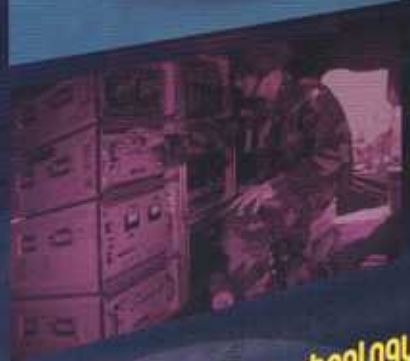
MILSPEC Reform Final Report

An Ending: A New Beginning

April 2001



Office of the Under Secretary of Defense (Acquisition, Technology & Logistics)
Logistics Plans & Programs

We are at the end of MilSpec Reform, but we are at the beginning of some important new directions for defense standardization.

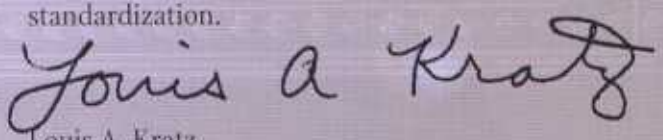
Executive Summary

Since 1994, the Department of Defense has been transforming its acquisition processes in response to profound changes occurring in the global political, economic, and technological environment. In order to meet future national security requirements, the Department had to address the challenges presented by reduced defense budgets and force structure, aging equipment in need of modernization, increased military deployments, and the restructuring, consolidation, and downsizing of the defense industry. It was clearly not possible to provide the warfighter with reliable, technologically advanced, affordable weapon systems and equipment unless the Department irreversibly changed its acquisition paradigm.

To change its acquisition paradigm, the Department embarked on an acquisition reform effort largely focused on expanding the use of commercial products and practices to leverage the massive technology investments of the private sector and reap the benefits of lower life-cycle costs, faster insertion of new technologies, improved reliability, and greater availability of parts and logistics support provided from a robust, commercial industrial base. A key element of acquisition reform involved transforming the way the Department stated its requirements in specifications and standards, and then, applied those documents in solicitations and contracts. Detailed military-unique requirements posed barriers for the Department to access the commercial industrial base. The objective of "MilSpec Reform" was to break down those barriers to save money, remove impediments to getting state-of-the-art technology into our weapon systems, and provide better access to the commercial industrial base.

Over the last six years, the Department has accomplished much under MilSpec Reform. We have canceled 9600 military specifications and standards. Another 8100 military specifications and standards were inactivated and retained only to support legacy systems and equipment. We have transformed our infrastructure of requirements documents from one that was largely based on detailed, military specifications and standards to one that is now mostly composed of non-government standards, commercial item descriptions, and performance specifications. Over 13,000 defense personnel have received formal training in the new ways of developing and applying specifications and standards. The benefits of this cultural change can be illustrated by success stories where billions of life-cycle dollars will be saved.

This report provides a summary of the many significant accomplishments achieved by the Military Departments and Defense Agencies under MilSpec Reform. This report also offers a glimpse of the future for the Defense Standardization Program. Joint Vision 2020 has created many new challenges for interoperability, information superiority, and a reduced logistics footprint in which standardization will play a pivotal role. We are at the end of MilSpec Reform, but we are at the beginning of some important new directions for defense standardization.



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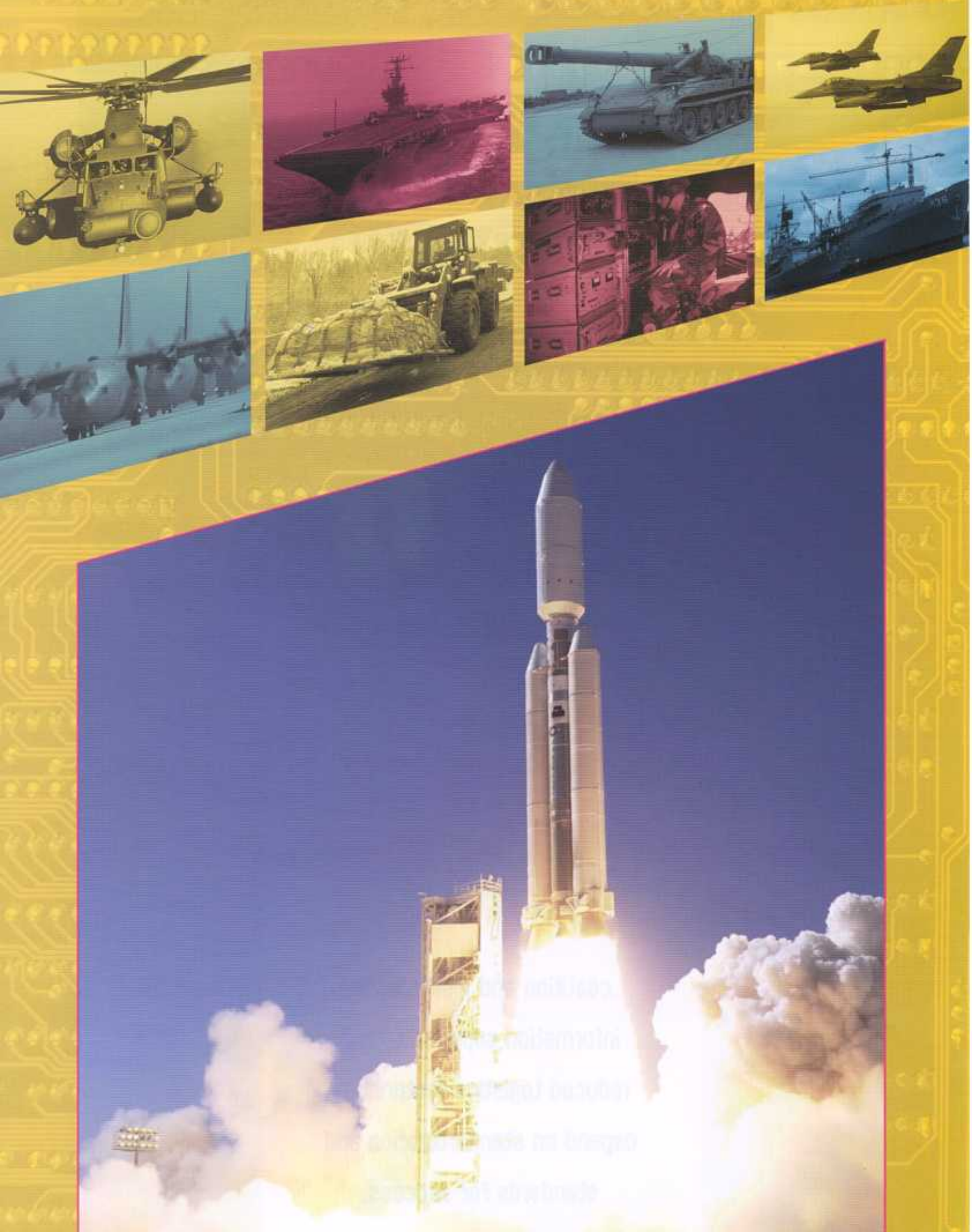
Introduction

Changing behaviors engrained through decades of routinely imposing military specifications and standards required planning and commitment by the senior leadership in the Military Departments and Defense Agencies to transform the acquisition culture. The establishment by the Under Secretary of Defense for Acquisition, Technology, and Logistics of a senior-level Defense Standards Improvement Council (which has now evolved into the Defense Standardization Council) was a major first step in providing the continuous direction and guidance needed to implement MilSpec Reform. Upon its establishment, the Council adopted a four-pronged approach to nurture cultural change by (1) issuing new policies and guidance on the development and use of specifications and standards; (2) overhauling existing educational classes and developing new training aids to disseminate and provide instruction on the new MilSpec Reform policies and philosophy; (3) creating new online tools to provide up-to-date information and measure progress; and (4) directing the Herculean effort to review and take appropriate action on over 29,000 military specifications and standards. The MilSpec Reform actions in all of these areas are now completed, although the Council continues to monitor, assess, and make adjustments where necessary to continue making improvements and help ensure that there will not be a return to past behaviors.



...coalition and joint warfare, information superiority, and reduced logistics footprint—depend on standardization and standards for success.

Policies and Guidance

In 1994 and 1995 the Defense Standards Improvement Council issued several policy and procedures memoranda to provide management direction on the development of performance specifications, preferences for non-government standards and performance specifications, waiver processes to cite detailed military specifications and standards, and reporting requirements. All of these policies and procedures have now been incorporated into the following publications:

- DoD 5000.2-R, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) Major Automated Information System (MAIS) Acquisition Programs"
- DoD 4120.24-M, "Defense Standardization Program Policies and Procedures"
- MIL-STD-961, "Defense Specifications"
- MIL-STD-962, "Defense Standards and Handbooks"

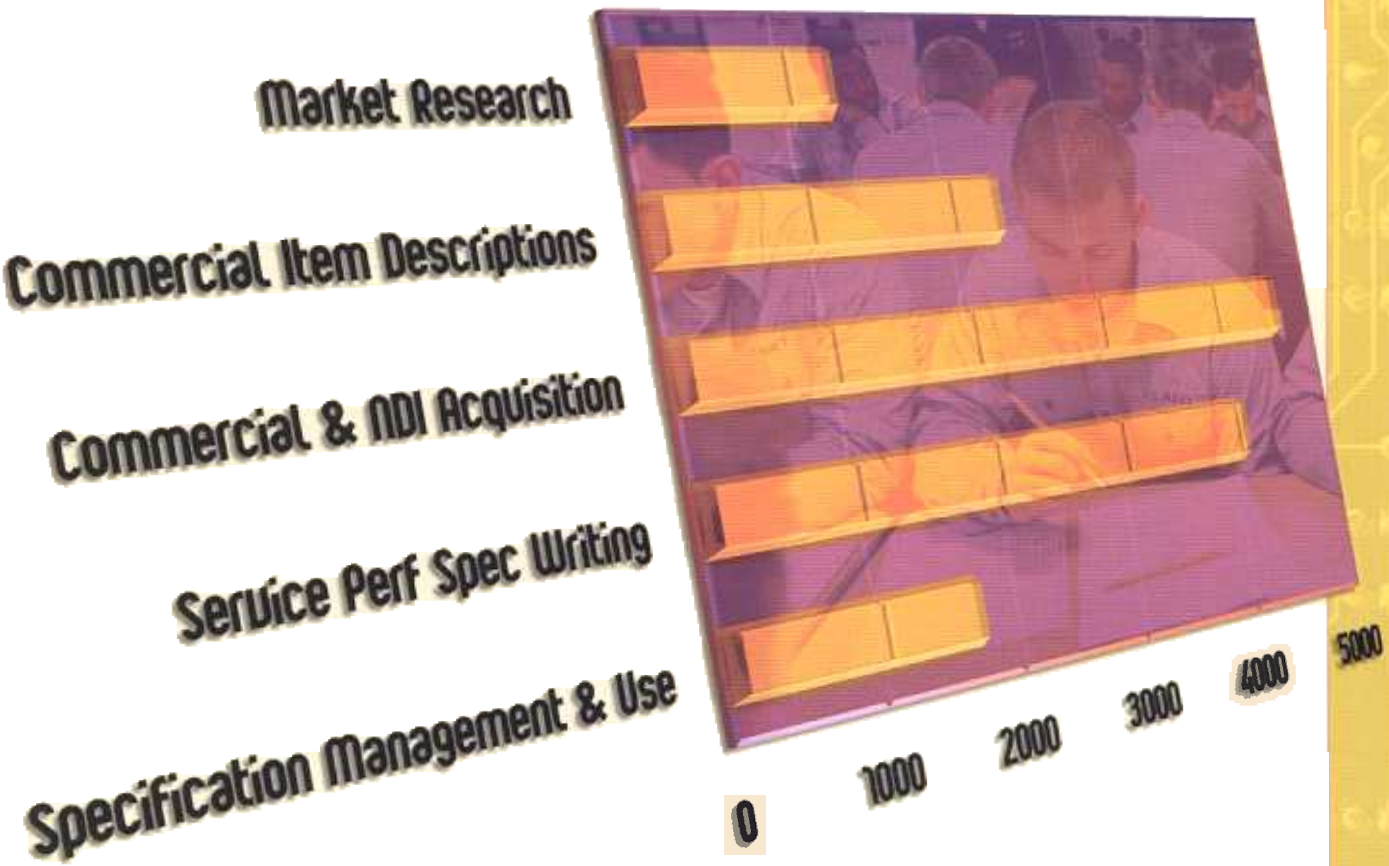
Since many of the concepts introduced under MilSpec Reform were new or not widely understood, the Council also directed the development of guidance to capture lessons learned and to provide a consistent approach for some of the major MilSpec Reform efforts, including the development of performance specifications, market research, and qualified manufacturers lists. Guidance for implementing the key MilSpec Reform elements were included in:

- SD-2, "Buying Commercial & Nondevelopmental Items"
- SD-5, "Market Research"
- SD-6, "Provisions Governing Qualification: Qualified Products Lists and Qualified Manufacturers Lists"
- SD-15, "Performance Specification Guide"
- SD-16, "Communicating Requirements"

Copies of these publications and others can be downloaded from the Defense Standardization Program website at www.dsp.dla.mil.

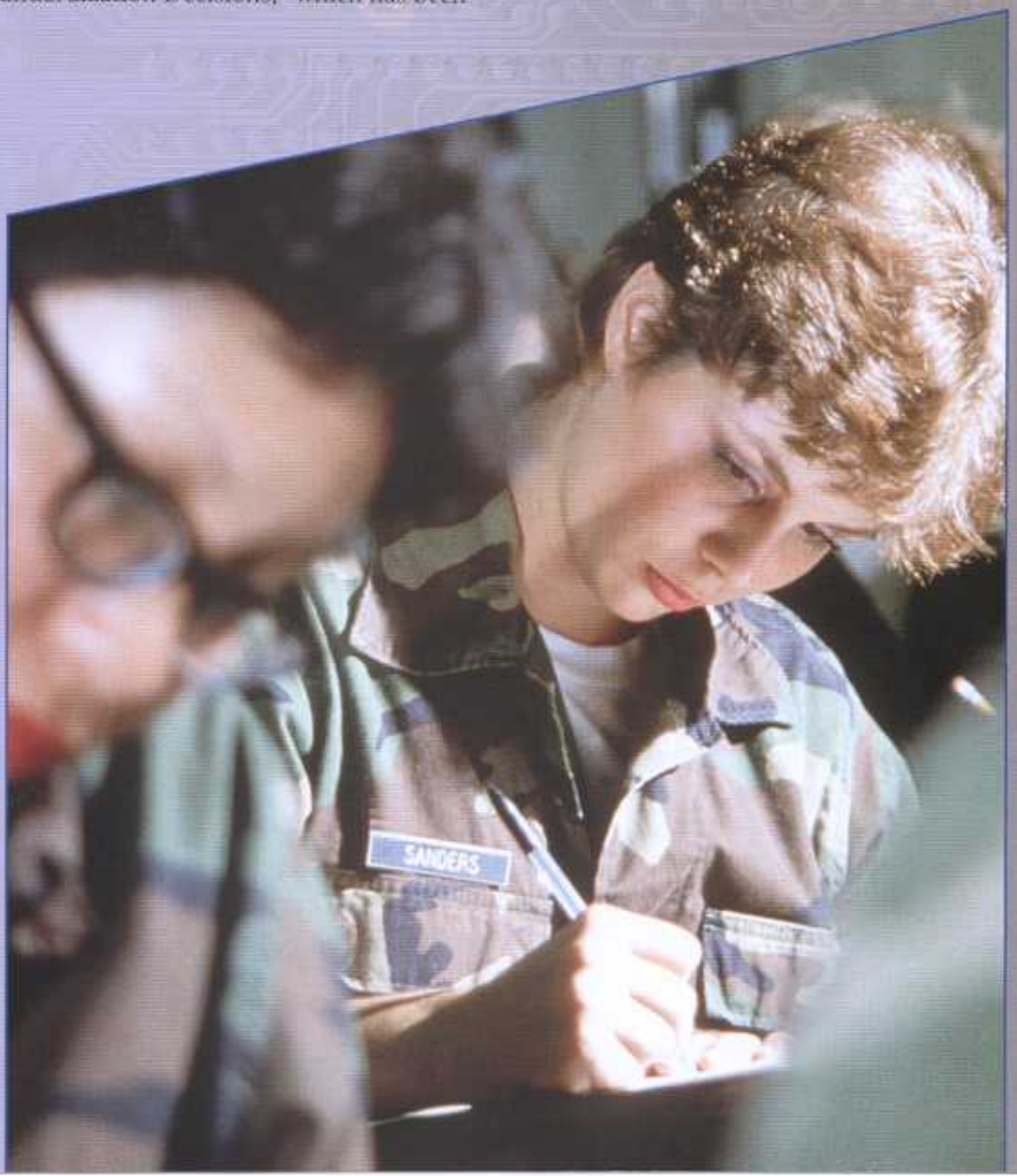
Training and Education

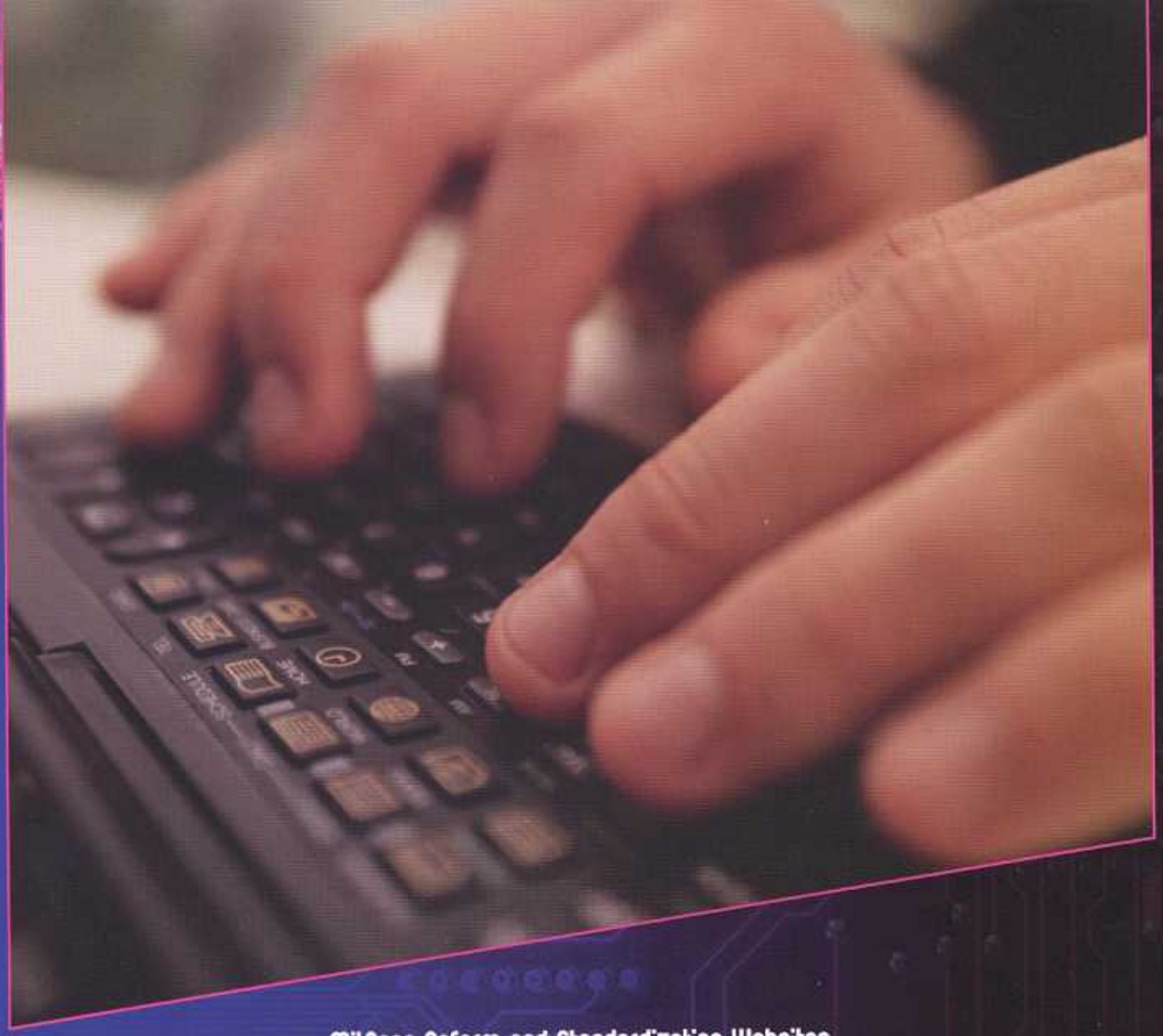
To enable the workforce to apply the new principles of performance-based acquisition meant training personnel to rethink why and how they develop and use specifications and standards. To jumpstart the process, during the first year of MilSpec Reform, the Defense Standardization Program Office held two training seminars on performance-based specification and standards development, where 500 people directly responsible for overseeing the development of these documents in their organizations received instruction. During this time, the Defense Acquisition University (DAU) revised its existing classes to promote the development and use of performance specifications and non-government standards, and the Military Departments developed Service-specific courses on performance specification writing. DAU also introduced some new courses on market research and nondevelopmental items, since the approach to defining requirements often dictates the types of documents needed and the way those documents are written. Lastly, the Department contracted with the American National Standards Institute (ANSI) to teach 20 classes to over 400 defense personnel over a two-year period on how to participate effectively on non-government standards committees. Since June 1994, over 13,000 defense personnel have received training in courses revised or developed under MilSpec Reform.



Attendance at MILSPEC Reform Sponsored Classes

While formal training was necessary and valuable for providing instruction on techniques for making good business decisions through the proper application of performance-based and commercial specifications and standards, a continuing education process was also needed to provide updated training to those who had previously received formal training and for those who were unable to attend classes. Under MilSpec Reform, the Defense Standardization Program Office developed a computer-based training tool called the SD-17, "Standardization Decisions," which has been distributed to 4000 government and industry personnel involved in determining and developing technical requirements for weapon systems, equipment, and components. The SD-17 is an interactive, multimedia educational and reference resource that helps people identify and understand standardization opportunities and benefits, establish a thought process to balance standardization decisions against other considerations, and rethink how they approach determining and stating standardization requirements.





MilSpec Reform and Standardization Websites

To improve awareness and understanding of the rapid changes resulting from MilSpec Reform, the Defense Standardization Program Office established a website at www.dsp.dla.mil. This website included such information as all policy and guidance documents pertaining to MilSpec Reform and the Defense Standardization Program, the most frequently asked questions and their answers, dates and locations of upcoming training courses, listing of Department of Defense participants on non-government and multinational treaty organization standards development committees, the Standardization Newsletter, and hot links to other related websites. This website also includes reports on the progress of the Defense Standardization Program Strategic Plan and links to efforts supported by standardization in the areas of interoperability, sustainment, and commercial-military integration.

The Military Departments also established websites to provide similar information on MilSpec Reform and standardization efforts at the Service level. These websites are available at:

Army Standardization Website:
www.amc.army.mil/amc/rda/milspec/speclinks.html

Navy Standardization Website:
www.ar.navy.mil/

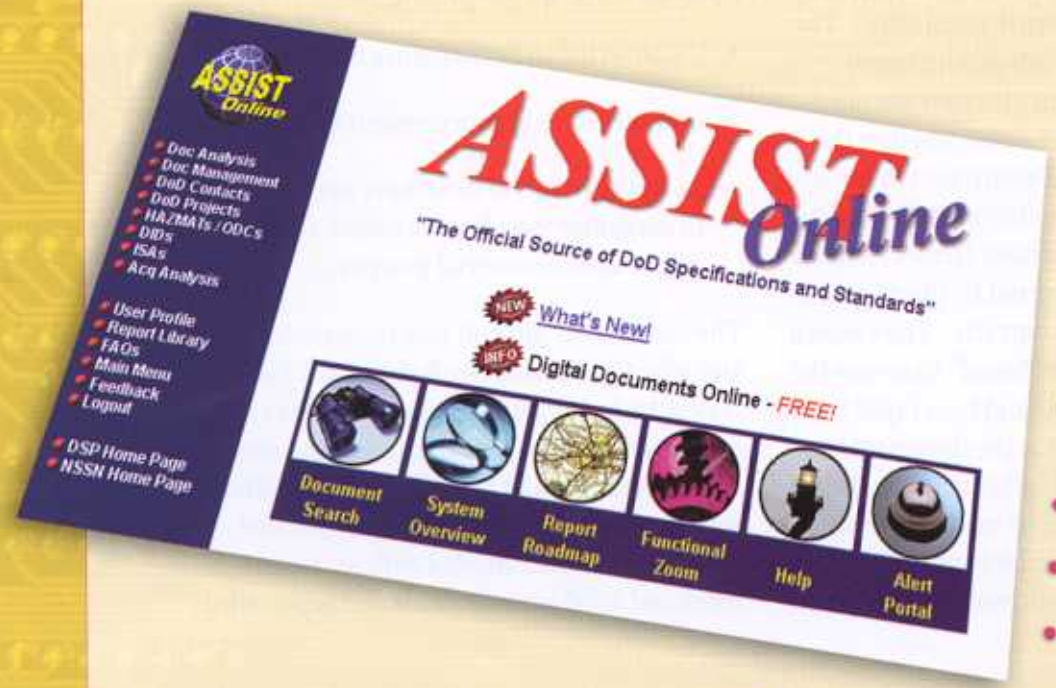
Air Force Standardization Website:
www.safaq.hq.af.mil/aqre/stdzn/

Online Tools

The demands of MilSpec Reform necessitated the development or enhancement of online tools to better manage the standardization program, track progress, improve communication among defense organizations and with industry, and make it easier for users to obtain copies of specifications, standards, and other related publications. The two main online tools that resulted from MilSpec Reform were the Acquisition Streamlining and Standardization Information SysTem (ASSIST) and the creation of websites to provide information on what was happening with MilSpec Reform at the Department-wide level and at the individual Service or Agency level.

ASSIST

ASSIST is an online, automated tool, which provides a wealth of information for document managers, developers, and users in both the public and private sectors. Initially, ASSIST was primarily a document index management tool that provided a complete index of specifications and standards and the responsible document preparing activities, document tiering data, and cancellation and replacement information. Under MilSpec Reform, ASSIST was expanded to include the responses to over 29,000 document questionnaires, a listing of documents requiring the use of hazardous materials, a correlation between U.S.-ratified International Standardization Agreements and their implementing documents, project tracking data, and a wide variety of management reports. The most popular ASSIST enhancement under MilSpec Reform, however, has been the online availability of nearly all of the unclassified military and federal specifications and standards, commercial item descriptions, handbooks, and other related technical documents. Making documents available online satisfied a long-standing customer need to have immediate access to defense standardization documents.



- Online Specifications & Standards
- Document Information
- Document Contacts
- Status of Projects to Change Documents
- Tiering Data
- Management Reports
- Keyword Searches

Document Improvement

Through MilSpec Reform, we tried to achieve the optimal mix of technical documentation to guide the Department and industry in the design, production, and acquisition of weapon systems and items of support. The goal of the Department was to transform its document infrastructure from one based on detailed, "how-to" military specifications and standards to one based on performance specifications and interface standards for weapon systems and military-unique items of supply, commercial item descriptions and non-government standards for commercial items and processes, and guidance handbooks to preserve lessons learned and offer known technical solutions. Reshaping the document infrastructure was one of the most difficult challenges of MilSpec Reform.

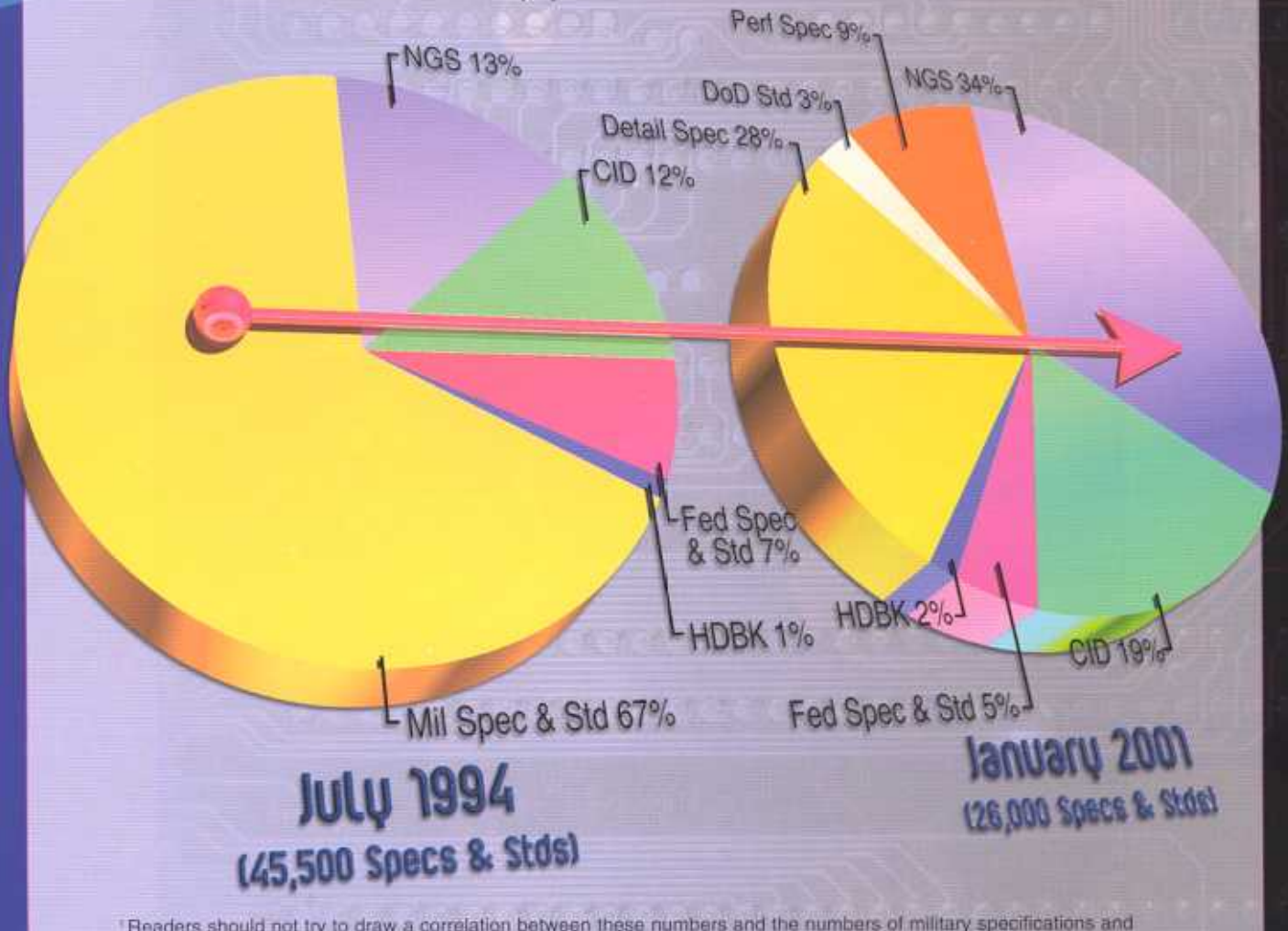
To meet this challenge the Defense Standards Improvement Council set in motion a short-term review and action plan for the top 110 military specifications and standards identified by several studies as the most significant cost-driver documents in defense acquisition. The Council established an independent inter-Service and Agency team to review the need for these documents and assess whether the benefits derived by the Department in terms of interoperability, operational capability, safety, reliability, or other important factors justified any additional costs incurred by placing these documents on defense contracts. The Council then served as a "murder board" to review the team's recommendations and hear input from the preparing activities for the documents as well as government and industry users. Unless a strong argument could be made for retaining the document, the Council was predisposed to canceling these 110 cost-driver military specifications and standards. Where a convincing case was made for retaining the requirement covered by the military specification and standard, the Council tried to transition to a non-government standard, performance specification, or guidance handbook. In those few cases where a detailed military specification or standard had to be retained, application was limited to reprocurement only or the document was updated to try to express the requirements in terms of performance or incorporate commercial practices to the greatest extent possible. The result of the Council's rigorous review and challenge of these 110 cost driver military specifications and standards is shown below.

Status of Top 110 Cost-Driver Military Specifications and Standards

- 45 Canceled Without Replacement
- 17 Converted to Guidance Handbooks
- 9 Replaced by Non-Government Standards
- 7 Converted to Performance Specifications
- 6 Retained for Reprocurement Only
- 26 Retained (18 of these have been updated to maximize use of performance requirements and commercial practices)

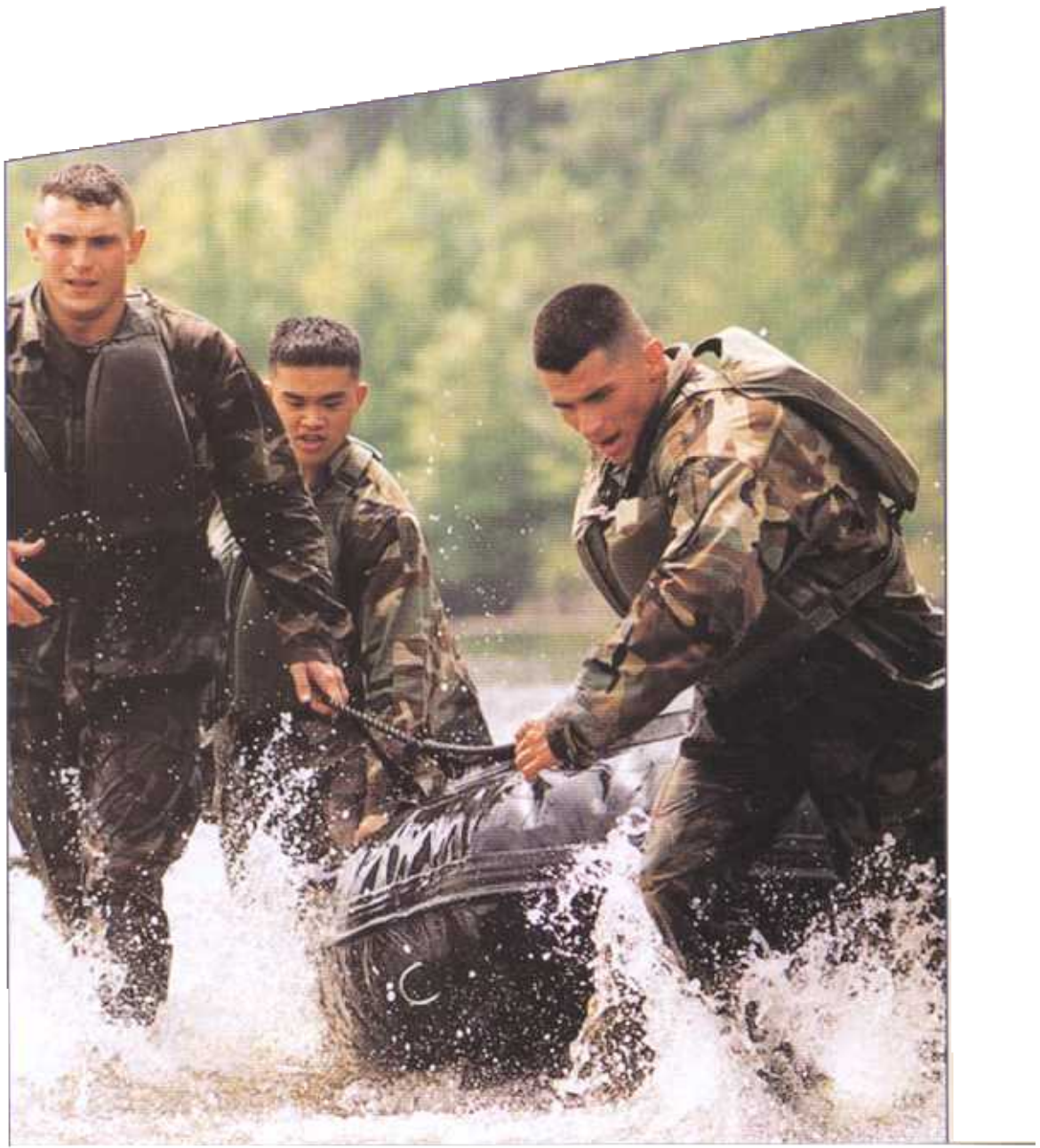
The single most difficult and resource-intensive effort under MilSpec Reform was the review and completion of questionnaires for over 29,000 military specifications and standards. As a result of this effort, 9600 military specifications and standards were canceled (nearly 6100 were canceled without replacement and 3500 were canceled and superseded

by non-government standards, performance specifications, commercial item descriptions, and guidance handbooks). In addition, over 8100 military specifications were inactivated and retained only to support reprocurement of parts and components for legacy equipment and systems. This massive effort has transformed the composition of the Department's active specifications and standards infrastructure. At the beginning of MilSpec Reform, two-thirds of the specifications and standards available for use were detailed military specifications and standards. Today, that percentage is less than one-third. The dominant types of specifications and standards that support the Department today are commercially oriented non-government standards and commercial item descriptions, which account for over half of the specifications and standards available to the Department. The following chart breaks down the different types of specifications and standards available to the Department at the beginning and at the end of MilSpec Reform.[1]



[1] Readers should not try to draw a correlation between these numbers and the numbers of military specifications and standards canceled under MilSpec Reform. These numbers reflect more than just military specifications and standards. They include non-government standards (NGS), federal specifications and standards, commercial item descriptions (CID), and other documents. These numbers also reflect normal standardization activity outside of MilSpec Reform to address defense needs and a related effort by the General Services Administration to reduce the numbers of federal specifications and standards.

The Department has now completed the MilSpec Reform document improvement actions that are under its control. The one area where some effort is still needed is in the replacement of military specifications and standards with non-government standards. The Department cannot dictate the pace at which suitable replacement non-government standards are developed since these documents are generated by voluntary, private-sector standards organizations. This effort is 82 percent completed, but there remain 369 military specifications and standards for which a suitable non-government standard has yet to be developed.



Accomplishments

It is relatively easy to provide statistics on the numbers of military specifications and standards canceled or replaced by non-government standards and performance specifications. It is not possible to quantify explicitly the extent to which MilSpec Reform may have reduced costs or improved performance, quality, reliability, or operational readiness, but examples illustrate the qualitative improvements resulting from MilSpec Reform. Many of the success stories can be seen on the websites mentioned previously. Listed below are some MilSpec Reform accomplishments that have been awarded the annual Defense Standardization Program Outstanding Achievement Awards for the past two years.

Interface Specification for Expendable Launch Vehicle—To Save $5 to $7 Billion

Launch vehicles historically have used unique, custom-made interfaces for launch payloads and different boosters for varying payloads, which are expensive. To address this issue, the Evolved Expendable Launch Vehicle (EELV) employs standardized interfaces for payloads and common launch booster cores. A Standard Interface Specification was created for government launches of the EELV for a common and standardized mechanical and electrical interface to the launch vehicle. In addition, the EELV utilizes one common booster core for medium lift systems and three common booster cores for heavy lift systems, all using a standard liquid propellant rocket engine. This allows for the use of many common components and facilitates standardized manufacturing, assembly, payload integration and launch operation processes. This is expected to lead to a savings of between $5 and $7 billion over the current fleet of launch systems. In addition, the resultant higher production volume and reduced number of parts will ensure more reliable production processes, leading to improvements of reliability and quality.

Navy Shipboard Furniture—Using Performance Specifications Will Save $43 Million

The Navy is in the process of converting 400 military hull standard and type drawings for shipboard furniture to performance specifications. As a result, future ship procurements for such furniture will cost at least 25% less with no loss of function or reliability, which potentially equates to $43 million over the next 20 years. Manufacturers now have the opportunity to more closely align their military products along commercial lines and this practice will result in a more efficient use of production processes and facilities.

Emergency Life Rafts—Performance Specification Reduces Maintenance Time and Cost

The Multi-Place Life Raft Replacement Team, Aviation Life Support Systems, Naval Air Warfare Center, Aircraft Division, made great strides in the maintainability area by replacing a detailed military specification for emergency rafts with a performance specification. New maintenance schedules are now at five years versus every 224 days. Fifty-year-old technology was replaced and savings from reduced maintenance inspections will amount to a cost avoidance of almost $10 million over 20 years.

Mark 46 System—Standard Parts Improve Cost, Schedule, and Performance

The Marine Corps Direct Reporting Program Manager, Advanced Amphibious Assault Weapon System Mark 46 Development Team, used standard components from existing successful weapon systems to develop a new medium caliber gun system. Their accomplishment reduced costs, development time, and risk. This group also won the Packard Award. This team is actively using standardization principles as a means to achieve cost, schedule, and performance goals.

Standardized Support Test Equipment Minimizes Costs, Increases Interoperability

A Defense Department Integrated Product Team (IPT) led the effort to produce the Joint Service Electronic Combat Systems Tester electronic warfare equipment. The nine-member IPT achieved the solution to the technical and cost requirements for accurate and reliable electronic warfare test equipment. The IPT developed common support test equipment to minimize costs, increase interoperability, and reduce the system's future logistics footprint. The team specified the use of a commercial, industry-based architecture that allowed a number of defense objectives to be realized, including ease of reconfiguration and minimization of sustainment costs. This equipment gives military technicians the capability to test and isolate electronic system faults installed in the Department's most advanced aircraft.

Civil-Military Integration in Parachute Standardization—$150 Million Savings

Integration of industry processes and government requirements for parachute systems technology is providing enhanced materials and hardware to the warfighter at the lowest possible cost. Development of the Advanced Tactical Parachute Systems is rapidly closing the technology gap between military and sports parachuting. From FY98 to FY05, this effort will realize a projected savings of over $150 million.

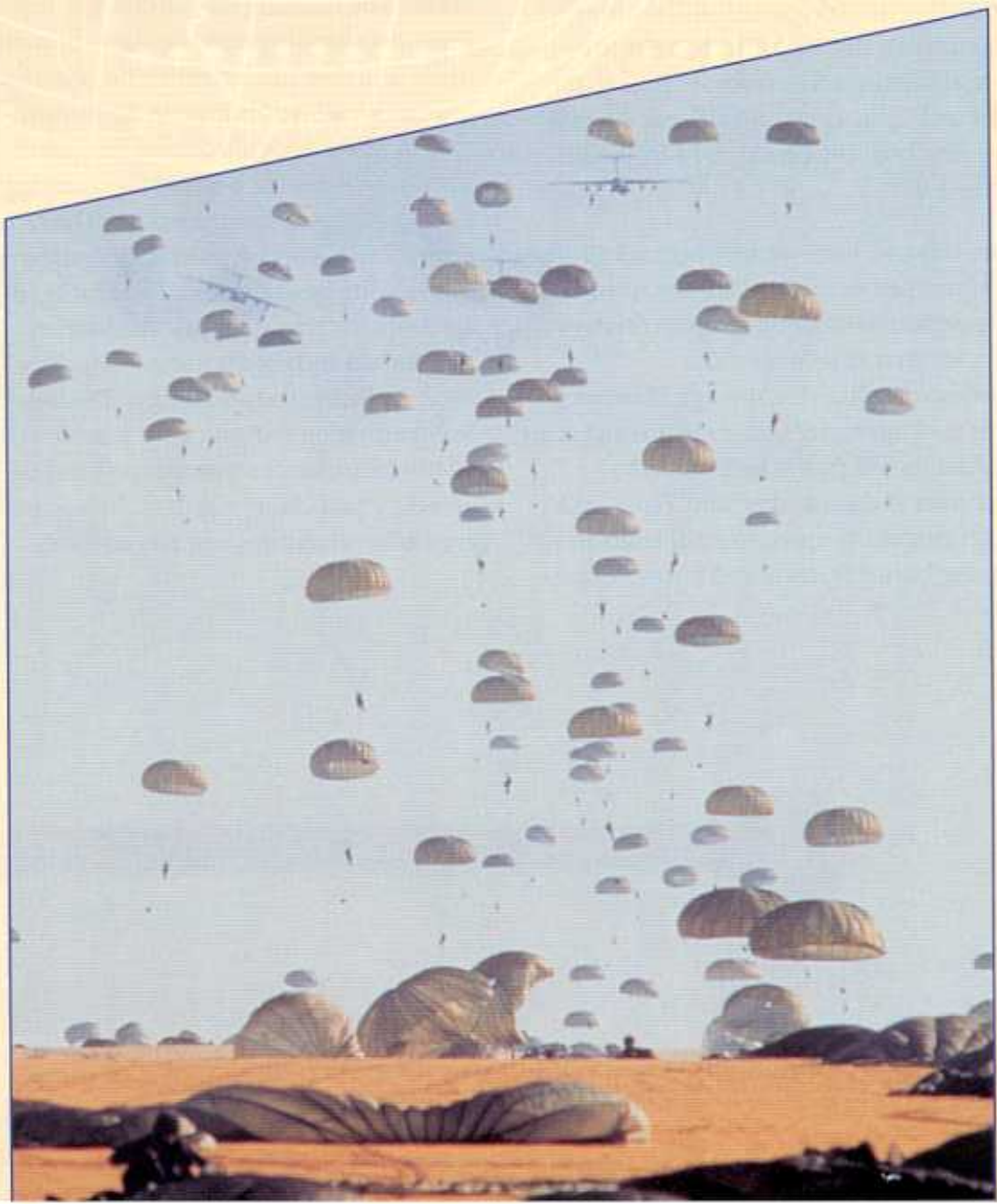
Video Teleconferencing Standard Enables Reduction of Millions of Dollars in Annual Travel Costs

The Defense Information Systems Agency led a standardization project that resulted in the development and approval of MIL-STD-188-331 for Video Teleconferencing (VTC). This standardization project evolved into the Industry Profile for VTC. This document further evolved and is now a part of the Federal Standard for VTC, Federal Telecommunications Recommendation 1080. This original standardization project is now saving federal agencies millions of dollars in travel costs each year.

Performance Specification Used for Display Set—$100 Million Annual Savings Possible

The Air Force developed the Common Large Area Display Set (CLADS) as a replacement for the existing cathode-ray tube workstation dis-

plays used on the E-3 Airborne Warning and Control System (AWACS) aircraft. The CLADS program relies on the use of performance and form-fit-function specification requirements to acquire the new product. The CLADS per unit cost will go from $180,000 to less than $40,000 for the original E-3 workstation display. Other platforms benefiting from this work include the E-8, C-130, AWACS, ground command, and control units. If CLADS were used across the Department of Defense, the estimated total operations and support cost savings would be $100,000 million per year. In addition to reduced cost, the use of performance-based specifications improves operational capability and enhances competition through partnering with companies not normally involved in defense acquisition.



An Ending: A New Beginning

The Department of Defense has achieved much under MilSpec Reform by transforming from a document infrastructure largely based on detailed military specifications and standards to one that is more reliant on non-government standards and performance specifications. More importantly, the almost automatic way in which military specifications and standards were once applied in solicitations has changed. Program offices and buying activities are doing a better job conducting market research and challenging requirements that may pose barriers to commercial solutions. The tasks assigned to the Military Departments and Defense Agencies have now been completed and MilSpec Reform has ended.

From this end, however, new beginnings arise, and these new beginnings are described in the Defense Standardization Program Strategic Plan, which may be viewed at www.dsp.dla.mil. This Strategic Plan recognizes the importance that standards and standardization will play in support of the warfighter as described in Joint Vision 2020, which establishes the conceptual template of how the United States armed forces will prepare to fight and win wars in the future. Some of the key tenets in Joint Vision 2020—coalition and joint warfare, information superiority, and reduced logistics footprint—depend on standardization and standards for success.

Coalition warfare and joint operations will only be possible if our systems and equipment are able to work together. Having common interfaces and performance requirements among our allies and between the Services depends on reaching standardization decisions, documenting those decisions in standards, and then implementing those decisions. International Standardization Agreements and their implementing documents have taken on a new importance as a means for achieving interoperability among our allies. The recently revised DoD 5000.2-R reflects this emphasis by requiring program offices to identify all applicable International Standardization Agreements and their implementing documents to foster interoperability. The Defense Standardization Program must provide better information using automated tools and the necessary supporting standards to help program offices meet this new requirement.

The future success of operations is going to depend heavily on information superiority—knowing things about the enemy and being able to transmit that information to your allies and communicate a course of action. Information superiority can only be achieved if we are able to communicate electronically with each other, and this requires interoperability of communications equipment and information systems. Such interoperability largely depends on the availability of suitable standards, especially commercial standards, to establish shared electronic and physical interfaces. One of the recent trends that must be reversed is a decline in defense participation in non-government standards committees. We must continue to work in partnership with industry to determine where non-government standards should be developed instead of military documents to describe commercial products and practices. Some needed standards may never become available without the active participation and leadership of the Department of Defense.

Lastly, if we are to minimize our logistics tail, we must do a better job at sharing parts, components, and subsystems. These pieces don't have to be identical, but they have to be interoperable and share common performance characteristics. We must look across weapon systems and equipment to identify common items in order to reduce costs and improve our effectiveness and efficiency in supplying needed items to a combat area.

Good endings make for good beginnings, and the end of MilSpec Reform provides us with a solid foundation from which to pursue defense standardization efforts that will support the warfighter and the Department's business goals. The conclusion of MilSpec Reform, however, must not mean a withdrawal of resources dedicated to the maintenance of the remaining specifications and standards as well as efforts to develop new ones to reflect changing technologies. It is imperative that we maintain the technical currency of our documents, or we will have merely spent resources under MilSpec Reform—not invested them.

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