### Project Plan Life Cycle Structure

The project plan requires two years for its life-cycle structure and is driven by a time-phased spectrum of activities expressed in terms of specific baselines and milestones. The sequence of project life cycle activities is as follows:
• Specifications (specific requirements for increased stability in low drag mode)
• Accumulation of information
• Development of alternative conceptual designs
• Engineering exploration Computational Dynamic Fluid Analysis and Simulation
• Reference design of selected fin variant
• Analytical investigations including laboratory test and analysis
• Development test, build models to include construction materials and components
• Drawings and detailed specifications
• Construction of Developmental Model Test
• Drawings, specifications for prototype, including product modification
• Construction of prototype
• Test (verify)
• Field models
• Test (verify and conclude)
• Design drawings and specifications
• Production ready drawing package

### Inter-Operability Plan

Members of our Allied Forces who have amassed an inventory of BSU-49/Bs and fly the F/A-18 and other modern attack aircraft may stand to gain from the retro-upgrade provisions of the project. Information received from Foreign Military Sales (FMS) countries indicates the need for an inexpensive alternative/replacement for the MK 14, MK 15, and the BSU-86/B High Drag Fins Assembly.

### Availability of a Retrofit Upgrade

For those countries flying F/A-18s and having an inventory of BSU-49/Bs, a provision in the project will create a retrofit process to modify existing BSU-49/Bs to the improved fin configuration.

## PROJECT BRINGS BENEFITS TO DOD SERVICES AND FMS CUSTOMERS

DoD and the Services will benefit from the successful completion of this program of modifying the BSU-49 Fin Assembly to acquire increased high-speed, low drag stability thereby increasing compatibility with flight delivery requirements of modern attack-fighter and fixed wing aircraft. The Joint Services and NATO will enjoy a reduction in procurement data package cost, contract cost, and logistics cost obtained from shared production, and an availability of an alternate/replacement for the BSU-86/B at approximately one-half of the present day cost to build the mechanical retarder.

The BSU-49/B improved fin is forecasted as the best alternative over the next 15 years for MK 82 Bomb high drag function. The BSU-49/B improved fin is designed to offer comparable stick length metrics and ballistics, a lower drag coefficient, and exceptional performance within the increased rigors of the delivery envelops for existing and newer F/A-18 planes and other modern attack aircraft.

Use of the BSU-49/B and the improved configuration, that have common configured canister and retarding apparatus, by U.S. and Allied Services will help meet the goal of logistics readiness through commonality of systems and components. Progress will be made in moving the U.S. and Allied Services toward standardization and full interoperability in the use of a single configuration high drag fin for the MK 82 500 LB warhead.

# Henry J. Patterson Jr



*Henry J. Patterson Jr.*

**Henry J. Patterson, Jr.,** works at the Naval Air Warfare Center, Point Mugu, California. He worked three years in industry, and five years in the US Navy. He served as the Navy's HARPOON and Conventional Weapons Program Acquisition Manager, and is currently the Foreign Military Sales Engineering Coordinator with NATO and allied countries. Mr. Patterson is a member of the Society of Logistics Engineers (SOLE) and the Institute of Industrial Engineers.

# What's in a name?  That which we call a rose by any other name would smell as sweet  — But what about acronyms?

By Stephen Lowell, Defense
Standardization Program

I'm not sure I agree with William Shakespeare.  I don't know if a rose would smell as sweet if we called it a chair.  And it would certainly be more confusing if different things had the same name.  Fortunately, most things do have their own unique names.  But the same cannot be said for acronyms.  In fact, it's rare to find an acronym that represents less than a hundred organizations, programs, processes, or whatever.  Let's take as an example, my favorite acronym, "DSP."

I get many unusual emails.  Most have something to do with the Defense Standardization Program (DSP), but some of the more entertaining ones relate to other DSPs.  For example, some time ago, a gentleman emailed me a political diatribe, which is okay, except that the target of his discourse was not the Defense Standardization Program (DSP), but the Democratic Socialist Party (DSP).  Somehow, he stumbled onto our website, saw the acronym "DSP" and concluded that we were the Democratic Socialist Party.  I had a similar experience – although much more light-hearted – involving someone in search of information about the Delta Sigma Pi fraternity.  I guess technically, the acronym for Delta Sigma Pi is not DSP, but $\Delta\Sigma\pi$, but their website address does have "dsp."  I let this future frat member know that while the Delta Sigma Pi fraternity was America's foremost professional fraternity for people pursuing business careers who like to drink kegs of beer, the Defense Standardization Program fraternity was America's foremost professional fraternity for people who develop defense standards and like to eat Meals Ready Eat (MREs).

While these emails were nothing more than amusing diversions, they must have had an effect on me, because I began seeing the DSP acronym everywhere.  For example, I subscribe to a number of technical publications, such as Government Computer News, Military & Aerospace Electronics, and Washington Technology.  I began to notice articles about the DSP throughout these publications, except the articles were not about the Defense Standardization Program.  These DSP articles were about Digital Signal Processing, Digital Service Provider, or Digital Signal Protocol.

When I visited the National Aeronautics and Space Administration (NASA) website, I saw they had an article on the DSP.  Since we work closely with NASA, I assumed they were writing about the Defense Standardization Program.  Wrong again.  The article was about their Deep Space Probe.  Even in the Department of Defense, the DSP acronym is everywhere.  I was visiting the Air Force Space Command website and saw an article on the DSP.  Since Air Force Space Command is Standardization Code 19 in the Defense Standardization Program, I naturally assumed it was about them.  Wrong again.  This article was on the Space Command's Defense Support Program, which operates satellites as part of North America's early warning system.  We recently went through a search of defense directives, instructions, regulations, and other policy documents to determine where standards and standardization requirements exist.  I was excited to see the Army Training and Doctrine Command Regulation 350-16 addressed the DSP, but once again, wrong DSP.  The regulation is for the Drill Sergeant Program.

My Dad had one of those family tree genealogies put together for the Lowell clan.  As I glanced at the branches, I occasionally noticed the acronym d.s.p. after some of the names.  I thought to myself that I must descend from a long line of civil servants in the DSP, and I am just carrying on the family tradition.  But as it turns out, in genealogy, d.s.p. is Latin for "decessit sine prole," which means, "died without issue."

The DSP acronym has even followed me into the kitchen.  I enjoy cooking and the other night, I tried a new recipe for Malay Curry Chicken.  The recipe called for 2 DSP ground red onion.  At first, I thought it was a typo and the author meant TSP for teaspoon (or Thrift Savings Plan).  But as I flipped through the cookbook, the DSP was everywhere.  For your culinary information, a DSP is a dessertspoon and 1 DSP equals 2 teaspoons.

Of course, in the standards world, acronyms have always had the potential for creating confusion.  Just take a look at the acronyms for those Standards Developing Organizations beginning with the letter "A."

| | |
|---|---|
| ABMA | • American Bearing Manufacturers Association |
| | • American Brush Manufacturers Association |
| | • American Boiler Manufacturers Association |
| AIA | • Automated Imaging Association |
| | • American Institute of Architects |
| | • Aerospace Industries Association |
| API | • American Petroleum Institute |
| | • American Paper Institute |

ASSE      •American Society of Sanitary
            Engineers
          •American Society of Safety
            Engineers
ATA       •American Trucking
            Association
          •ARCNET Trade Association
          •Air Transport Association
AWCI      •Association of the Wall and
            Ceilings Industries
          •American Wire Cloth
            Institute

As you have no doubt noticed from reading the many articles in this issue of the Journal on military treaty organizations, they have their own acronyms, but again, few are unique.  When my colleague John Tascher was trying to explain the NATO structure to me, he began with the MAS, which of course everyone knows refers to the General Services Administration's Multiple Award Schedules (MAS), or did he mean Military Assistance Sales (MAS) that fall under the Foreign Military Sales office, or perhaps Maritime Air Superiority (MAS), which we all learned about from Tom Cruise in Top Gun.  Come to find out, MAS in NATO stands for Military Agency for Standardization.  But forget MAS, because it is has been replaced by NSA.  What?  The National Security Agency (NSA) has taken over NATO standardization?  No, in NATO, NSA stands for NATO Standardization Agency.  If you want to get clear on acronyms dealing with military treaty organizations and international standardization agreements, there is a list in this issue of the Journal.  And in looking at the list, I think I may have found the only unique acronym in the world – AUS-CANNZUKUS – although I am still checking the Physicians Desk Reference to make sure this isn't some rare tropical disease.  Perhaps what we need to bring order to the world of acronyms is a new government agency – the Department of Acronyms (DOA), but I suspect such a suggestion would be dead on arrival (DOA).  So am I suggesting an end to acronyms?  Not on your life.  I love acronyms.  But I just wish my favorite acronym, "DSP," had a little more uniqueness in the world.  What's in a name?  Shakespeare knew the power of words and the importance of names.  What's in an acronym?  Definitely not uniqueness, and sometimes there is confusion, which probably explains why the Bard did not use acronyms in his plays.  Of course, had he used acronyms, I'm sure there would have been a DSP – perhaps for Demetrius, Saturnius, and Publius (DSP) in Titus Andronicus.

# Society of Automotive Engineers (SAE) Develops Maintainability Standard

The SAE Maintainability/Serviceability (G-11M) Committee developed JA1010, Maintainability Program Standard, as an industry replacement for canceled MIL-STD-470, Maintainability Program for Systems and Equipment.  G-11M determined industry needed an available standard to develop a successful Maintainability Program following the cancellation of MIL-STD-470.  G-11M develops maintainability/serviceability industry standards, guidelines industry best practices and methodologies in the promotion of techniques, processes and procedures to design products, which achieve optimum maintainability/serviceability at the lowest cost and shortest time to market.  JA1010 has been tailored after the recently issued JA1010, Reliability Program Standard.  The NATO representative on the G-11 Division Committee stated NATO's intent to utilize JA1000, JA1010, and associated Implementation Guides in procurement documents.

G-11M also is developing JA1010-1, Maintainability Program Implementation Guide.  JA1010-1 will provide task guidance to the maintainability practitioner on how to carry out a successful maintainability program.  The guide will contain program task information, reference sources for more detailed task information and industry best practices based on successful experiences of expert practitioners.

For more information, contact **Gina Saxton** at 724-772-7319; e-mail: ginaf@sae.org.  (Reprinted with permission by SAE)
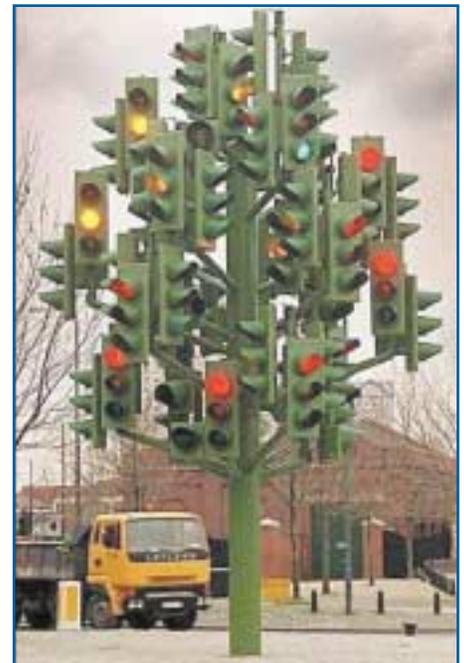


*Without standardization, there is no direction!*

# ASTM International: Standards Worldwide
# A New Name, A Longstanding Commitment

After 103 years of success as an international standards developing organization, ASTM is clarifying its name to reflect what has been its mission for over a century. ASTM is now ASTM International. This new identity celebrates ASTM's position as a leading standards developing organization with worldwide participation and acceptance.

While this is a change in name only, it better represents the truly international way ASTM has operated all along-international in how our standards are developed as well as where and how they are used. With 30,000 members from over 100 nations, and almost 40 percent of our standards sold outside the United States, many could argue that the shift to ASTM International is long overdue.

According to President Jim Thomas, ASTM is international not only in name, member participation and standards distribution,

welcome from anywhere on the globe." This borderless philosophy has long made it possible for members to participate from around the world, but the financial limitations of international travel and even the time problems inherent in the international mail system didn't always make that participation easy. For the past several years, ASTM has taken steps to use online technology to make that participation easy. One of those steps is the development of the Internet-based Standards Development Forums. This innovative use of online technology serves to blur national boundaries by leaping past the traditional limitations of travel budgets and time zones. Using the Forums, members may participate in the development or revision of posted standards 24 hours a day, seven days a week.

ASTM has also launched Web balloting, allowing members

## Memoranda of Understanding (MOU)

In an effort to work with developing countries, ASTM has recently signed memoranda of understanding with the Colombian and Uruguayan national standards bodies. The MOU with the Instituto Colombiano de Normas Tecnicas y Certificacion (ICONTEC) was signed on October 16, 2001, to enhance the ability of ASTM International and ICONTEC standards to support the needs of the Colombian people, continue growth of the Colombian economy, and aid in the development of Colombian national standards for health, safety, and the environment. Fabio Tobon, the executive director of ICONTEC, and ASTM President Jim Thomas were the signatories.

An agreement between ASTM and the Uruguayan national standards organization, the Instituto Uruguayo de Normas Tecnicas (UNIT) was signed on Nov. 14, 2001. The Uruguayan Ambassador to the United States, Martin J. Silverstein, was present for the signing. The MOU will promote communication between the two organizations, promote knowledge of the standards development activities of each organization, and strengthen the Uruguayan national standards system. During his visit to UNIT, Jim Thomas spoke to a gathering about ASTM standards and their importance in the commerce of the Americas.

## Technical Committees

ASTMs technical committees, which represent industry fields ranging from metals to the environment, have a long history of international activity.

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*ASTM has also launched Web balloting, allowing members around the world to vote on standards actions online, without the delay of mailing printed ballots*

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but most importantly in the manner in which it operates.

"ASTM's method of developing standards is based on consensus without borders," notes Thomas. "Our process ensures that interested individuals and organizations representing academia, industry product users, and governments alike all have an equal vote in determining a standard's content. Participants are

around the world to vote on standards actions online, without the delay of mailing printed ballots. This latest use of Internet technology closes the circle: from document templates available online that help users write standards in ASTM format, to Standards Development Forums, through Web balloting, the entire ASTM process is open to members around the world.

Most recently, Committee D01 on Paint and Related Coatings, Materials and Applications and its International Organization for Standardization (ISO) counterpart signed an MOU highlighting the acceptance and use of globally accepted standards, such as those of D01, to meet the needs of all stakeholders in the paint and coatings industry, without recourse to duplication of effort within ISO. (See the December 2001 issue of **Standardization News** for coverage of this MOU.) Other ASTM technical committees such as D30 on Composite Materials and F24 on Amusement Rides and Devices have recently launched significant efforts toward increasing international participation on their standards development activities as well as promoting the international use of their standards. Dr. Kishore Nadkarni, formerly of ExxonMobil and an active member of ASTM Committee D02 on Petroleum Products and Lubricants, summed up the significance of the change

to ASTM International with the following comment. "ASTM has always been the premier standards writing body around the world," comments Nadkarni. "A lot of blood, sweat and tears have gone into making ASTM the successful international organization that it is. This name change legitimizes what many people around the world have known for a long time."

For information, contact **Barbara Schindler,** ASTM, 610-832-9603

**Federal Agency Participation in ASTM.** ASTM International is pleased to have 22 U.S. government agencies and military branches participating on ASTM technical committees for standards development. Following is a list of those U.S. government agencies that participate in ASTM (number of participants in parentheses).

- **Army (116)**
- **Navy (160)**
- **Air Force (43)**
- **DoD (47)**
- **NIST (209)**
- **HHS (88)**
- **EPA (52)**
- **DOI (51)**
- **DOE (11)**
- **FTC (2)**
- **NRC (9)**
- **VA (14)**
- **NASA (55)**
- **DOT (77)**
- **USDA (56)**
- **Treasury (28)**
- **CPSC (23)**
- **GSA (8)**
- **OSHA (9)**
- **HUD (7)**
- **Postal Serv (6)**
- **Justice (4)**

"Set your expectations high; find men and women whose integrity and values you respect; get their agreement on a course of action; and give them your ultimate trust."

**John Fellows Akers**

"You don't always win your battles, but it's good to know you fought."

**Lauren Bacall**
**Actor**

# Editor's Corner

<u>The 2001 Standardization Symposium</u>, "The Shape of Things to Come:  Acquisition and Logistics Excellence Through Standardization"--our staff returned from the November 27-29 symposium with lots of taskers.  It was a good meeting and the presentations were right on target.  Our Director, Greg Saunders, heard many excellent comments about the event and thought it was well received.  Many people asked whether or not we would do a repeat in 2002.  We will have to think about that, but that spoke well for the overall impression the symposium had on people.

Anyone wishing to view the presentations can visit the following site, operated by our symposium host—Government Electronics and Information Technology Association:

http://www.geia.org/dspconf/index.htm

<u>Frequently Asked Questions</u> – Are you aware that you can possibly find the answer to your question by visiting our website:  www.dsp.dla.mil?  In our Help section (scroll down on the far left side toolbar) click on Help and click on the Frequently Asked Questions section.  I refer callers frequently to this site for information.  It works, try it!

<u>Saying Goodbye to Old Friends and Co-workers:</u>  It seems that everyday someone is telling me how close they are to retirement (including myself).  Recently, our co-worker **Carla Jenkins** retired.  Carla had been with the government for over 34 years, the last 17 years with the Defense Standardization Program.  She started her federal career with the Department of the Navy and joined the DSP in 1984.  I personally miss my buddy of 16 years but I will not be the only one.  Carla has immediate plans for the future so you won't find her at home wondering what to do.  Way to go Carla!

<u>Farewell to Robert Rosell, Wright Patterson AFB, OH:</u>
As of November 19, 2001, our longtime work relationship with **Bob Rosell** ended.  Bob wrote a farewell note to let me know that he is embarking on a two-year engineering assignment at the Aeronautical Systems Center.  His new duties involve being an avionics engineer in support of modifications to the Air Force Mobility Aircraft (e.g., cargo planes, tankers, etc.).  This was a career move for Bob and actually takes him closer to his original engineering roots.  As the former Command Standardization Officer at the Air Force Materiel Command, Bob enjoyed his work with our program and wrote, "In my view, the DSP serves a very vital role in support of the overall DoD mission, and provides tools and processes which are indispensable in the development and sustainment of weapon systems and related materials."  He also sent his best wishes and wrote, "It's been an honor, a privilege, and a pleasure working in the DSP and in working with all of you.  I will move on taking with me valuable knowledge which will be of immense value regardless of my future endeavors, as well as long-lasting, fond memories of working with you all.  My best wishes to you wherever your future leads, and, perhaps, sometime, we will once again have an opportunity to work together."

We will miss Bob's input and friendship and we send our best wishes that he truly enjoys his new assignment.  Good luck, Bob!

<u>Recommended Reading</u>

Make sure to visit our Home Page:,  www.dsp.dla.mil to read  the November 2001 issue of ASTM's Standardization News interview with **Greg Saunders**, Director, DSPO, titled, "MILSPEC Reform:  Completed."

*Sharon Strickland*

**Sharon Strickland**

Editor, Defense Standardization
Program Journal

# Directory of NATO Acronyms

AAP ...................................................Allies Administrative Publication
ABCA ................................................American, British, Canadian, and Australian (Army)
AC......................................................Alliance Committee or Atlantic Council (NATO)
ACP....................................................Allied Communications Publication (published by CCEB)
AP .....................................................Allied Publication (NATO)
ASCC ................................................Air Standardization Coordinating Committee
AUSCANNZUKUS .............................Australia Canada New Zealand United Kingdom United States
C3 ......................................................Command, Control, and Communications
C4 ......................................................Command, Control, Communications, and Computers
CCEB .................................................Combined Communications Electronics Board
CNAD .................................................Conference of National Armaments Directors
COMEDS ............................................Committee of Chiefs of Military Medical Services
HOD....................................................Heads of Delegation
IMS-WMS ...........................................International Military Standardization Work Management System
MAG ...................................................Main Armaments Group (NNAG, NAAG, NAFAG) under NATO
MAS ...................................................Military Agency for Standardization (under NATO; MAS is now called the NATO Standardization Agency (NSA)
MC ......................................................Military Committee
MCEB ..................................................Military Communications-Electronics Board
NAAG ..................................................National Army Armaments Group (NATO)
NAC .....................................................North Atlantic Council
NADREP ..............................................National Armaments Directors Representative
NAFAG .................................................NATO Air Force Armaments Group
NIAG ....................................................NATO Industrial Advisory Group
NNAG....................................................NATO Navy Armaments Group
NSA.......................................................NATO Standardization Agency (formerly the MAS)
QAP .....................................................Quadripartite Advisory Publication
QSTAG .................................................Quadripartite Standardization Agreement
QWG ....................................................Quadripartite Working Group
SACEUR ..............................................Supreme Allied Commander Europe
SACLANT ...........................................Supreme Allied Commander Atlantic
SHAPE ................................................Supreme Headquarters Allied Powers Europe
SNLC....................................................Senior NATO Logisticians Conference
STANAG ..............................................Standardization Agreement (NATO)
TTCP....................................................The Technical Cooperation Program
USD(AT&L) ........................................Under Secretary of Defense for Acquisition, Logistics and Technology
USDELMAS.........................................U.S. Delegate to a NSA Service Working Group
WP .......................................................Working Party

# Notes