DEFENSE SCIENCE BOARD

REPORT OF THE TASK FORCE ON SPECIFICATIONS AND STANDARDS

APRIL 1977

OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
WASHINGTON, D.C. 20301

Defense Science Board

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SPECIFICATIONS & STANDARDS

Office of the Director, Defense Research & Engineering — Washington, D.C.

OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
WASHINGTON, D. C. 20301

14 April 1977

TO: THE SECRETARY OF DEFENSE

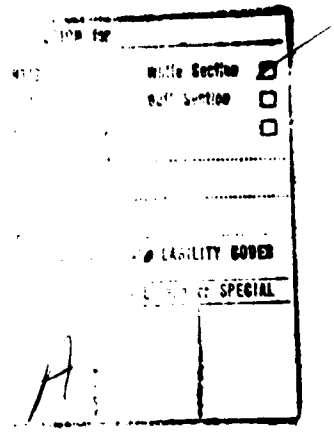
THROUGH: THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING

The attached report of the Defense Science Board Task Force on Specifications and Standards was prepared at the request of the Director of Defense Research and Engineering and the Assistant Secretary of Defense (Installations and Logistics). The Task Force was chaired by Dr. Joseph F. Shea and included members from the three Military Departments, the Defense Logistics Agency and industry.

The Task Force was convened to examine the "increasing costs arising from unreasonable contract requirements" contributed by the Defense Standardization Program. They have concluded that improved management of specifications and standards leading to curtailment of cost escalation attributed thereto can best be performed through 1) a concerted program throughout the DoD and industry to improve the climate and techniques of specifications and standards application in RFP's and contracts and 2) an evolutionary program to improve the existing body of specifications and standards. Strong emphasis is placed on the need for full and prompt implementation of Task Force recommendations. The report has been approved by the Defense Science Board and I forward it to you for your consideration.

Attachment
DSB Report

Solomon J. Buchsbaum
Acting Chairman
Defense Science Board



OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
WASHINGTON, D. C. 20301

7 MAR 1977

MEMORANDUM FOR THE CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Final Report of Task Force on Specifications and Standards

The final report represents the key findings and recommendations of the Task Force. As the study progressed, we concluded that the problems with DoD specifications and standards arose more from a tendency to overdo both application and enforcement, rather than from the detailed content of the documents themselves.

We recommended an immediate program to improve the climate of application, followed by a longer range program to improve the body of specifications and standards by emphasizing increased flexibility and reduced cost of application in revisions and consolidation.

Our preliminary findings resulted in Secretary Clements' memorandum of 4 August 1975 concerning Specifications/Standards Application. We are encouraged by our recent review that much progress has been made by the Services in the intervening months.

The issues which arise in Specifications and Standards cover a wide range of technical and management disciplines. In general, they are addressed by specialists with parochial viewpoints.

I strongly recommend that the Defense Science Board continue a periodic review of the Defense Standardization Program to provide an objective viewpoint which is required to counter a tendency toward unnecessary refinement which can, inevitably, only continue to increase the cost of application.

Joseph F. Shea

JOSEPH F. SHEA
Chairman, Task Force on
Specifications and Standards

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FOREWORD

The Task Force on Specifications and Standards improvement was chartered as a panel of the Defense Science Board (DSB) by Deputy Secretary of Defense (Depsecdef) William P. Clements in 1974 under the chairmanship of Dr. Joseph F. Shea, Senior Vice President, Raytheon Company.

The Task Force was established in response to the recommendation of then-Assistant Secretary of Defense (I&L) A.I. Mendolia, as contained in a report to Secretary Clements on the findings of an Office of Secretary of Defense (OSD) Cost Reduction Study.

The Task Force was comprised of military and civilian executives (see roster next page) and held full public meetings in October and November, 1974, January, March and April, 1975 and September, 1976.

A draft of this report was circulated for comment in the final meeting.

It is worthy of note that Mr. Lester Fox, Director, Defense Materiel Specification and Standards Office (DMSSO) served the DSB Task Group as Executive Secretary. This arrangement enabled the real time initiation of actions aimed at resolution of problems in the Defense Standardization Program, as they were identified in on-going deliberations of the Task Force.

An important overall recommendation of this report concerns the concept, advanced by Industry, of establishing some type of arrangement to assist and support the ASD (I&L)/DMSSO in the future in monitoring and evaluating progress against the action recommendations of the Task Force. This suggestion merits OSD approval because it provides a valuable consultative resource, comprised of concerned DoD and Industry experts to serve as a forum to provide guidance and direction to DMSSO and Service programs aimed at carrying out the DSB recommendations.

DEFENSE SCIENCE BOARD (DSB)
SPECIFICATIONS AND STANDARDS TASK FORCE

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***	**MR. JOHN KICAK** Acting Associate Director, Specifications, Standards & Engineering	**Hq., Materiel Development & Readiness Command (DARCOM)** - U.S. Army
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	DR. RICHARD STIMSON Chief, Engineering Program Division	**Defense Supply Agency (DSA)**
	MR. STEVE J. STOLL Chief, Technical Data & Standardization, Management Branch, Engineering Division	**Hq., Materiel Development & Readiness Command (DARCOM)** - U.S. Army
	MR. PAUL S. VISHER Assistant Group Executive, Space and Communications Group	**Hughes Aircraft Company**

*Retired - no replacement
**Replaced Captain Ross - retired
***Replaced Mr. Stoll - retired

EXECUTIVE SUMMARY

Military Specifications and Standards have long been a target for criticism. This study convinced the Task Force that such criticism is generally misdirected. We found that the existing Specifications and Standards are reasonably good, more than adequate to Department of Defense needs.

In general, the documents contain much more flexibility than appears to be used in practice. Most of the instances of "excessive cost" examined by the Task Force resulted from a failure to utilize this flexibility in a reasonable way, rather than a fundamental problem with the specification itself. Industry was as guilty of over-interpretation as Government was of over-enforcement.

Major payoffs can be expected almost immediately from changes in the method of application of specifications and standards, followed by longer range improvements in their substantive content. This report contains detailed recommendations for a three-pronged program focused on:

- improving the climate of application throughout DoD and Industry.
- evolutionary upgrading of the existing body of specifications and standards.
- continuing high level management attention.

The climate of application will improve if Industry will accept the discipline inherent in the Defense Standardization Program as a way of life, resist the tendency to over-react, and establish practices which conform, where possible, without increasing cost. At the same time, the Government must recognize the inherently arbitrary nature of standardization, and be willing to "Tailor" specifications to the particular needs of a given program.

Since the existing procurement environment is basically conservative and encourages cautious conformance rather than forceful ingenuity, the Government Program manager and the functional organizations which support him must be educated and motivated to realize that strict, parochial application of specifications and standards is neither required nor desired.

Although the existing body of Specifications and Standards is adequate to DoD needs, considerable improvement is possible, particularly in areas such as general requirements or management which are prone to over-interpretation. Specifications can be consolidated both within and across services. More can be done to further the development of national standards which satisfy military requirements.

Effective feedback from both Industry and Government users is required to identify problem areas. Control of the revision process should focus on reducing the cost of application while improving flexibility and technical content.

Although Specifications and Standards can have a significant impact on the cost of DoD procurement, the Defense Standardization Program has historically received relatively little top-level attention. The results of this study essentially confirm the findings of similar investigations conducted over the past fifteen years. Follow-through has been a problem.

The Task Force has been encouraged by the response to our preliminary findings. The past year has seen initial acceptance of the concepts of tailoring within the Services. DoD management of the Defense Standardization Program has been strengthened.

The Defense Science Board should continue its activities to provide an objective overview of progress and identify issues requiring particular attention.

I. INTRODUCTION, FINDINGS & DISCUSSION

INTRODUCTION

The Defense Science Board (DSB) Task Force on Specifications and Standards was convened to identify the factors contributing to unnecessary contract costs arising from Military Specifications and Standards and to recommend appropriate action to be implemented through Department of Defense Directives and Instructions. The Task Force was assisted in its deliberations by a contracted study effort performed by the Arthur D. Little Company of Cambridge, Massachusetts.

Over the years, specifications and standards have been blamed for poor performance, goldplating, delivery delay and excessive costs. They have been widely and variously criticized by the defense industry, military users, program managers, the General Accounting Office and the Congress. Numerous studies have been conducted as a result of such criticism, all of which found illustrations of unnecessary requirements not contributing to mission performance, but imposing additional cost.

This Task Force began by looking at the unreasonable contract requirements cited in the previous studies. Almost without exception, close examination revealed misinterpretation or misapplication of specifications rather than a fundamental problem with the specifications per se. Although the structure and layout of the specifications sometimes contributed to their misinterpretation and thus, their misapplication, the flexibility or levels of applicability written into specifications seemed consistently to be ignored, resulting in inappropriate and/or excessive and costly requirements. Contractor and Government Management seemed equally at fault but for different reasons -- Government authorities selecting applicable portions of specifications were motivated to avoid the risk of failure so as to fully protect Government interests, while contractors were motivated to comply rather than risk non-conformance in a highly competitive marketplace.

The tendency toward overly-conservative application of Military Specifications and Standards, coupled with a resistance to change that is inherent in the Department of Defense procurement system, results in unnecesary costs which can be avoided if the climate of application can be improved.

FINDINGS:

The Task Force Findings are:

- specifications and standards are essential to technical procurement;
- the present body of Military Specifications and Standards is adequate to the needs of the Department of Defense;
- specifications and standards contain, for the DoD, a corporate history of lessons learned. They communicate what and how to perform and thus restrict designers' options in an effort to reduce the government's risk and, in principle, lower cost;
- specifications serve as a primer for the inexperienced as well as a safeguard to help assure quality products;
- of the 40,000+ specifications and standards listed in the Department of Defense Index (DoDISS), major cost impact can arise from the non-product variety (i.e. general design requirements; documentation; management);
- major payoff for improvement in specifications and standards will come initially in their method of application, followed by longer range improvements in substantive content. In this connection:
  - Specifications contain tailorable alternatives which in many cases, are ignored.
  - Excessive costs arise from misapplication, overapplication, premature application and uncontrolled callouts of referenced documents.
  - Requirements for contractor demonstration of compliance can be excessive.
  - Unnecessarily excessive management systems and plans are required in non-system related specifications.
- The structure of the Defense Standardization Program (DSP) should be improved. The DSP in its present mode has the following deficiencies:
  - Its organization is diffuse and thus inhibits management direction.
  - Specification preparers are removed from specification users by function as well as by distance; communication is poor.
  - Feedback mechanisms are poor, un-publicized and unused.
  - Document revision activity lacks control and tends to increase cost of application.

- Interaction between the DSP and commercial and national voluntary standards organizations can be expanded.

- There is a lack of discipline on the part of industry as well as a lack of discipline and flexibility on the part of government.

- Certain "non-DoDISS" documentation items, usually promulgated by the Military Departments and Agencies, also contain cost-driving implications, and therefore should be subjected to the same scrutiny and control herein recommended to apply to the DoDISS entries.

- Unnecessary requirements and attendant excessive costs can result from incorporation of reference documents in RFPs/Contracts, unless specific controls over such proliferation are exercised.

GENERAL DISCUSSION

The Defense Science Board (DSB) Tack Force on Specifications and Standards was convened to examine the "unnecessary costs arising from unreasonable contract requirements" contributed by the Defense Standardization Program. The tone of the assignment reflected a preconceived notion that Specifications and Standards were a major culprit in the escalation of military costs.

We began by reviewing specific examples cited by prior industry and government review groups. In most instances the problem seemed to lie, not so much with the specification itself, but with the interpretation or application of it. Industry was as guilty of over-interpretation as government was of over-enforcement and over-application.

We concluded that the problem did not seem to be quite as stated.

There are two fundamental facts about Specifications: they must exist, but, by their very nature, they must be arbitrary.

Specifications and Standards can improve the quality of a product by defining proven components, fabrication techniques and test approaches which also can reduce development risk and lower production costs. Specs are essential to technical procurement and all responsible organizations, whether involved in commercial or government products, invoke them to some degree.

The government's problem in developing specifications is exacerbated by procurement regulations which encompass a wide range of potential suppliers. Specifications and Standards can enable inexperienced companies to learn how to produce acceptable product, while providing the procuring agencies with the leverage to assure that suppliers use materials and processes which will produce a quality product.

If one accepts the need for specifications, then a question arises as to why they are so maligned. The answer is because, to be effective, a specification must be an essentially arbitrary selection of one or more proven ways to accomplish a goal from a much larger sub-set of possible approaches. There is no one unique way, for example, to solder correctly. But to guard against the many improper possibilities, a soldering spec will require a specific, proven approach, thereby ruling out other potentially equally acceptable alternatives.

The same situation obtains in the choice of standard parts, test specifications, or assurance plans. Alternate acceptable choices exist across the entire spectrum encompassed by the Defense Standardization Program.

The essence of standardization is making pertinent, economic, flexible selections of the standards to be promulgated, and the acceptance of those choices by both government and industry users.

That is much more easily said than done, because personal convictions, experience, even economic survival, can and do enter the judgment of which choice is correct. Ideally, individuals and organizations involved in standardization should recognize that the inherent gains can only be achieved by conforming with the choices made by those with the responsibility to do so -- rather than continuing to advocate equivalent or marginally improved standards; that is, accept the arbitrary nature of Specs and Standards in today's technological world.

The Task Force's review convinced us that the present body of Specifications and Standards is reasonably good. Most of the instances of "excessive cost" we examined resulted from a failure to utilize the flexibility, or options, incorporated in the specification in a reasonable way, rather than a fundamental problem with the specification itself. In general, the specifications contain much more latitude than appears to be used in practice. We also found that, in many cases, the MIL-SPECS were technically superior to counterpart commercial specifications, which often have to accommodate the least common denominator of performance in an industry.

These observations can be reconciled with the generally accepted view of specifications by observing that, in the mass of some 40,000 documents contained in the Department of Defense Index of Specifications and Standards (DoDISS), there are bound to be some ludicrous requirements which make great anecdotes -- a fifteen page spec for chewing gum comes to mind. There is a tendency to use such documents to disparage the system in general, rather than look for its strengths.

This is not to say that the system doesn't need improvement. There is much that can be done. The Task Force concluded that, while the present body of Specs and Standards was "adequate" to needs, the DoD does not practice a coherent philosophy for the development, revision or administration of specifications. Excess costs are associated with specifications, but primarily in their premature application, over-application, over-interpretation or excessively rigid enforcement. *The Task Force recommends that solution of these problems be achieved in these steps:*

- *BY AN IMMEDIATE PROGRAM THROUGHOUT THE DEPARTMENT OF DEFENSE AND INDUSTRY TO IMPROVE THE CLIMATE OF CONTRACTUAL APPLICATION.*
- *BY AN EVOLUTIONARY PROGRAM TO IMPROVE THE EXISTING BODY OF SPECIFICATIONS.*
- *BY PERIODIC REVIEW OF THE PROGRESS OF THE DEFENSE STANDARDIZATION PROGRAM SO AS TO FOCUS ON AREAS OF PARTICULAR CONCERN TO GOVERNMENT AND INDUSTRY.*

The first step must be a joint government/industry effort to effectively tailor the contractual application of specifications and standards. The second step is primarily a government responsibility, supported by competent, interested industry groups. The third step is also a joint government/industry effort and is essential to sustaining the very positive momentum achieved during the tenure of the DSB Task Force.

IMPROVE THE CLIMATE OF APPLICATION

Significant evolutionary improvements in the substantive content of the DoDISS will be realized over the next five or so years by strengthening the Defense Standardization Program.

But five years is too long to wait. Significant gains can be realized in the near term by *improving the climate of application.* The Task Force observed that the major unnecessary cost associated with Specs and Standards arose from:

- Over-interpretation by both government and industry.
- Misapplication in RFPs and Contracts.
- Uncontrolled incorporation by reference (specification tiering).
- Redundant Proofs of compliance.
- Rigid enforcement.

Improving the climate of application requires the use of common sense in the adoption, interpretation and application of specifications.

As a starting point, it is believed that industry can do much to make conformance a way of life. A large fraction of the cost of applying a specification, be it for soldering, standard parts, or management systems arises from any changes in normal procedures required to comply with a particular specified approach, or from the superimposition of a prescribed compliant system on an already existing structure. It would seem to be incumbent on defense contractors to establish their design standards, processes and program control systems to conform with MIL SPECS. Once this is done, and the systems used for both internal and external purposes, any incremental cost of compliance should virtually disappear.

But conforming doesn't mean over-reacting. Many of the troublesome specifications leave wide latitude for interpretation. For example, MIL-D-1000, which concerns drawing requirements, contains several levels of applicability. In at least one organization, the Task Force found that standard practices tended to go to the upper bound -- the most expensive interpretation of each of the levels. Although this undoubtedly results in fewer contractual arguments, the practice is not in the best interest of either government or industry. In the instance cited, drafting costs were reduced appreciably by recognizing that the specification permitted free hand sketches or photographs as acceptable Level 2 or Level 3 drawings, and that existing Level 2 drawings could be used in Level 1 drawing packages.

Specifications which treat quality control, configuration management, reliability or other disciplines request a contractor to achieve a desirable end result -- a reliable product of good quality -- by establishing and following a set of procedures intended to achieve the goal. But, too often, tests of conformance are in terms of procedural compliance - not goal achievement.

MIL-Q-9858-A, Quality Program Requirements, requires "the establishment of a quality program to assure compliance with the requirements of the contract. The program and procedures....shall be developed by the contractor....(It) shall be documented and....subject to disapproval (after review by) the government representative whenever the contractor's procedures do not accomplish their objectives." In effect, the contractor is asked to define the procedures required to achieve a quality product, document them and then follow them.

Philosophically, it seems reasonable that a self-defined set of procedures, rigorously adhered to, might be required to produce a quality product economically. However, the system can become expensive if the procedures are overly elaborate in order to impress the "government representative" who reviews the system, or if the discipline breaks down and problems result. The government handbook on Evaluation of a Contractor's Quality Program, which is 35 pages long, almost four times the size of MIL-Q-9858A, states that the "the quality program is subject to the disapproval of the Government Representative whenever the contractor's procedures do not accomplish their objective." The message is clear. Don't have problems. Unfortunately, problems do occur. Too often the reaction is to add procedures rather than get at the root cause. The result can be form without substance, effort without result or purpose, thus causing a slackening of discipline that can cause further problems.

An improved climate of application does not mean that industry must blindly conform, or merely refine their interpretation of specifications. The MIL SPECS were written to cover a broad range of products destined for use in a myriad of operational environments. They also tend to document the DoD corporate memory of how to avoid problems encountered on past programs. Inevitably, they contain redundant requirements or specific values which may be too extreme for a given case. These characteristics imply that such specifications must be invoked and administered with common sense.

TAILORING

The process of using common sense in the application of specifications and standards is called tailoring. In essence, this means using the specifications as a reasonable starting point, but modifying their applicability to suit the circumstances of a given program. Perhaps a better definition would be: "stop treating the specs as sacred."

Ideally, all specs to be imposed on a program should be tailored. But, in the real world, there are usually too many to be treated comprehensively before issuing the Request for Proposal, and it is difficult to determine, *a priori*, which ones will present problems as the development goes along.

The Task Force observed, for example, that perhaps half the "failures" in qualification testing for subsystems on a major program represent *not* an outright failure (no go), but rather a failure to meet some essentially arbitrary specification requirement, which had insignificant effect on the intended mission. In such cases, tailoring is intended to encourage the responsible people to understand the real requirement and be in a position to waive and/or change the specification. *The climate should be one in which it is accepted that situations frequently occur in which waivers are actually good for a program, and so should be encouraged.*

The Task Force recommends that DoD policies encourage tailoring:

- Before the RFP is issued.
- During the life of a program.

The relatively large number of specifications required on a contract make it impractical to tailor each before calling it out. Such a process would extend the definition/validation phase unnecessarily, and would create an almost impossible burden for the already overloaded government program manager. However, the Task Force was able to identify specifications which either because of their wide usage, broad applicability, or both, were prime candidates for misapplication and misinterpretation. As part of the RFP preparation, the Government Program Office should tailor a subset of these cost driver specifications, some ten to fifteen, both to establish the climate for tailoring and to benefit from the cost avoidance involved.

The cost driver specifications are not a hard and fast set. The potential offenders vary with Service and program. Typically, they include General Specifications for Materials, Parts and Processes, Environmental and Test Specifications, Documentation, Management and the "Ilities". (See Appendix A for a representative list.)

Of even more importance is the continuing atmosphere which encourages challenging specifications throughout the life of a program from development through production. To this end the ASPR committee should be requested to change ASPR to require tailoring of specifications, and contractual approaches to incentivizing cost-effective waivers should be developed.

Effective exploitation of a new-found freedom to question and modify specifications in the interest of economy presents a new challenge to industry and government managers. Data must be presented in such a way as to enable logical decisions because deviation from a spec is basically an unconservative action for the deviator. Cost savings will have to be clearly established, and will have the added benefit of identifying the incremental cost of particular specification provisions.

REDUNDANT PROOFS OF COMPLIANCE

In addition to or as an element of the tailoring process, the Task Force also recommends that particular attention be given to identifying and reducing the redundant proofs of compliance. By these we mean the incremental, sequential inspections, tests and records which together comprise the data required to show that a contractor has performed in accordance with a specification. It is our belief that, in many cases, these activities can be reduced without compromising product assurance. In the extreme, the government can emphasize a contractor's responsibility to comply without surveillance, particularly for products where warranties may apply in the future.

USE OF COMMERCIAL STANDARDS

As a possible alternative to the use of military specifications the Task Force consulted representatives of organizations responsible for commercial and national standards. These organizations believed that MIL SPECS were often superior to commercial counterparts. In general, a stronger interaction with the Defense Standardization Program would be welcomed. Such DoD participation would promote development of commercial specifications meeting DoD needs and ultimately would have the effect of reducing related DoD specification effort while helping to maintain the expertise of participating DoD personnel.

NON-DODISS REQUIREMENTS

While concentrating its major attention on the documents in the DoDISS, the Task Force notes the existence of certain "non-DoDISS" documentation which, if contractually misapplied, also contain potential cost-driving implications. In general, this body of documentation is comprised of service or program-peculiar, limited-application documents, such as specifications, standards, "slash sheets" thereto, handbooks, instructions, directives,

AR's, and the like. There are several thousand documents in this category. To the extent that such documents are contractually imposed and applied without being subjected to the same rigorous scrutiny and tailoring as is recommended herein for the DoDISS entries, there will be a compromise of the effectiveness of actions taken in response to this report. Such documentation often has the effect of superseding the parent DoDISS item. This concern also extends to any lower-tier document issued by a military department or agency purportedly to implement a higher-level document (e.g., DoD Directive/Instructions), but in actuality having the implication of overriding or expanding upon the intent and scope of the higher-level document.

INCORPORATION BY REFERENCE

Another problem identified relates to the prevailing practice of "incorporation by reference." Studies by the aerospace industry have revealed that, in the absence of positive management control over the process of contractual incorporation-by-reference, the number of contractually binding documents can proliferate drastically. It has been established that each called-out milspec or mil-standard can involve an average of eight (8) additional specifications and standards which, in turn, will, themselves, repeat the process -*ad infinitum*.

Under the acquisition practices directed by such policies as Office of Federal Procurement Policy (OFPP) Circular A-109 and DoD Directives 5000.1 and 5000.2, the competing contractors are now required to identify, rationalize, and propose for Government approval, the contractually applicable specs and standards and other requirements for each succeeding phase in the acquisition cycle from mission identification through full-scale development, production, and support. Strict attention to the implementation of these policies should drastically reduce the call-out by reference of unnecessary and costly requirements.

REQUIRED DISCIPLINE AND FLEXIBILITY

A balance of both discipline and flexibility is required in individuals and organizations who deal with specifications and standards. Discipline is particularly important in industrial organizations that do work for DoD. A company which has established, for example, its drafting practices, preferred parts lists, and/or manufacturing processes in accordance with military specifications may incur essentially no extra cost in these areas compared with commercial standards they might have adopted or developed for themselves. Unnecessary cost does arise when a contractor has to convert to a new or revised military specification or is faced with conflicting requirements in the same area from two or more elements of DoD which have not had the discipline or have lacked the communication to resolve their differences within the Defense Standardization Program.

Flexibility is particularly important within the DoD elements responsible for development and procurement. The Design to Cost philosophy which seems so promising at the Weapons System level can and should be extended down to the realm of specifications and standards. Since military specifications are often written for the general case, innumerable instances of technically acceptable, lower cost alternatives can occur. Responsible government and industry personnel must be encouraged to be open to such possibilities, using the existing specification as a baseline. In the absence of strong motivation, the inherent safety of requiring things "by the book" will discourage cost saving innovation.

IMPROVEMENT OF EXISTING SPECIFICATIONS

Although the existing specifications are adequate to DoD needs, there still is considerable room for improvement. There are too many specifications, often difficult to read and interpret. They do not contain clear statements of the problem being solved, and are rarely self-contained. Because the spec originator is frequently far removed from the user, both functionally and geographically, cost of application has not been a paramount concern to the originator.

Five basic actions are recommended:

- Focus and strengthen DoD management of specifications, with initial concentration on cost-driving requirements.
- Improve feedback from users to preparers.
- Control specification generation and revision.
- Foster increased use of commercial specifications and standards.
- Reformat documents to facilitate tailoring.

The Defense Standardization Program must establish realistically achievable goals to realize significant quick results. Past efforts to improve specifications/standards have relied on basic broad policies which addressed general management of the entire body of documents. While this is necessary there is a need to concentrate in the near term on the high usage, high-cost-driver specifications and standards. Of the 40,000 DoDISS documents there is a relatively small group in this high-priority category. Removing obsolete, marginal and unrealistic requirements in these documents can yield substantial savings.

To be successful in improving the existing Specs and Standards, there must be an identification of the redundant or overlapping specifications, those technically obsolete, or those which are too inflexible or too difficult to interpret. Feedback from users should be

the main source of such information. In fact, the last page of almost every copy of every specification is a tear off page (DD Form 1426) inviting anyone who has worked with the document (or read through to the last page) to comment on the use of the spec in the interest of "insuring that suitable products can be procured with a minimum amount of delay and at the least cost."

Noble as that aim is, the 1426 is sparingly used. A thirty day sample revealed 105 submissions from 30 authors, which extrapolates to about 1200 comments per year scattered among the some 40,000+ specifications in the DoDISS.

The 1426 has not been a significant factor in improving specifications, for a number of reasons, including lack of emphasis and slow, or non-existent feedback on actions resulting from submittal. We believe that a campaign to stimulate constructive spec criticism via the 1426, coupled with a more dynamic and responsive government response can provide the data to identify trouble spots and establish priorities. Industry program managers who must deal with waivers on a spectrum of programs can contribute significantly to this activity.

The Defense Standardization Program calls for a review of each Spec every five years to determine whether revision is necessary. This revision cycle is a natural focus for the improvement of the body of specs and standards.

The Task Force recommends that all revisions to specifications, and all new specifications be justified by a statement of intent, approved by Defense Standardization Program management, prior to initiation of effort. The goals of any new draft should be identified in order of priority, including:

- Expected impact on the cost of applying the spec.
- Increased flexibility through clarification or increased options.
- Upgrading for technical currency.
- Consolidation with existing related specifications, either within or across Service lines.
- Use of, or consolidation with, existing industrial specifications and standards.
- Improved readability.
- Planning for coordination with industry.

Although the priorities may vary, the pressure on identifying the expected cost of application is important to avoid excessive technical refinement. Industry coordination, works reasonably well in most cases, but should be strengthened by provision for an appropriate higher level of DoD management to resolve industry/preparing agency differences before a new or revised specification is issued.

Effective control of specification generation and revision can result, over the *next five or so years*, in improvement in the DoDISS by:

- Reduction in the total number of specifications.
- Consolidation with industry or national standards.
- Lower cost of application.

BASIC CONCLUSION

The Task Force has concluded that improved management of specifications and standards requires:

- A concerted program throughout the Department of Defense and industry to improve the climate and techniques of application in RFPs and contracts.
- An evolutionary program to improve the existing body of specifications and standards.
- Continued DSB involvement to encourage cooperative Government/industry implementation of this report's recommendations.

Recommendations and discussion of these approaches, a report of progress already achieved to date and planned initiatives by the OSD and its department and agencies follow. (See Appendix B hereto for a summary of recommendations and proposed DoD action cognizance.)

II. RECOMMENDATIONS TO IMPROVE THE CLIMATE OF APPLICATION THROUGH TAILORING

DISCUSSION

No specification should be treated as infallible. Most have been written to encompass a wide range of possible cases and, therefore, may contain provisions which are overstated for a particular instance. The solution is not to generate detailed specifications and standards for every program. Such an effort would be too time consuming, expensive, and unnecessary. Rather, the Task Force believes that DoD should initiate a program to create an atmosphere in which both Government and Industry personnel are encouraged to treat specifications and standards as living documents — as baseline guidance to both Government and industry program managers.

The essence of such a program is the *tailoring of specification.* Tailoring implies using the appropriate requirements from specifications and standards while encouraging modifications to achieve engineering management realism and resultant economies.

Typically, tailoring can include but is not limited to:

- Modification of quantitative requirements (such as a temperature range or a vibration level).
- Selection of the appropriate level of requirements (such as type of drawings).
- Selection of only a limited number of requirements within a specification.
- Substitution of commercial or industrial specifications.
- Elimination of MIL-specification requirements not applicable to the specific program situation at hand.
- Control of referenced documents.

Tailoring should continue throughout the life of a program, from advanced development RFP preparation, through engineering development, production and deployment. In essence, tailoring is an extension of the tradeoff principles of design to life cycle cost (i.e., useful performance for affordable cost) to levels of detail which are not usually challenged.

Tailoring cannot be dictated by a set of hard and fast ground rules. It requires management and technical judgment on the part of both Government and Industry personnel.

Because a decision to modify or waive provisions in specifications imp'icitly carries the possibility of being wrong, even if the savings are significant, tailoring must be strongly supported and publicized by DoD management if the program is to succeed. The existing procurement environment is basically conservative and encourages cautious conformance rather than forceful ingenuity. The Government Program Manager and functional organizations supporting him must be encouraged to realize that strict, parochial application of specifications and standards is neither required nor desired.

RECOMMENDATIONS

The Task Force recommends the following specific actions in the interests of improving the climate of application through tailoring:

2-1 Tailoring Should Take Place Throughout A Program's Life Cycle

- During preparation of the RFP, selected cost-driving specifications which are most often misapplied should be identified and tailored by the Program Manager.
- In responding to the RFP, contractors should be stimulated by ASPR provision to propose effective alternatives, without fear (real or imagined) of being found nonresponsive to affected terms of the RFP.
- During the development and production phases of a program, specification tailoring should be encouraged contractually. A method of incentives should be employed to motivate the contractor to propose cost effective changes.

2-2 The Services Should Prepare Guidelines For Selecting, Tailoring and Applying Management Systems, Data Requirements, Specifications and Standards

Because the concept of tailoring can only be made real by specific examples, these guides should be oriented toward illustrating the principles with a broad cross section of examples updated as experience is gained.

2-3 DoD Should Require That Potential "Cost Driver" Specifications Be Identified and Tailored During Preparation of the RFP for a Program

Specifications are designed to meet the requirements of a wide variety of users. Effective application requires picking and choosing among the alternative requirements found therein. The Task Force observed that the documents most often indicted as contributing

to excessive cost contained levels of lower cost options which were rarely used. The potential cost driver specifications in general, are:

- General Design Requirement Specifications.
- Environmental Requirements and Test Methods.
- Reliability and Maintainability.
- Quality Control.
- Human Factors and Safety.
- Documentation
- Configuration Control.
- Integrated Logistic Support.
- Packing, Packaging, Preservation, Transport.

Although the particular cost drivers may vary depending on service and type of program, the Task Force estimates that careful attention to approximately twenty such documents prior to initiation of each program can save money and establish an atmosphere conducive to further tailoring as the program progresses. A preliminary list of approximately 120 potential cost driver specifications is attached as Appendix A.

2-4 DoD Should Encourage Contractors (Through ASPR Provision, Not Presently Existing) to Identify Cost Effective Alternatives to Specifications Contained in an RFP

Contractors are in a better position than DoD to recognize unnecessary and costly requirements arising out of specification misapplication. However, current DoD practice, in general, requires conformance with all terms and provisions of an RFP. The potential disqualification for "nonresponsiveness" is a strong deterrent to contractor ingenuity. This practice is archaic in the context of modern acquisition policy.

DoD should consider changes to ASPR to authorize the use of incentives to encourage contractors to challenge specifications in responding to an RFP. These might range from allocating a given number of source selection evaluation points based on the quality of the proposer's recommendations for tailoring, to cash awards to bidders making cost saving suggestions, whether or not they are ultimately awarded the contract.

2-5 DoD Should Eliminate the Requirement for Submission of Pro-Forma Plans as Part of a Proposal

Many of the cost driver specifications, such as reliability, quality assurance, maintainability and configuration management require a contractor to submit a plan as part of the proposal. Because of the desire for high scores in all areas of proposal evaluation, such plans tend to be fully compliant with the most rigorous interpretation of the specification, and are subsequently incorporated into the contract. Alternatively, as part of contract negotiation with the selected contractor, the plans could be developed in light of the program phase requirements, contractor practices, and the funds available for the particular disciplines involved. A contractor's competence in these areas can be established by periodic review of contractor practice supplemented by evaluation of product and managerial performance on existing and/or prior contracts.

2-6 DoD Should Develop Contractual Incentives Through ASPR Provisions to Encourage Tailoring of Specifications Throughout the Life of the Program

The Task Force believes that only a small fraction of the provisions contained in the specifications imposed on a program will have a measurable cost impact if a contractor has oriented his practices toward MILSPECS. In many instances, areas of potential difficulty cannot be identified until the detailed design or production planning is well underway. In the existing DoD procurement environment, requests for reasonable waivers are often met with demands for "consideration". To counteract such attitudes, DoD should:

- *Modify ASPR to require tailoring of all specifications and standards applied to an RFP or contract.*

- *Develop contract incentives which can readily be applied to change proposals for tailoring acceptable to the government program manager. For example, in flexibly priced contracts such proposals could be incorporated as an instantaneous value engineering proposal without a requirement for extensive audit or negotiation, with the contract fee or profit slope inherently determining the Government/Contractor share of the savings.*

2-7 DoD Should Institute a Program to Identify and Reduce the Cost of Demonstration of Compliance to MILSPECS

A significant portion of the cost associated with specifications and standards lies in the requirements developed by both Contractor and Government to demonstrate compliance. In some cases, only the costs associated with inspection, test and reports to document that

the hardware has been built in accordance with a spec could be identified as potentially excessive.

In particular, attention should be directed toward:

- *Eliminating redundant inspection, test and "prior approval" requirements.*
- *Emphasizing a contractor's responsibility to comply with specifications without detailed surveillance by Government personnel.*

2-8 DoD Should Institute a Program and Formulate a Policy Requiring Identification and Control of the Proliferation and Use of Non-DoDISS Technical Requirements Documents Which Have the Same Potential Contractual Force and Effect as Do the Specs and Standards Contained in the DoDISS.

Examples Are:

- *Service/program-peculiar, limited-application documents;*
- *Aeronautical Requirements;*
- *Specifications, standards (and slash sheets thereto);*
- *Handbooks, guides, and other lower-level documents purportedly issued to implement higher-level directives, instructions, and the like.*

To the extent that such documents are contractually imposed, without being subjected to the same rigorous scrutiny and tailoring as recommended elsewhere herein for the DoDISS entries, there will be a compromise of the effectiveness of actions taken in response to this report. Explicit restrictions in the form of a stamp, such as "*Not for Contractual Use*" or "*For Design Guidance Only*" should be required.

2-9 DoD Should Incorporate, In ASPR and In Its Planned Policy On Applications Tailoring, Provisions Which Require Specific Management Attention, Controls and Limits Over the Incorporation of Documents Called Out By Reference In Other Cited Requirements Documents.

The implementation of this recommendation impacts current ASPR provisions relating to incorporation by reference and priority of documents. ASPR must be examined and modified so that only mandatory requirements are explicitly cited in procurement documents. Reference documents should not be contractually binding but used for guidance only.

2-10 For the Above Recommendations to be Effective, DoD Must Institute a Vigorous Campaign to Educate Both Government and Contractor Personnel and to Publicize the Intent of Directives Issued to Implement the Improved Climate of Application

As a first step, the curriculum of service schools in the area of procurement, program management, and contract administration (DCAS, AFPRO, NAVPRO) should be strengthened in the area of specifications management, with particular emphasis on case studies derived from actual experience with tailoring. Such formal education should be supplemented by existing avenues of communication including Commanders newsletters, staff meetings, posters, etc. Personal incentive and motivation of program office personnel can be stimulted by a DoD-wide awards program focused on the savings achieved from effective tailoring.

Trade Journals, the Defense Management Journal, industrial association forums and addresses by DoD officials can be effective media to inform and convince industry of the DoD intent to treat specifications more flexibly, particularly if the points can be illustrated with specific examples.

III. RECOMMENDATIONS TO IMPROVE THE EXISTING BODY OF SPECIFICATIONS AND STANDARDS

DISCUSSION

Although the Task Force found the existing body of Specifications and Standards adequate to DoD's needs, it also noted considerable room for improvement. The number of specifictions can be reduced by consolidation of overlapping, redundant documents and by elimination of the obsolete. Some specifications undoubtedly contain outdated or unreasonable requirements. Inherent flexibility of specifications can be increased, and readability improved. Cost can be made a more explicit consideration in the generation of requiremens.

The development and maintenance of Specifications and Standards is controlled within the Defense Standardization Program (DSP). All specifications are required to be reviewed once every five years to determine whether revision is appropriate. The Task Force believes that the framework of this existing program should be directed toward an evolutionary improvement and purging of existing specifications and standards, in accordance with annual plans by Federal Supply Code.

The recommended actions fall in five categories:

- *Strengthen DoD specification management, with initial priority attention to the the cost drivers.*
- *Improve feedback from users to preparers.*
- *Control Specification generation and revision.*
- *Foster increased use of applicable commercial specifications and standards.*
- *Re-format documents to facilitate tailoring.*

These proposed actions are elaborated in the ensuing discussion.

STRENGTHEN SPECIFICATION MANAGEMENT

Responsibility for the Defense Standardization Program (DSP) lies with the Defense Materials Specification and Standardization Board, supported by a small group, the Defense Materiel Specifications and Standards Office (DMSSO), which has numerous other responsibilities. Management responsibility is delegated to the three Military

Departments and the Defense Supply Agency who, as Assignees for Commodity groups, delegate responsibility for individual commodity classes to their field commands in the case of the Departments, and Defense Supply Centers in the case of the DSA. These activities are known as Assignee Activities. Management for non-commodity designations is retained by the OSD (DMSSO). Specifications are developed, written and maintained by Preparing Activities in accordance with a coordinated management plan instituted by Assignee Activities. Preparing Activities are responsible for coordination throughout the DoD, other Government agencies, where appropriate, and the pertinent segments of industry. Such activities are widely dispersed and are generally remote from the users of specifications. Few are full time and budgetary support for effort is obscure and unstructured. There is no overall DoD policy guidance on the goals, priorities and allocation of effort of the Defense Standardization Program (DSP).

3-1 The Management of the DSP should be Strengthened and Focused

The Task Force hesitates to define what organizational steps should be taken within DoD to accomplish this goal, but suggests the following actions for consideration:

- *Increase top management attention through revitalization of the Defense Material Specifications and Standards Board (DMSSB) and the chairmanship of its panels. Provide stronger technical support through DMSSO.*

  The issues involved in Specifications and Standards are complex, and the interests of individuals involved can be parochial and antagonistic. Until senior management actively applies judgment to the details of the program, not only to general direction, little improvement can be expected.

- *Issue policies and prepare an annual guidance and priority plan for the Defense Standardization Program. Review the Program Analysis for conformance with the overall plan.*

  An annual plan for the DSP can provide much needed guidance to the myriad organization responsible for specifications. The plan must direct effort to the areas of most concern (the cost drivers, the obscure, the obsolete, and the controversial) and identify Specifications and Standards which can be consolidated with commercial counterparts.

- *Assure the commitment of dedicated personnel to the Assignee and Preparing Activities. Budget such support through the DSP. Assure adequate technical support to the Preparing Activities.*

People responsible for each Specification and Standard should be competent and dedicated to the task of producing an economically balanced, technically accurate product. Support of the DSP should be a clearly defined, funded responsibility of the assigned commands.

- *DoD should review whether its historic in-house competence in the fundamental disciplines of parts, materials and technical specifications has declined to the point where it is no longer current with present technology.*

IMPROVE FEEDBACK

Savings in the use of Specifications and Standards often relate to very specific provisions, no one of which is dramatic as a percentage of program cost. Yet, within the existing structure, significant cumulative potential for savings can result from improving individual documents. The major sources of data for improvement should be the users of specifications. However, DoD has no clear-cut, effective feedback mechanism to monitor the effectiveness of specifications; to identify and deal with user dissatisfaction, and initiate corrective action.

Currently, there are two formal channels for securing feedback. One is a tear-off sheet printed on the back of all Specs, the DD1426 form, which invites comments for specification improvement from any user within industry or DoD. The other channel applies only to the creation of a new specification or a major revision in an existing Spec where comments on draft versions are solicited from industry associations.

In addition, informal feedback can occur from telephone calls, letters and personal visits to preparing activities by industry. Industry associations do form special study groups, hold seminars and conferences, and communicate the results through a variety of means back to DoD. However, no formal mechanism exists within the DSP for "third party" executive review of issues when an impasse is reached in the dialogue between industry commentators and specification authors.

On the whole, feedback is poor, partly because existing mechanisms have not been adequately publicized. Many in industry are not aware of their existence. Existing sources of information of potential utility have not been tapped by DoD.

3-2 Use of the DD1426 Form and Other Mechanisms should be Strengthened as Sources of Feedback on Specifications and Standards

The DD1426 is only marginally effective at the present time partly because it has not been adequately promoted by DoD and partly because communication back to industry on the actions resulting from their comments and ideas has been deficient, non-existent or inconclusive.

The DD1426 program should be part of an overall public relations program aimed at expressing support for cost reduction in the use of specifications, enlisting the support of industry and DoD components, and demonstrating the DoD commitment to this goal.

The following steps should be taken to improve this feedback source:

- *DD1426 forms should be sent to Preparing Activities (PA), as at present.*
- *Acknowledgement letter should be promptly sent by the PA to respondents, including description of subsequent feedback to be expected, and when.*
- *Subsequently, a follow-up letter should be sent to all DD1426 initiators advising them of the action taken on their suggestions.*
- *Forms received should be summarized, coded by specifications and by category of problem identified, and reviewed by some competent third party. Action taken along with frequency counts should be forwarded to Assignee Activities semi-annually.*
- *Management at the OSD and Departmental levels should periodically sample DD1426s to gauge the progress of the program.*
- *Certain suggestions of unusual merit should be given wide publicity through OSD to encourage further feedback. Some type of symbolic award to the company might also be given, such as a plaque or personal letter from Secretary of Defense.*

3-3 Each Command Should be Required to Compile and Establish Data Bank and Retrieval Systems For Recording the Changes to Specifications Authorized in Contracts Under its Cognizance, and to Forward This Data Periodically to the Preparing Activities for Information, Analysis and Action

The waivers, and other specification changes, granted on contracts are another source which can indicate specifications which should be reviewed for revision.

3-4 DoD Should Encourage and Continue to Avail Itself of Support From Industry Organizations by Formalizing Channels of Communication and Providing for Higher-Echelon Management Review of Points of Disagreement

Industry organizations are eager to work with DoD in preparing or reviewing proposed specifications or revisions. However, industry should be accorded a right of appeal in those cases where important points of disagreement with respect to specifications and standards provisions cannot be resolved to the mutual satisfaction of Preparing Agencies and industry.

3-5 DoD Should Institute a Comprehensive Contract Audits Program to Determine the Degree to Which the Specifications Application Tailoring Program Has Been Implemented, Its Problems and Accomplishments

Audit of specific contracts should be undertaken to identify and understand instances of specification misapplication and their causes, associated costs as well as actions leading to correction. Such an audit represents a feedback tool to management in determining the effectiveness of the program, specific reasons why specifications are misapplied and overapplied, the effect of mis-application, potential vs actual savings as well as instances of excessive cost.

EXERCISE CONTROL OF SPECIFICATION REVISION

The DSP policy requires review of all specifications within a five-year period to determine whether revision is required. The Task Force observed that the revision process tends to increase the cost of application if not controlled. The revisions are frequently initiated by specialists devoted to increasing the presumed rigor of the specification, while ignoring the potential cost increases implicit in the upgrading.

3-6 All Major Revisions to and All Specifications Should be Justified by a Statement of Intent, and Approved by DSP Management Prior to Initiation of Effort

The statement of intent should identify the goals of the revision in order of priority, including at least:

- *Impact on cost of application*
- *Improvement in technical currency*
- *Increased flexibility through clarification or increased options*
- *Feedback received*
- *Possibility of consolidation with or elimination of related existing DoD specifications*
- *Possibility of use of or consolidation with existing industrial specifications and standards*
- *Industry coordination feedback*

FOSTER USE OF COMMERCIAL SPECIFICATIONS AND STANDARDS

3-7 DoD Should Work Toward the Development of National Standards Which Satisfy Military Requirements in Preference to an Independent Set of Military Standards

The DSP should consider establishing goals for potential cost reduction, and for the number of specifications which can be consolidated, merged with industry standards, or eliminated. Particular attention should be given to increasing the compatibility of DoD technical requirements with industrial practice.

The DoD maintains over 40,000 specifications and standards. Non-Government standard organizations have published over 26,000 voluntary engineering standards and specifications, many in areas related to the DoD documents. DoD has so far adopted approximately 1200 industry standards.

Steps which could foster increased use of commercial specifications and standards which satisfy DoD requirements are:

- *Establish a focal point for interface with voluntary standards programs.*
- *Develop guidelines for DoD participation in voluntary programs.*
- *Encourage greater participation in voluntary national standards programs by having DoD personnel maintain active dialogue with the technical committee structure. The voluntary standards community can then better respond to DoD needs. Increased participation in such activities would facilitate more effective atilization of military, commercial commonality.*
- *Nominate a responsible DoD official for the Board of Directors of the American National Standards Institute. In this regard, an exemption to DoD Directive 5500.2 is required because it tends to or does prohibit such membership.*
- *Encourage use of national standards in lieu of military specifications and standards when there is no significant advantage to the DoD in the development of new documents. Use military options superimposed on basic commercial products. Expand the effort to review and revise specifications, eliminating duplication and excessive requirements. Focus military documents on items unique to safety, armament and military system design.*
- *Educate engineers as to the use of comercially available components and products.*

The above actions should provide a strong impetus toward a more consolidated National Standards Program, and would make available to DoD a broader technical base for the development of specifications. Increased commonality between DoD and industry practices can eventually provide a broader industrial support base for military programs.

RE-FORMAT DOCUMENTS TO FACILITATE TAILORING

3-8 DoD Must Initiate and Emphasize a Program to Re-format New and Existing Specifications and Standards to Faciliate the Tailoring Process

While many of the existing specifications and standards are structured in a manner compatible with the tailoring process, reformatting of all documents, where applicable, is essential. This is particularly true of the non-product, cost-driver high-usage documents. Government/industry engineers will be more prone to tailor requirements if the governing document provides a relatively simple, concise means by which it can be accomplished.

IV. INDUSTRY SUPPORT/RETAIN DSB COGNIZANCE

The Task Force was pleased with the overall positive response to its findings and recommendations, as manifested by the scope and extent of DMSSO and Services' actions already undertaken well in advance of formal release of this report. We believe that much progress can be gained in meeting the objectives identified in our key recommendations by retaining in some form the resource represented by the DSB Task Force.

Appendices C, D, E and F respectively are letters of support of this concept, received by the Chairman, from Aerospace Industries Association (AIA), Electronic Industries Association (EIA), National Security Industrial Association (NSIA), and American Defense Preparedness Association (ADPA).

RECOMMENDATION

4-1 DoD Should Take the Necessary Steps to Assure The Retention in Being of a DSB Task Force on Specifications and Standards Which Would Periodically Review The Progress of the Defense Standardization Program by Focusing on Areas of Particular Concern to Government and Industry.

V. PROGRESS REPORT, PRESENT AND FUTURE INITIATIVES

PROGRESS TO DATE

The Task Force, following its formation, convened in six public sessions held in October and November, 1974; January, March and April, 1975, and September, 1976.

Mr. Lester Fox, Director of DMSSO, served the DSB as Executive Secretary and, in this capacity, was able to report to the Task Force on concurrent efforts of his office concerning specs and standards management. DMSSO was also able to initiate specific implementation of certain key recommendations as they were formulated through Task Force discussions. A discussion of these actions already taken or in progress follows.

First and foremost, action was taken to put the matter of misapplication of specifications and standards in proper perspective and to establish basic policies governing their proper use. As a first step, Deputy Secretary of Defense Clements issued a memorandum advising the Services of the preliminary findings of the task force. This memo, dated 4 August 1975 (see Attachment G of this report) identified the immediate need to impose tighter controls over the use of specifications and standards in acquisition, called attention to the specific "cost driver" documents that have been identified, required that these be scrubbed and tailored when applied, and directed that RFP/contract review boards be made responsible for assuring that such tailoring had been accomplished. The memorandum further indicated that DMSSO would undertake a coordinated program to initiate appropriate procedures, regulations and policies to implement measures to correct the problems identified by the Task Force. Actions taken were:

- **ASPR Revisions**

  Three specific actions were taken to implement those recommendations impacting the Armed Services Procurement Regulation (ASPR):

  — the tailoring of specifications and standards used in acquisition;

  — feedback of contractual changes affecting specifications and standards, and

  — an improved dialogue between government and industry during the RFP/contract process to enhance and facilitate feedback of cost-effective changes in requirements from contractors without jeopardizing their competitive position.

The first of these proposed ASPR changes dealt with the establishment of specific policies which replaced the blanket application of specifications and standards with a mandatory requirement that these documents be tailored when invoked in the acquisition process. Specific tailoring procedures were proposed. *This change was approved by the ASPR Committee and resulted in a complete revision of ASPR1-1201(a).*

The second proposed ASPR change concerned the tightening of feedback procedures covering interim changes or corrections to specifications and standards required to effect a procurement. A language change was proposed to broaden the scope of this policy to assure that all such specification/standard actions were fed back to the document-preparing activity for information and disposition. *This change to ASPR 1-1202(e) was approved in May 1976.*

A third proposed change was directed toward improvement of the dialogue between government and industry in the proper application and tailoring of specifications and standards. The thrust of this proposed change was aimed at those negative connotations in ASPR which tend to inhibit constructive proposals from industry, particularly during the RFP stage. Its intent is to remove constraints and utilize incentives to broaden the concept of feedback in all solicitations other than IFBs. *Preliminary findings by the ASPR Committee raised several significant issues that must be resolved. This matter will continue to be pursued.*

- **Field Visits and Conferences**

Simultaneously with the foregoing actions and following the issuance of Mr. Clements' memo of 4 August 1975, a program of on-site visits and discussions with the DoD Components and program managers was initiated to determine the degree to which the Services were implementing these new policies and to view firsthand those difficulties and problems that were encountered. During the period, visits were made to Program Managers/Services responsible for systems such as Single Channel Ground/Airborne Radio System (SINCGARS); Design-to-Price Low Cost Electronic Warfare Suite (DTPEWS); Lightweight Doppler Navigation System (LDNS); the B1 Electronic Countermeasures (ECM) System; Patrol Hydrofoil Missile (PHM), PAVE-PAWS; Hellfire and Dragon.

In addition, briefings and discussions were held with management heads of the various System Commands such as Army DARCOM, MICOM and ECOM; Navy CNM, NAVAIR and NAVSEA; and Air Force AFSC and the Air Force Weap-

ons Laboratory. These discussions provided the opportunity to review the methods and approaches used by the Components to implement specs/standards applications policies. The degree of implementation and procedures used varied within commands but without exception, all had taken initial and positive steps to carry out the instructions conveyed in DEPSECDEF memorandum of 4 August 1975.

- **Policies**

With the experience gained from these visits and other related activities, it was considered necessary and desirable that the policies governing the application and tailoring of specifications and standards be more clearly defined and amplified and specific responsibilities assigned to the DoD Components and Program Managers. This led to the preparation of a proposed DoD Directive (DoDD) titled, "*Specifications and Standards Application*." It specifically requires that specifications and standards be tailored, that Data Item Descriptions (DIDs) conform to the tailored governing document, that the imposition of specifications and standards be controlled, that review boards assure that tailoring has been accomplished, that records be maintained as to the degree of tailoring accomplished and that feedback be solicited from potential contractors during the solicitation (RFP) stage. The proposed DoDD addresses all of the recommendations made in the DSB's preliminary report to Secretary Clements regarding the control, application and tailoring of specifications and standards. The document has been coordinated with the Services. Comments have been reconciled. Issuance is targeted for early 1977.

- **Training and Education**

To make very certain that all DoD levels are aware of OSD's interest in the control of specifications and standards and the need to tailor these documents in their application, a program of training and education has been undertaken. DoD policies and goals have been incorporated into the curricula of the Program Manager course at the Defense System Management College, Fort Belvoir, Va.; the Specifications Management course at the Army Logistics Management Center, Fort Lee, Va.; and at various courses at the Air Force Institute of Technology, Dayton, Ohio. OASD (I&L) personnel have participated in these schools as guest lecturers on this subject to add emphasis to the importance of the subject matter.

OASD (I&L) representatives have also appeared as guest speakers at any number of symposia and conferences sponsored by recognized industry associations to

convey DoD's intentions to the industry regarding the use of specifications and standards and to solicit their assistance in changing the culture.

The Air Force is in the process of developing a videotape training aid on the application and tailoring of specifications and standards. This product is expected to be given wide distribution. Several of the Services have begun the development of instructional guides covering the "how to" aspects of tailoring.

OTHER INITIATIVES UNDERWAY

To bring about general improvements in the specifications and standards themselves, particularly in the identified "cost drivers" which deal with the disciplines, a number of new initiatives have been undertaken:

- **Form DD1426**

  The DoD is particularly interested in obtaining feedback from the users of MIL documents. To that end, the DD Form 1426 Standardization Document Improvement Proposal has been revised to simplify its use in submitting beneficial changes to the document Preparing Activity. Some of the steps are:

  — All Preparing Activities have been instructed to acknowledge receipt of a DD Form 1426 within 30 days and to advise the submitter of disposition of his recommendations.

  — The assistance of the major industry associations has been solicited in publicizing our interest in receiving user comments via the 1426. Several industry groups (AIA, EIA, ASTM) have advertised this fact in their trade journals.

  — Action has been taken to predominantly display on the cover page of Military specifications and standards the fact that user comments are desired and solicited, using the 1426 as the means of communication.

  — Steps are under way within the OSD to contact the major systems contractors, advising them of OSD interest in receiving user feedback through the use of the DD Form 1426.

  — The weekly Notice of Changes to the Index of Specifications and Standards has been exploited as a means of bringing further recognition to the feedback efforts. This notice is circulated extensively throughout the Government and

industry. It carries a periodic note, prominently displayed, that constructive comments/recommendations are desired.

— DoD policies, with respect to the format and content of specifications and standards as specified by MIL-STD-961 and MIL-STD-962, have recently been changed to highlight the intent and purpose of the DD Form 1426 and the feedback process. All new and revised specifications and standards now have a note displayed in bold type on the cover page explaining the fact that user comments are desired and referring to the DD Form 1426 (an integral part of the document) as the vehicle for submitting such comments.

- **Feedback — Contract Modifications**

The Assistant Secretary of Defense (I&L) by memorandum dated 2 November 1976, directed the Services to establish procedures to provide feedback to the document Preparing Activity of any contract modifications that authorize or approve technical changes to specifications or standards during contract performance. This procedure will provide some insight to the Preparing Activity of those exceptions/repetitive changes being made to documents and will highlight deficiencies requiring corrective action.

- **Cost Driver Spec Improvement**

Several specific actions have been taken.

— First, each of the cost driver areas and related documentation have been identified for specific management attention. A lead Service within the DoD Components has been designated to assume responsibility for the particular area and to develop a comprehensive management plan, in conjunction with the other Services, which will address the problems and issues regarding that area. The plan will consider the adequacy of documentation, proposed methods by which existing documents can be prudently tailored in their application, determine whether duplication in documentation exists or whether additional documentation is required. A model plan governing "Reliability" has been developed and is currently in the process of being approved. In the other disciplines, the lead Service will be expected to perform in-depth analysis of the area assigned in order to identify specific steps such as policy changes, document actions that must be taken to assure adequate management controls and achievement of DoD goals in the cost-effective application of specifications and standards in the acquisition process. In

this regard, an initial list of "cost driver" documents has been developed to assist the assigned Departments in their potential efforts. This list is included in this Report as Appendix A.

– Secondly, in conjunction with these assignments, action has also been taken to promote the philosophy and use of the sectionalizing concept in the development of new and revised standards. In its simplest terms, the concept promotes the use of document formatting techniques to simplify the tailoring process by specifically grouping all mandatory requirements, specifically identifying "optional requirements," ranges, variables and the like, and structuring each requirement so as to be independent of any other requirement in the document.

  The purpose and objective of each separately structured requirement are defined together with a statement of how it should be utilized in acquisition programs. The use of this concept has been highlighted and amplified in separate correspondence to all document Preparing Activities and in MIL-STD-962 governing the format of standards. A number of documents are now in process of revision to adopt this new formatting technique. Among these are Military Standards 282, 461, 633, 756, 785, 811, and 1180, covering such subjects as Reliability, etc.

- **Industry Standardization — DoD Use Of**

  The DoD is also restating and amplifying its policies governing its participation in industry standards-making bodies and the adoption and use of industry standards. These policies are embodied in a forthcoming DoD directive which promotes government participation with industry bodies in developing new and revised standards that will accommodate and reflect government requirements at the outset. Moreover, it prescribes criteria under which industry standards will be adopted in favor of the development of a new Military or Federal specification or standard.

- **Data Item Descriptions (DIDs)**

  While the matter of Data and Data Item Descriptions (DIDs) was not specifically identified and discussed in the Task Force findings as cost drivers, it is recognized that the misapplication of redundant data requirements related to Specifications and Standards does drive costs. For that reason, the DMSSO, in conjunction with the DoD Management Information Analysis Group (MIAG) in the Comptroller's Office (OASD-C) is in the process of developing and issuing policies designed to

eliminate duplicative work tasks and Data requirements from defense contracts. Standardization Preparing Activities will be instructed to undertake a program for consolidating the various Data Item Descriptions associated with the specific specifications and standards assigned to that activity. This effort has the potential for eliminating approximately two-thirds of the Data Items in the DoD system today. It will also correlate the Data Items with the "parent" document for proper interpretation and control. Henceforth, the Preparing Activities formulating new specifications and standards will also be required to prepare and coordinate the associated Data Items with the new document.

- **Military Department and Agency Initiatives**

  The Military Departments have been very responsive to the findings of the Task Force and to the DEPSECDEF memorandum implementing these findings.

  – *U.S. Army*

    Within the Army, the DARCOM established and implemented comprehensive application and tailoring procedures by letter dated 25 September 1975 to its major subordinate commands and program managers. These procedures:

    - identified specific specifications and standards to be tailored
    - charged the Data Requirements Review Boards with responsibility to verify application/tailoring accomplished in RFPs
    - required formal certification of tailoring by functional technical groups
    - required the retention of formal records reflecting the degree of tailoring.

    Implementation of the subordinate command level has been accomplished, for example, by the Army Electronics Command under Command letter, dated 4 February 1976, to subordinate Directorates, Laboratories and Program Managers, and by the Army Missiles Command by MICOM Regulation 1-36, dated 5 January 1976.

  – *U.S. Navy*

    Navy implementation was in the form of a letter from Chief of Naval Material to its subordinate commands, dated 7 October 1975, which imposed

the policies prescribed in the OSD memorandum. The subordinate system commands have taken several actions to implement these policies. Examples are as follows:

- NAVELEX took action to establish a formal management level review board charged with responsibility for implementing the instruction from CNM.

- NAVAIR employed an Ad Hoc committee to conduct a management review of existing procedures for the application/tailoring of specifications and standards. A draft Instruction is in process of approval to charge specifications/standards review boards with the responsibility for implementation of the CNM instructions. NAVAIR has also held formal seminars with contractors and industry associations to obtain their recommendations on priorities and recommendations for improving specifications and standards used in weapon system acquisition.

— *U.S. Air Force*

Air Force implementation was achieved through the issuance of Air Force Systems Command Regulation 800-25, dated 12 June 1975, titled "*Application of Military Specifications and Standards to DoD Procurements.*" Subsequent to the issuance of that regulation, the AFSC identified 13 major objectives/initiatives designed to implement the Task Force findings. These included matters such as:

- developing tailoring techniques,

- improving education/training programs,

- development of contractor incentives and development of an expanded SOW preparation guide.

These initiatives are actively being implemented by the various divisions within the AFSC. In addition:

- handbooks or guides covering the detailed procedures of application and tailoring of specifications and standards have been developed by a number of Air Force subordinate commands, including ASD and SAMSO and other AFSC Divisions.

— *Defense Supply Agency*

While the Defense Supply Agency is not directly involved in the initial steps of major weapon systems acquisition, (i.e., preparation of DCPs and RFPs, system specifications, statements of work etc.), DSA must and does, in fact, utilize cost-effective acquisition procedures in their mission of supply support and contract administration. Typical of their efforts to reduce total DoD acquisition/investment costs are the Military Parts Control Advisory Group activities now employed at two of the major Supply Centers. These groups review proposed lists of parts to be used in new weapons systems and make recommendations of parts substitutions to progam managers and prime contractors. Their purpose is to avoid or prevent the introduction of unnecessary varieties and sizes of parts into weapons systems during design and development. Also, the advisory groups, as a result of the information being received on latest technology, provide specification coverage reflecting current design requirements and serve as a central information source for use Defense-wide. The Defense Supply Agency has experienced very high success in this program, achieving a return on investment of over 100:1. In Fiscal Year 1976, cost avoidance savings in excess of $174 million were achieved largely by identifying, recommending and causing the adoption and use of parts already in the supply system.

The Defense Supply Agency has devoted a significant amount of effort to planning and programming specification development for which they are the responsible manager. Program plans have been developed in all key areas outlining priority of effort and schedules for completion. These plans are coordinated with the Military Departments and interested industry associations and professional societies.

FUTURE INITIATIVES

- **Specification Tiering:**

The existing practice of "specification tiering" is cumbersome and can be costly when it leads to misapplication of military requirements in the system specification.

A means must be found to significantly reduce the impact of the tiering practice. Consideration will be given to one or more of the following:

- An ASPR clause which provides that *necessary requirements only will be cited in RFPs/Contracts, and that referenced specifications are for guidance only.*

- *Develop a means to limit the verification of compliance.*

- **Flow Down to Subcontractors:**

Present policies and procedures governing application and tailoring of specifications and standards are mainly directed at the prime or systems contractor. The tailoring philosophy has equal merit and application to specifications used by the prime contractor in dealing with his subcontractors. However, it does have a point of diminishing returns. Policies will be developed to assure that the application/tailoring concept is invoked by the prime, with considerations of the levels to which it will be carried. A method of verification will also be devised.

- **Specification Controls for Non-DODISS Specifications/Standards Cost Drivers:**

A study is planned to identify other requirements and areas that drive costs but do not have their origin in the DODISS specifications and standards. Examples of these include business, financial, performance and management data requirements as well as specification/standards, "slash sheets," program/service peculiar handbooks, guides, manuals, etc. that may have a potential bearing on the technical and cost aspects of the system/contract. The effect of these requirements on cost will be determined, together with appropriate controls, where necessary.

- **Accomplishing Quantitative Measurement:**

Methods to quantify the beneficial results of proper application/tailoring of specifications and standards in systems acquisition programs are desirable. Ideally, these results should be quantified in dollars, representing costs avoided or cost savings. A method for measuring, recording, verifying, auditing and reporting will be considered.

- **Criteria for Small Dollar Procurement:**

At the present time, DoD emphasis on the application and tailoring process has been directed toward major weapons systems, those subject to the DSARC review. Future attention will be paid to lower dollar value programs with con-

sideration given to modified procedures to accommodate these less complex systems/equipments.

- **Problems Associated with Maintenance of Tailoring Actions:**

  Although policies and procedures have been established to assure that cost-effective application and tailoring of specifications and standards is accomplished early in the system acquisition cycle (System Specification/SOW), a system of controls must be developed and imposed to protect the degree of tailoring accomplished. Pre-award negotiations and downstream contractual changes could become the avenue for reimposing requirements previously tailored. A means will be established to control and challenge such actions to assure that excessive, unnecessary costs are not reintroduced.

GENERAL CONCLUSIONS

Specifications and Standards should not and cannot be eliminated from the DoD procurement system. However, the cost of their development and application can be reduced if:

- DoD will institute an effective program to introduce flexibility, judgment, and contractual latitude and incentives in the application of specifications.

- Industry will work with DoD to reduce the cost of conformance by modifying practices and systems to comply without increasing cost, and is encouraged to feed back cases of unreasonable requirements, and recommended alternatives.

- Education, motivation and publicity and, above all, leadership, are applied in the development and application of specifications and standards.

The Defense Standardization Program (DSP) should be a positive force within DoD. The progress made at DESC on electronic parts standardization demonstrates what strong management attention can accomplish. The potential impact that DISC can exert on mechanical standardization during the transition from English to Metric units is significant for both military and commercial industry. Stronger management attention to the DSP is required. Definition, staffing and overall strengthening of DMSSB/DMSSO to serve as DoD's executive agency in carrying out these suggestions is a necessary first step.

The Task Force recommendations, summarized in Appendix B, indicate directions in which the DSP should be steered to improve the generation and application of specifications. But the world of standardization is a world of myriad detail agitated by conflicting interests. Only competent, objective attention to detail, expanded by broad exposure to examples of good practice and coupled with forceful management direction, can produce the potential savings inherent through a revitalized Defense Standardization Program.

The Task Force believes the climate is right to realize the gains which can come from a common sense approach to specifications and standards. The potential for badly needed savings is real and achievable.

APPENDIX A

*REPRESENTATIVE LIST OF POTENTIAL COST DRIVER SPECIFICATIONS/STANDARDS

GENERAL DESIGN REQUIREMENTS

NUMBER		DATE	TITLE	P.A.
MIL-E-917D	(L)	12-16-66	Electric Power Equipment, Basic Requirements (Naval Shipboard)	N-SH
MIL-I-983E	(L)	12-22-67	Interior Communication Equipment Naval Shipboard, Design Requirements	N-SH
MIL-E-4158E	(L)	1-11-73	Electronic Equipment, Ground, General Requirements for	A-17,RADC
MIL-E-5400D		7-02-73	Electronic Equipment, Airborne, General Specification for	N-AS
MIL-E-8189G		7-02-73	Electronic Equipment, Missiles, Boosters and Allied Vehicles, General Specification for	N-AS
MIL-E-8983B		7-02-73	Electronic Equipment, Aerospace, Extended Space Environment General Specification for	AF-19,SAMSO
MIL-P-11268I	(L)	11-09-73	Parts, Materials and Processes Used in Electronic Equipment	A-EL
MIL-E-11991C	(L)	10-30-70	Electrical-Electronic Equipment, Surface Guided, Missile Weapon Systems, General Specification for	A-MI
MIL-W-13855		2-22-74	Weapon, Small Arms and Aircraft Subsystems, General Spec for	A-WC
MIL-E-16400F	(L)	12-14-74	Electronic Equipment, Naval Ship and Shore, General Spec for	N-SH
MIL-F-18870D	(L)	8-18-70	Fire Control Equipment, Naval Ship and Shore, General Spec for	N-OS
MIL-T-21200L		7-02-73	Test Equipment for Use with Electronic and Electrical Equipment General Specification for	N-AS
MIL-V-38352		1-20-65	Value Engineering Program Requirements	AF-11
MIL-STD-188C		11-24-69	Military Communications Systems Technical Standards	A-EL
MIL-STD-454D		11-01-74	Standard General Requirements for Electronic Equipment	AF-10
MIL-STD-704		4-11-73	Electric Power, Aircraft Characteristics and Utilization of	N-AS
MIL-STD-1378A	(L)	3-14-74	Requirements for Employing Standard Hardware Program Modules	N-EC
MIL-STD-1474	(L)	3-03-75	Noise Limits for Army Material	A-MI
MIL-STD-1521		9-01-72	Technical Reviews and Audits for Systems, Equipment, Comp PRG	AF-13,ESD
MIL-HDBK-300C		7-01-74	Technical Information File of Ground Support Equipment	N-AS
MIL-E-6051		7-05-68	Electromagnetic Compatibility Requirements, Systems	AF-11

NOTE:
(This is an initial list identified by DMSSO as a first step and is by no means totally conclusive or definitive of the total potential for cost-driving embodied in the DoDISS).

ENVIRONMENTAL REQUIREMENTS AND TEST METHODS

NUMBER		DATE	TITLE	P.A.
MIL-S-901C	(L)	9-05-63	Shock Tests (Hi Impact) Shipboard Machinery, Equipments & Systems Requirements for	N-SH
MIL-E-6051D		7-05-68	Electromagnetic Compatibility Requirements, Systems	AF-11,ASD
MIL-P-9673B	(L)	9-15-71	Radiation Limits, Microwave and X-Radiation Generated by Ground Electronic Equipment (as related to personnel safety)	AF-26
MIL-STD-167B	(L)	5-01-74	Mechanical Vibrations of Shipboard Equipments	N-SH
MIL-STD-202E		11-12-74	Test Methods for Electronic and Electrical Component Parts	A-EL
MIL-STD-210B		12-15-73	Climatic Extremes for Military Equipment	AF-13,EDS
MIL-STD-449		2-22-73	Radio Frequency Spectrum Characteristics, Measure of	N-EC
MIL-STD-461D		2-09-71	Electromagnetic Interference Characteristics, Req. for Equipment	N-EC
MIL-STD-462		2-04-71	Electromagnetic Interference Characteristics Measurement of	AF-11,ASD
MIL-STD-469		3-30-67	Radar Engineering Design Requirements, Electromagnetic Capability	N-SH
MIL-STD-750		2-09-73	Test Methods for Semiconductor Devices	N-EC
MIL-STD-810C		3-10-75	Environmental Test Methods	AF-11ASD
MIL-STD-826A		5-01-70	Electromanetic Interference Test Requirements and Test Methods	AF-11,ASD
MIL-STD-831		8-28-63	Test Reports, Preparation of	AF-11
MIL-STDR-847		6-21-74	Format Requirements for Scientific and .... Technical Reports (Short Title)	AF-11
MIL-STD-883A		11-15-74	Test Methods and Procedures for Microelectronics	AF-11,RADC
MIL-STD-1364B	(L)	4-26-74	Preferred General Purpose Electronic Test Equipment	N-EC
AR 70-38		P 7-20-71	DoD Food Research, Development Testing & Engineering Program (Joint Reg w/OPNAVINST 39 26/AFR80-52/MC03900.9/DSAR 3200.4)	DCSRD-A

RELIABILITY—MAINTAINABILITY

NUMBER		DATE	TITLE	P.A.
MIL-QR-2273C	(L)	11-12-73	Reliability Requirements for Shipboard Electronic Equipment	N-SH
MIL-STD-470		3-21-66	Maintainability Program Requirement (for Systems and Equipment)	AF-10
MIL-STD-471A		1-10-75	Maintainability Demonstration	AF-17
MIL-STD-690		8-01-74	Failure Rate Sampling Plans and Procedures	A-EL
MIL-STD-756A		9-17-61	Reliability Prediction	N-AS
MIL-STD-757		6-19-64	Reliability Evaluation from Demonstration Data	N-AS
MIL-STD-781B		7-28-69	Reliability Tests, Exponential Distribution	N-AS
MIL-STD-785A		3-28-69	Reliability Program for Systems and Equipment Development and Production	AF-11
MIL-STD-790		4-18-68	Reliability Assurance Program for Electronic Parts Specifications	N-EC
MIL-HDBK-217B		9-20-74	Reliability Prediction of Electronic Equipment	AF-17
MIL HDBK-472		5-24-66	Maintainability Handbook	N-AS
QR-800-D		6-01-75	Reliability Program for Systems and Equipment Development and Production (Army MICOM Purchase Description)	A-MI

QUALITY CONTROL—INSPECTION—CALIBRATION

NUMBER		DATE	TITLE	P.A.
MIL-Q-9858A		12-16-63	Quality Program Requirements	AF-01
MIL-G-10944		5-16-69	Gage, Dimensional Control	A-MU
MIL-P-21549B		6-10-63	Product Quality Program Requirements for Fleet Ballistic Missile Weapon System Contractors	N-OS
MIL-I-45208A		12-16-63	Inspection System Requirements	A-MU
MIL-I-45607	(L)	1-22-70	Inspection Equipment, Acquisition, Maintenance ... and Disposal of	A-MU
MIL-C-45662A		2-09-62	Calibration System Requirements	A-MI
MIL-T-50301	(L)	5-06-69	Technical Data, Quality Control Requirements for	A-MU
MIL-STD-105		3-20-64	Sampling Procedures and Tables for Inspection by Attributes	A-EA
MIL-STD-109		4-04-69	Quality Assurance Terms and Definitions	N-SH
MIL-STD-414		5-08-68	Sampling Procedures and Tables (Short Title)	N-OS
MIL-STD-1235	(L)	6-28-74	Single and Multilevel Continuous Sampling Procedures (Short Title)	A-PA
MIL-STD-1520	(L)	5-01-74	Corrective Action and Disposition System for Nonconforming Material	AF-05
MIL-STD-1535A	(L)	2-01-74	Supplier Quality Assurance Program Requirements	AF-10

HUMAN ENGINEERING—SAFETY

NUMBER	DATE	TITLE	P.A.
MIL-H-46855A	5-02-72	Human Engineering Requirements for Military Systems, Equipment and Facilities	A-MI
MIL-STD-882	7-15-69	System Safety Progam for Systems and Equipment, Requirement for	AF-10
MIL-STD-1472A	5-15-70	Human Engineering Design Criteria for Military Systems, Equipment and Facilities	A-MI

DOCUMENTATION—STANDARDIZATION

NUMBER		DATE	TITLE	P.A.
MIL-D-1000A		10-15-75	Drawing, Engineering and Associated List	A-MC
MIL-M-38761		10-01-70	Microfilming—Photographing of (Short Title)	AF-26
MIL-M-38784		4-15-75	Manual, Technical, General Requirements (Short Title)	AF-16
MIL-T-38804	(L)	7-31-72	Time Compliance Technical Orders (TCTOs), Preparation of	AF-16
MIL-M-63041		5-01-74	Manual, Technical Content Requirements (Short Title)	A-TM
MIL-S-83490		10-30-68	Specifications, Types and Forms	AF-10
MIL-T-60530	(L)	2-19-71	Technical Data Package for AMC Materiel	A-MC
MIL-M-63001		9-01-73	Manual Technical Base, ISSWG Items (Short Title)	A-TM
MIL-STD-35	(L)	2-07-75	Automated Engr Document Preparation System	A-MI
MIL-STD-100A		11-01-67	Engineering Drawing Practices	A-MC
MIL-STD-143B		11-12-69	Standards and Specifications, Order of Precedence for the Selection of	AF-11,ASD
MIL-STD-155		8-05-55	Joint Photographic Type Designation System	AF-11
MIL-STD-196C		11-14-72	Joint Electronics Type Designation System	A-EL
MIL-STD-490		5-18-72	Specification Practices	AF-10
MIL-STD-499A		5-01-74	System Egineering Management	AF-10
MIL-STD-680		4-27-71	Contractor Standardization Plans and Management	N-AS
MIL-STD-749B		12-14-70	Prep and Submission of Data for Approval of Non-Standard Parts	N-EC
MIL-STD-804		8-15-66	Format and Coding of Tabulating & Aperature Cards for EDMS	A-EL
MIL-STD-875		4-30-74	Type Designation System for Aeronautical Equipment (Short Title)	AF-11
MIL-STD-885B		10-22-71	Procurement Data Packages	AF-11,ASD
MIL-STD-891B		3-10-75	Contractor Parts Control and Standardization Program	AF-10
MIL-STD-1304A		10-31-69	Reliability Report	N-AS
MIL-STD-1470	(L)	10-15-74	Guided Missile Preferred Item List, Electronic (Short Title)	A-MI
MIL-STD-1471		7-01-75	Guided Missile Preferred Item List, Mechanical (Short Title)	A-MI
MIL-STD-1528		8-01-72	Production Management	AF-10
MIL-STD-1631A	(L)	9-28-73	Procedure for Selection of Electric Parts During Equip. Design	N-EL

CONFIGURATION CONTROL

NUMBER		DATE	TITLE	P.A.
MIL-STD-480		10-30-68	Configuration Control - Engineering Changes, Deviations & Waivers	N-AS
MIL-STD-481A		10-18-72	Configuration Control - Engineering Changes, Deviations & Waivers (Short Form)	N-AS
MIL-STD-482A		4-01-74	Configuration Status Accounting, Data Elect. and Related Features	N-OS
MIL-STD-483	(L)	12-31-70	Configuration Management Practices for Systems, Equipment Munitions, and Computer Programs	AF-10
MIL-STD-1456	(L)	1-25-72	Contractor Configuration Management Plans	A-MC

PACKING, PACKAGING, PRESERVATION, TRANSPORT

NUMBER		DATE	TITLE	P.A.
MIL-P-116F		2-01-73	Preservation-Packaging Methods of	N-AS
MIL-C-3774		9-21-62	Crate, Wood, Open, 12,000 and 16,000	A-ME
MIL-M-8090F		2-01-74	Mobility, Towed Aerospace Ground Equipment, General Spec for	AF-11
MIL-A-8421F		10-25-71	Air Transportability Requirements, General Specification for	AF-11
MIL-P-9024G		6-06-72	Packaging, Materials Handling & Transportability, System and System Segments, General Specification for	AF-11
MIL-M-13231	(L)	11-11-71	Marking of Electronic Items	A-EL
MIL-P-14232	(L)	10-02-74	Parts Equipment & Tools etc., Packaging & Packing of (Short Title) ...	A-AT
7-10-63				
MIL-D-46845	(L)	2-12-68	Design Requirements for Missile Weapons Systems, Packaging & Packing	A-MI
MIL-S-55565		8-13-73	Microcircuits, Preparation of Delivery For	A-EL
MIL-STD-129F		3-30-75	Marking for Shipment and Storage	A-SM
MIL-STD-130D		3-05-71	Identification Marking of U.S. Military Property	AF-16,AFLC
MIL-STD-281		11-23-65	Automobile Trucks, etc., Preservation & Packaging (Short Title) ...	A-AT
MIL-STD-726E		12-16-74	Packaging Requirement Codes	N-AS
MIL-STD-731		10-12-70	Quality of Wood Members of Containers and Pallets	A-ME
MIL-STD-794D		12-18-75	Parts and Equipment, Procedures for Packaging and Packing	N-AS
MIL-STD-834C		12-10-74	Packaging Data Forms, Instruction for Preparation and Use of	AF-69

APPENDIX B
SUMMARY OF RECOMMENDATIONS/ACTION COGNIZANCE

	RECOMMENDATIONS	ACTION	STATUS
IMPROVED APPLICATION			
2-1	Tailoring should take place throughout a program's life cycle.	DMSSO	Proposed DoDD
2-2	The Services should prepare guidelines for selecting, tailoring and applying management systems, data requirements, specifications and standards to assist personnel.	DMSSO	Underway
2-3	DoD should require that potential "Cost Driver" specifications be identified and tailored during preparation of the RFP for a program.	DMSSO	Proposed DoDD
2-4	DoD should encourage contractors, through ASPR provisions, to identify cost-effective alternatives to specifications contained in an RFP.	DMSSO/ and Functional Managers/ OASD-I&L (Procurement)	Proposed DoDD
2-5	DoD should eliminate the requirement for submission of pro-forma plans as part of a proposal.	Functional Managers	Future
2-6	DoD should develop contractual incentives through ASPR provisions to encourage tailoring of specifications throughout the life of the program.	Functional Managers/ OASD-I&L (Procurement)	Future
2-7	DoD should institute a program to identify and reduce the cost of demonstration of compliance to MIL SPECS.	Functional Managers	Future
2-8	DoD should institute a program and formulate a policy requiring identification and control of the proliferation and use of non-DoDISS technical requirements documents.	DMSSO/Comptroller	Future
2-9	DoD should incorporate, in ASPR and in its planned policy on Applications Tailoring, provisions which require specific management attention, controls and limits over the incorporation of documents called out by reference in other cited requirements documents.	DMSSO/ OASD-I&L (Procurement)	Proposed DoDD

	RECOMMENDATIONS (CONT'D)	ACTION	STATUS
2-10	For the above recommendations to be effective, DoD must institute a vigorous campaign to educate both government and contractor personnel and to publicize the intent of directives issued to implement the improved climate of application.	DMSSO	Underway Planned
	IMPROVED DEFENSE STANDARDIZATION MANAGEMENT		
3-1	The management of the DSP should be strengthened and focused.	DMSSO/DEPSO Committee	Underway
3-2	Use of DD 1426 Form and other mechanisms should be strengthened as sources of feedback on specifications and standards.	DMSSO	Underway
3-3	Each command should be required to compile and establish data bank, information, retrieval and feedback systems for recording changes to specifications authorized in contracts under its cognizance.	DMSSO	Future
3-4	DoD should encourage and continue to avail itself of support from industry organizations by formalizing channels of communications and providing for higher-echelon management review of points of disagreement.	DMSSO	Future
3-5	DoD should institute a comprehensive contract audits program to determine the degree to which the specifications application tailoring program has been contractually implemented, its problems and accomplishments.	Comptroller	Future
3-6	All major revisions to and all new specifications should be justified by a statement of intent and approved by DSP management prior to initiation of effort.	DMSSO	Future
3-7	DoD should work toward the development of national standards which satisfy military requirements in preference to an independent set of military standards.	DMSSO	Proposed DoDD
3-8	DoD must initiate and emphasize a program to reformat new and existing specifications and standards to facilitate the tailoring process.	DMSSO	Underway

RECOMMENDATIONS (CONT'D)	ACTION	STATUS
INDUSTRY SUPPORT/RETAIN DSB COGNIZANCE		
4-1 DoD should take the necessary steps to assure the retention in being of a DSB Task Force on Specifications and Standards which could periodically review the progress of the Defense Standardization Program by focusing on areas of particular concern to Government and Industry.	ODDR&E/I&L	Underway

APPENDIX C

LETTER, 8 DECEMBER 1976
AEROSPACE INDUSTRIES ASSOCIATION (AIA)

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.

1725 DE SALES STREET, N.W. WASHINGTON, D.C. 20036 TEL. 347-2315

OFFICE OF THE VICE PRESIDENT

December 8, 1976

Dr. Joseph F. Shea
Senior Vice President
Raytheon Company
141 Spring Street
Lexington, Massachusetts 92173

Dear Dr. Shea:

The AIA recognizes the constructive forward momentum generated by your Defense Science Board Task Force Study on Specifications and Standards. The Task Force has provided a means for industry and government to cooperatively evaluate and work toward improvement of the Defense Standardization Program. A productive working climate has evolved which can be the key to successful implementation of the study's recommendations.

The formation of a permanent Defense-Industry standardization working group would be a firm step toward preserving the productive climate and sustaining the momentum. The idea, though not new, is particularly timely because of the increased DOD and OFPP emphasis on better use of industry resources for standards development.

The benefits of such a high level working group are many. It would:

1. Provide a focal point for planning and implementing OFPP and DOD policies for improved use of existing private sector standards development capabilities to fulfill newly identified military needs.

2. Develop and recommend concepts to improve standardization management and provide immediate identification, within the complex private standards structure, of the organization or committee best suited to address a specific standardization problem.

3. Develop recommendations for improved industry responsiveness to innovation in military standardization policy and provide a direct, on the spot, means of alerting DOD to the practical aspects of DOD policy impact on industry.

4. Provide feedback on how well policies are being implemented.

5. Monitor compliance with DoD directives to remove contractual and how-to requirements from specifications and standards.

6. Provide an overseer capability similar to that provided by the Shea Panel for:

   a) Critical review of areas where plans and policies are not being developed in accordance with policies of the DOD.

   b) Supportive guidance and widespread favorable exposure of areas of exceptional performance.

In light of the above benefits and the timeliness of the idea, we suggest that your final report include a strong recommendation for the formation of a permanent Defense-Industry group to perform these vital functions. Such a group could be instrumental in carrying out the needed improvements so ably identified and reported by your Task Force. We stand ready to contribute to the development and implementation of this proposal.

Very truly yours,

AEROSPACE INDUSTRIES ASSOCIATION

C. Ronald Lowry
Vice President
Research & Technology

APPENDIX D

LETTER, 10 DECEMBER 1976
ELECTRONIC INDUSTRIES ASSOCIATION (EIA)

ELECTRONIC INDUSTRIES ASSOCIATION

2001 EYE STREET, N W
WASHINGTON, D C 20006

December 10, 1976

Dr. Joseph F. Shea
Senior Vice President
Raytheon Company
141 Spring Street
Lexington, MA 02173

Dear Dr. Shea:

The Government Division of EIA has followed with justified optimism the progress of the Defense Science Board Task Force on Specifications and Standards under your competent chairmanship.

Our observations have convinced us that the convening of DoD and Industry managers on a periodic basis to discuss problems and potential solutions has been a vital motivational factor. The public character of the meetings encouraged everyone to make that important extra effort.

We have provided comments to your group and to OFPP and OSD on several previous occasions. Based on recent conversations between Mr. Maher of your staff and Brent Hardesty, Chairman of our Technical Council, we are confident the DSB final report will adequately address the recommendations we have made.

The recommended improvements in the Defense Standardization Program now must be reduced to practice. The 16 September 1976 task group meeting unquestionably contributed to implementation; but, it is recognized DSB task groups are ad hoc. We are concerned that any planned "decommissioning" of your task group will create a void where there has been a positive catalyst. We must not lose the momentum achieved.

Therefore, we recommend that the final report of the Task Force contain a recommendation for follow-up periodic reviews of the adequacy of implementation. The reviews should be accomplished by a group led by the Defense Material Specifications and Standards Office that will be comprised of representatives of the OSD and the Services; and, designated representatives from the major Industry Associations who will serve in an advisory capacity. These reviews should be conducted once or twice a year with reports to the Assistant Secretary of Defense (I & L) and the Director Defense Research and Engineering. With regard to Industry representation, we are not locked in as to either arrangements or numbers. However, one concept might be for the AIA, EIA and NSIA to each appoint a couple of "generalist" type individuals to serve each calendar year.

Congratulations to the DSB Task Force members and to you for the excellent job done. Thank you for the opportunity to comment on the report as it progressed.

Very truly yours,

Jean A. Caffiaux
Staff Vice-President
Government Division

APPENDIX E

LETTER, 13 DECEMBER 1976
NATIONAL SECURITY INDUSTRIAL ASSOCIATION (NSIA)

THE RESEARCH AND ENGINEERING COMMITTEE
of the NATIONAL SECURITY INDUSTRIAL ASSOCIATION

UNION TRUST BUILDING
WASHINGTON, D.C. 20005

740 15TH STREET, N.W., SUITE 700
(202) 393-3620

December 13, 1976

Dr. Joseph F. Shea
Senior Vice President
Raytheon Company
141 Spring Street
Lexington, Massachusetts 02173

Dear Dr. Shea:

The Executive Committee of the National Security Industrial Association's Research and Engineering Committee has reviewed and supports the findings and recommendations to be included in the Final Report of the Defense Science Board Task Force on Specifications and Standards which you chaired.

Our observations concur with the key points identified on programs to improve the climate for application of Specifications and Standards including the awareness of "cost drivers" and identifying cost effective alternatives, and in improving the existing body of Specifications and Standards.

Recognizing that a number of the objectives of the suggested actions recommended have been sought by many in both DOD and industry, NSIA's Research and Engineering Committee suggests that an additional recommendation be included. This recommendation should be along the lines that a group be formally designated perhaps as part of the Defense Science Board to regularly review (possibly semi-annually or annually) the progress within DOD. The formal recognition of such a group could provide additional momentum in implementing the recommended actions. Another strong reason shared by the Committee supporting this recommendation is to assure DOD that the implementation of the Task Force recommendations are consistent and supportive of the intent of the DOD Directives 5000.1 and 5000.2 on "Major Systems Acquisitions" presently being revised.

Very truly yours,

Sol Matt

Sol Matt
Chairman

APPENDIX F

LETTER, 28 DECEMBER 1976
AMERICAN DEFENSE PREPAREDNESS ASSOCIATION (ADPA)

AMERICAN DEFENSE PREPAREDNESS ASSOCIATION

DEDICATED TO PEACE WITH SECURITY THROUGH DEFENSE PREPAREDNESS

UNION TRUST BUILDING, 15TH AND H STREETS, N. W., WASHINGTON, D. C. 20005
202-347-7250

Founded 1919

December 28, 1976

Dr. Joseph F. Shea
Senior Vice President
Raytheon Company
141 Spring Street
Lexington, Mass. 02173

Dear Dr. Shea:

The American Defense Preparedness Association has appreciated our association with your Defense Science Board Task Force study on Specifications and Standards. We feel you have provided valuable forward momentum to the defense standardization effort.

Now that your Task Force has completed its assigned mission this Association believes there is a need for a continuing body, reporting to the Secretary of Defense, the DDRE and the ASD(I&L), to continue the effort. We suggest that such a body be made up of individuals of approximately the same balance and managerial level as the present Task Force.

If we can lend support to this proposal, or to any future Task Force effort, please feel free to call upon us or upon any of our specialized divisions, sections or committees.

Sincerely,

Henry A. Miley, Jr.
General, U.S. Army (Retired)
Executive Vice President

APPENDIX G

MEMORANDUM, 4 AUGUST 1975
DEPUTY SECRETARY OF DEFENSE (DEPSECDEF)

THE DEPUTY SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

4 AUG 1975

MEMORANDUM FOR THE SECRETARIES OF THE MILITARY DEPARTMENTS

SUBJECT: Specifications/Standards Application

In November 1974, the Defense Science Board was asked to establish a Task Force to examine the impact of specifications and standards on materiel acquisition with the objective of reducing costs. The initial findings of the Task Force have confirmed my concern regarding the need for a coordinated and well managed control over the application of specifications and standards in the acquisition process of end item equipments and systems.

The Task Force has concluded that the content of specifications and standards are not the primary contributor to unnecessary contract costs although there is a continuing need for evolutionary improvement. The main cause of cost escalation was identified to be in the application, interpretation, demonstration of compliance and enforcement of specifications and standards in RFP's and contracts. This, therefore, is a fertile arena for effective cost reductions in the acquisition process.

In this context, it is recognized that among contributors to cost escalation, the major one is a finite group of specifications and standards which have one common characteristic; they do not pertain to a procurable end item. As a group, such specifications and standards should not be contractually invoked without a specific, coordinated "scrub and tailor" process.

The Task Force has labeled these documents as "cost drivers" which cover requirements in such areas as:

- General Design Requirement Specifications
- Configuration Control
- Quality Control
- Reliability and Maintainability
- Integrated Logistic Support
- Human Factors and Safety
- Environmental Requirements and Test Methods
- Documentation
- Packing, Packaging, Preservation, Transport

The Task Force further indicated that specific continuing management controls are required over the utilization of this group of specifications and standards in the acquisition process. The need for such controls and associated procedures were recognized in my memorandum of July 17, 1973, which requested the establishment of RFP/Contract Review Boards and my follow up memorandum of March 7, 1975. While actions taken to date thereto are steps in the right direction and are commendable, the concept and role of the Review Boards needs reassessment. The findings and recommendations of the Task Force have convinced me that further actions are desirable and should be pursued.

- Review and evaluate the process of establishing technical requirements for inclusion in RFP's and contracts. Extend the role of Review Boards, including participation at lower organizational levels. Specific emphasis should be on assuring coordination and interaction among the contributing technologies in the areas listed as "cost drivers."

- Institute procedures and policies to control blanket contractual imposition of such specifications and standards. These controls should be structured to force technical activities to tailor requirements to the essential, specific operational needs of the end item equipment or system.

- Publicize the cost effective benefits of such an effort and provide positive indication of management support and continuing commitment.

I have, therefore, instructed my staff to initiate appropriate procedures, regulations and policies in those areas and to implement measures to correct the problems identified by the Defense Science Board Task Force. The findings of the Task Force were presented in a briefing to your members of the Defense Materiel Specifications and Standards Board by Dr. Joseph F. Shea, Chairman of the Task Force.

I intend that this program be a coordinated effort. In this connection, I have instructed the Defense Materiel Specifications and Standards Office (DMSSO) to contact your staff members so as to promote and foster a mutually compatible program to institute effective cost reduction techniques in the acquisition process. I anticipate receiving feedback through the members of the Defense Materiel Specifications and Standards Board. Additionally, I am requesting a briefing from your Materiel Commanders with respect to progress within 120 days.

I cannot overemphasize my personal interest in this area and my desire that you assure continuing attention is given to the application of specifications and standards in the acquisition process.

W. P. Clements, Jr.

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DDR&E
ASD(C)
ASD(I&L)
ASD(PA&E)