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Integrated DoD Guide to Performance-Based Packaging Practices

Dated August 22, 2002

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Foreword

Since the end of the Cold War, the preference within the federal government has shifted from the acquisition of items developed exclusively for the government to the acquisition of commercial items. This change was necessary to take full advantage of available and evolving technological innovations. Increased reliance on commercial items and necessity to take advantage of technological innovations also extends to the use of commercial processes and practices when buying both commercial and non-commercial items. It is to the government's benefit to take a flexible approach to packaging requirements utilizing the commercial processes whenever possible.

This guide will assist government and industry personnel in applying flexible packaging practices to meet the requirements of new and legacy systems. It can be used as a tool for program managers, contracting officers, packaging specialists, and DCMA personnel to leverage commercial packaging practices, where possible, to meet defense packaging requirements. It will also prove useful in determining the appropriate form and process for employing packaging for both legacy and new systems.

With the impending manpower crisis in the federal workforce as a result of a large number of federal employees nearing retirement eligibility, it is imperative that knowledge about packaging practices be preserved in order to facilitate a basic institutional knowledge among newcomers. As an integrated resource tool across multi-functional lines, this guide will provide sufficient information to meet the needs of a large segment of readers with its contents. For others, the intent is to identify the additional resources and governing documentation that are relevant to the packaging body of knowledge.

This guidebook also includes an extensive list of appendices designed to serve as a quick reference dealing with issues discussed in the text.

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[Editor's note: The Table of Contents will be updated after final edit of the text.]

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Chapter 1:
The Packaging Environment

The logistics requirement for effective packaging methods has resulted in the refinement of standards for military packaging procedures and associated military specifications for materials and methods. Hard-learned lessons[1] from the use of traditional packaging that was unsuitable for the conditions encountered have been largely responsible for advancing the art, science and management of military packaging. However, an unintended consequence of highly effective military packaging practices has been the exclusion of packaging practices that have been developed in the commercial marketplace. In packaging, as in weapon systems, more effective, affordable results are possible through leveraging of commercial technology. Current packaging initiatives and their relation to Department of Defense (DoD) acquisition and logistics integration goals are a key interest for the DoD.

What Has Changed?

Significant strides have been made toward greater use of commercial packaging for defense supplies. The prior packaging paradigm was for government contracts to stipulate military specifications and standards for performance of work, including packaging. This occurred despite the fact that the contractor may have been manufacturing and packaging the same or similar items being used for like purposes in the commercial world. A shift in this paradigm is currently in process.

Policy and procedures have been changing to reflect Department of Defense preference for commercial packaging and performance-based specifications. The DoD 5000 series documents emphasize performance-based acquisition and the DoD Materiel Management Regulation (DoD 4140.1-R) directs the use of commercial packaging when it is cost effective and will withstand anticipated logistics conditions. Since 1994 military packaging specifications and standards have focused on performance. Many detailed and prescriptive specifications for packaging have been canceled in favor of performance specifications. MIL-STD-2073-1 DoD Standard Practice for Military Packaging was revised in 1996 and again in 1999 to simplify military packaging and promote the use of commercial packaging. Service specific documents are referenced in the appendices.

In 1998 DoD initiated a commercial packaging pilot program[2] to demonstrate greater use of commercial packaging in areas where military packaging was the norm. At this same time earlier efforts were beginning to show results. Commercial packaging was being extensively used, approaching 100%, in some commodity areas such as medical supplies and subsistence. Commercial packaging was also proving to be suitable for many supply classes and for most consumables except where military preservation requirements exceeded normal commercial

[1] An historical perspective of military packaging can be found in *The History and Significance of Military Packaging* by Joseph C. Maloney, Jr., DSMC Press Technical Report 1-96, Defense Systems Management College, Fort Belvoir, Virginia, April 1996.

[2] See Appendix A.

requirements. The Defense Logistics Agency has made extensive use of commercial packaging, estimating usage of commercial packaging in 90% of their transactions overall. The military services have also demonstrated expanded use of commercial packaging with significant percentages estimated by most buying commands.

The new philosophy dictates that commercial packaging may be used whenever feasible with the proviso that in some instances a military-unique solution is required. With adoption of performance-based specifications and standards, and acceptance of commercial practices, as well as the single process initiative (SPI), corporations may no longer need to maintain parallel packaging practices for government and industry clients.

The Single Process Initiative (SPI)

The process by which a Single Process Initiative (SPI) receives government approval requires the decision of a management council consisting of the Defense Contract Management Agency (DCMA), the Defense Contract Audit Agency (DCAA), the respective military departments and the contractor. If a process has been approved by the management council, and the procurement of a subsequent lot of the product is being procured, the previous decision to grant SPI status would still be in effect. These provisions are found in DFAR[3] 211.273-2. Packaging practices can be integrated into a single process initiative thereby streamlining the process of selecting the appropriate packaging and repeatedly dealing with packaging requirements between government and contractor.

With respect to solicitations, if there is a solicitation for a previously developed item, the solicitation should encourage the use of SPI as opposed to government specifications and standards. Included in the solicitation can be a discussion of what type of packaging should be used. When preparing solicitations DFAR 211.273-3 there is ample opportunity for the contracting officer to establish performance-based packaging requirements in the solicitation.

Combining and Integrating Commercial and Military Practices

Throughout the 1980s and 1990s, a number of studies, including the Packard Commission and the 1998 Defense Science Board (DSB) Task Force Sub-Panel on Research and Development Report, have reached the conclusion that DoD should adopt more commercial practices. Efforts such as the Federal Acquisition Streamlining Act, the Federal Acquisition Reform Act, and former Defense Secretary Perry's mandate to use performance-based and commercial specifications are notable steps in that direction.

The rationale behind integrating with industry practices comes from the following factors:

- Reduced funding for acquisition programs since the end of the Cold War.
- Consolidation of the defense industrial base.
- Diminishing opportunity for competition of certain commodities.

[3] Defense Federal Acquisition Regulation Supplement.

- High cost in resources and time in dealing with unique government regulations.

- Recognition that commercial products and practices can often be accepted for government use either as is, or with minor modifications.

- The government is not the big customer it used to be and cannot dictate marketing standards.

- Greater integration of commercial and military products, manufacturing and logistics processes.

The results of these factors have been less competition for government work in addition to an explosion of technology development within the private sector. Integration of commercial and military practices through the use of performance-based requirements and the acceptance of commercial practices, whenever practical, will assist the DoD in fielding more effective and affordable products with packaging. Industry can leverage the best of what industry has to offer.

Commercial Packaging

Today's business environment calls for the broader acceptance of alternative practices in order to leverage the innovation driven by the dynamics of the commercial marketplace. The rationale behind commercial packaging practices is that it fosters the integration of commercial and military practices which in turn results in cost savings to the government and a broader supplier base for defense needs. Additionally, it eliminates a barrier to suppliers who choose not to do business with the DoD because of unique military specifications and standards requirements. As more and more commercial items are adopted for military use, it is important to make effective use of the packaging processes associated with the commercial marketplace. ASTM 3951 is the DoD adopted commercial standard, however other commercial standards exist based on item commodity.

Accepting commercial packaging practices does not mean lowering standards or relaxing packaging performance requirements. Many commercial items, especially industrial items must meet stringent government standards for safety. For example, transportation of hazardous material requires that Department of Transportation regulations be followed. In addition, some of the specifications that govern commercial products are the same ones required for military products. Performance-based requirements are the key to specifying effective packaging.

Commercial items and practices can increase effective leveraging in logistics. Packaging is no exception. It is in the interest of the DoD and the packaging community to take advantage of the advances and innovations in the commercial sector in order to continue to provide affordable, effective equipment to the warfighter.

Commercial packaging practices take into account many of the same factors as military packaging during development. It is important to know what to expect from methods and materials of commercial packaging. Understanding commercial packaging is an important tool in being able to implement and carry out new packaging initiatives. Some of these factors include:

- Ensures acceptable standards of protection and preservation.
- Compatible with many military practices.
- Packaging development based on item protection and preservation requirements.
- Customer needs and economic factors are considered in package design and marking.
- Tailored to meet various customers' needs (i.e., wholesale distributors, retailers and consumers) in accordance with performance-based requirements.

The obvious challenge is to develop the appropriate commercial packaging requirements that meet the user's protection and preservation needs, taking into account the environment in which the product will be stored and employed. The packaging should meet all criteria to ensure effective storage and delivery for the requisite amount of time. There are few commercial items that require the kind of long-term storage in austere environments that are often necessities for military materiel. Developing or modifying commercial packaging requirements to meet such packaging and protection considerations may not be practical, or the associated cost may negate other cost savings for the government. A careful analysis is necessary to arrive at the proper decision.

Legacy systems present additional challenges when one tries to utilize commercial packaging. Before introducing commercial packaging for items that have previously been packaged to military specifications, it is important to develop a sound rationale that weighs the benefits and considers the acquisition and logistics impacts. If there is no significant return on the investment in a commercial packaging process, either in reduction of total ownership costs or improvement in customer wait time, it becomes difficult to justify the use of commercial packaging processes.

In the case of reparable items, it is also important to consider the impact on the packaging of the reparable for delivery to a point of repair and subsequent storage and reissue. Because reparable items may repeat this cycle many times, long life reusable containers should be considered.

Chapter 2:

Defining Requirements

Who Generates Requirements

This guide is not intended to detail the requirements generation process. The requirements for product packaging are derived from the item's characteristics and the warfighter's need in a military distribution environment. The overarching performance requirement is to ensure the protection and preservation of items of supply during handling, transport and storage. The operational parameters that describe the need are most commonly expressed in environmental and logistics terms. Operational commanders have the responsibility for generating these requirements in terms of the warfighter's need. They rely on users, maintainers and supply specialists to identify the essential requirements that apply to the expected deployment and use of an item.

Acquisition managers and packaging specialists translate the operational parameters into technical requirements and determine contract requirements to ensure effective packaging performance.[4] Program managers and logistics managers need to predict requirements in order to adequately identify, document, fund and contract for the government's requirements based on the environmental and logistics conditions of the item. They should avoid the use of the term "best commercial practice" and similar terms, when identifying packaging requirements. They should also specify the performance requirements that apply to specific weapons systems, components, equipment and other items, and encourage and approve the use of commercial materials and processes when their performance can be validated. This is particularly applicable to entire weapons systems and their major components (i.e., LRUs or WRAs) where high cost, fragility, size, weight or irregular shape or military criticality is an issue.

Rationale Behind Requirements

Accepting commercial packaging practices does not mean lowering standards; it does, however, require a performance-based approach to packaging requirements and the ability to evaluate adequacy of proposed packaging. The requirements for the packaging of military materiel are fundamental to the development of effective packaging. Packaging performance requirements need to be established by the cognizant packaging subject matter expert for solicitations, just as other performance-based requirements are established by the cognizant program and logistics managers and carried forward into solicitations and contracts.

Three criteria that can be used to determine the suitability of commercial packaging are: the nature of the item, the environment the packaging and packaged item will encounter,

[4] Packaging references and guidance are provided in Appendix B. Packaging of hazardous materials, preservation and other special considerations for packaging are addressed in Appendix C. Service and Agency specific references and guidance are provided in Appendices D through H.

and economic factors including the value of the item. Identification of essential packaging performance parameters hinges upon the ability to predict the environmental and logistics conditions to be encountered. In this way flexible packaging practices can be applied without lowering standards or compromising performance. Economic and operational considerations can be evaluated for impact on overall logistics needs and alternative methods employed with confidence. In addition, innovations and economies stemming from the commercial marketplace can be capitalized upon without extraordinary review and approval for relief from detailed government specifications.

Introducing Flexible Packaging Practices

Flexibility for a program to use commercial packaging practices hinges on the ability to identify the performance-based packaging requirements. The desired performance requirements must be stated in terms which will provide protection based on the anticipated transportation, handling and storage of the item. The ability to characterize the details of the logistics environment is essential. By avoiding "how-to" specifications, the supplier can focus on meeting performance-based packaging requirements using processes derived from experience with both military and non-military products. In this way the government is able to leverage the use of commercial packaging processes to meet military needs. Therefore, the expense related to the unique processing of government items can often be avoided. However, the contractor, in some cases, may elect to use MIL-STD-2073-1 compliant processes as their best practice.

Performance-Based Requirements

A well thought-out performance-based requirements description is essential to ensure the government receives packaging that meets the established requirements. Performance-based requirements descriptions state the government's required outcomes and provide criteria for measuring and verifying performance; they do not dictate the specific methods to be used to achieve those outcomes. Stating objectives, rather than prescribing "how to" perform the work, may allow previously unforeseen solutions in the commercial sector to fulfill the desired mission requirement.

Just as military packaging practices are a result of testing of designs, commercial packaging practices are also subject to their own developmental processes. The extent to which analytical or empirical methods are used in both military and commercial sectors may vary greatly, but the end result for both should be package performance. Commercial packaging must largely perform, at the suppliers' liability, until acceptance by the customer. For example, some industry standards provide for storage periods for a minimum of one year. This is a powerful incentive for industry to provide effective packaging and preservation. Therefore, the environment from destination to use is also considered. The government should predict the environment into which an item is going and the contractor should consider the military-unique packaging and preservation requirements. Manufacturers, in the absence of identifiable and quantifiable requirements, may mark packages with the known limitations such as shelf life, stacking height, temperature extremes or other environmental assumptions or limits. Contracts will need to have certain minimum requirements stipulated to avoid unacceptable shipping, storage and handling limitations.

Achieving a Balance

It should be the goal of every program to achieve a balance in the packaging practices that are employed. Effectiveness of the packaging protection, preservation and overall cost must be weighed. A good packaging program will define its needs in performance-based terms that specify the anticipated logistics environment and while considering the economic factors. In this way contractors will be able to employ effective commercial methods and materials to satisfy military requirements. This flexibility is essential in order to enable contractor innovation and to leverage market-driven advances. Receptive attitudes toward alternative commercial practices and early use of performance requirements will maximize the business incentive for contractor improvements in packaging.

While commercial packaging as practiced by many firms meets many DoD performance requirements, differences between commercial firms acting as sellers of goods, and DoD as a consumer, should be recognized. A manufacturer is motivated to move goods, to sell them, as soon as practical. Buyers from manufacturers are typically wholesalers or resellers with similar motivations. Thus long term storage, or protection from extreme environmental conditions is not a routine requirement in the commercial market place. Sellers are responsive to the stated requirements of their valued customers, packaging in different sizes, quantities, decorative styles, or for longer preservation, when a good customer makes those requirements known and competition, or the implicit threat of losing good business, is present. An astute seller will not increase costs through additional packaging expense absent recognition of buyers' requirements. DoD needs to make its needs known to the commercial market, to motivate sellers to utilize, and perhaps develop, packaging that meets DoD's needs, such as withstanding ravages of extreme environmental conditions, or long term storage, when those are anticipated.

Chapter 3:

Roles and Responsibilities

Integration of Program Roles

The key players may vary from program to program but it is the DoD program manager that is charged with leading the team's effort. The active roles and the focus of effort will shift during the various phases of a program around a core team of technical and business specialists. In all phases packaging will require the involvement of procurement and logistics team members. The team should include a packaging, handling, storage and transportation (PHS&T) subject matter expert to determine the applicable performance-based requirements. The PHS&T specialist will refine any routine, non-standard (e.g. environmental, handling) and any specific requirements (e.g. paradrop; ship-to-ship transfer).

The program manager may rely heavily on the team members to carry out the program packaging objectives but leadership of the government team and integration of the contractor's team is the responsibility of the program manager. The program manager must balance the technical aspects of the packaging requirements with the business aspects of the overall program while ensuring that the user's operational needs are met.

Logistics Responsibilities

It is not uncommon for a program manager to turn to a logistics manager to coordinate the program's packaging efforts. The logistics manager and packaging specialists are responsible for translating the operational requirements into technical requirements that will ensure effective packaging performance.

Performance-based packaging requirements are the key to introducing commercial packaging practices into the program. It is the logistics manager's and prime contractor or military packaging specialist's responsibility to facilitate the use of commercial packaging unless it is shown that proposed commercial packaging practices cannot provide adequate protection and preservation.

The logistics manager and packaging specialists have the opportunity to enable innovative contractor performance while incentivizing cost savings for the government. In order to make sound judgments regarding the suitability of commercial packaging practices they must be knowledgeable of customary commercial practices and environments. This may require more work in understanding and articulating that government requirements are the key to effective packaging. Specific performance-based engineered requirements and solutions may be needed to protect high value items such as aircraft jet engines and dynamic components, full, built-up weapons systems, and their major components.

Logistics managers should challenge packaging practices and adopt innovative techniques and processes. Anticipated item destination and interim shipment requirements must be communicated in the solicitation and contract. Proper logistics

planning early in the acquisition process ensures cost savings, fewer problems, and opportunities for alternative strategies.

Contracting Officer Responsibilities

Contracting officers have the responsibility to ensure that, to the extent a contract requirement specifies packaging in accordance with military specifications or standards, DFARS 211.272 and 211.273 requirements are followed, timely evaluation of proposed alternative packaging is facilitated, and cost savings are realized wherever available through acceptance of other than government specified packaging wherever such packaging meets performance requirements. Past performance evaluations should consider the effectiveness of non-government specified packaging utilized by contractors.

Contracting officers should be alert that the term "best commercial practice" without further description of the performance characteristics of the proposed material or process is generally unacceptable. They should refer such proposals to government subject matter experts for determination of suitability of the proposed material or process.

Contractor Responsibilities

The customer and contractor are dependent upon each other for the creation of value and success while meeting the warfighter's requirements. The government usually cannot efficiently produce the products and services it needs. Likewise, the government is an important market for defense contractors, who are dependent upon it for economic gains and returns. Customer and contractor both benefit when they consider themselves long-term partners rather than competitors. The contractor should be part of the program IPT to ensure requirements are adequately addressed in the program documentation.

The use of commercial packaging practices should not be the end objective for a program—it is a means to help achieve the objective of utilizing the most efficient packaging method that meets the desired program requirements. Consequently, management action to introduce the flexibility for a program to use commercial packaging practices would be expected to decrease costs. The contractor must resolve to identify any performance shortfalls that arise and take corrective action.

Chapter 4:
Liability

This chapter addresses general concepts regarding the division of liability with respect to military packaging specifications compared with performance-based packaging requirements. The topic of Liability and the related topic of Warranty are sufficiently complex that a program team should seek the advice of counsel if uncertain of the specific provisions required in the contract. Keep in mind that performance-based specifications require the contractor to provide packaging that meets the specified protection and preservation conditions. In contrast, military specifications and standards require the contractor to comply with specified processes, procedures and materials. The government accepts the risk that the resultant packaging will be effective if it is compliant.

Contractor Assumption of Liability

Unless the contract specifies otherwise, the contractor assumes liability for items packaged in accordance with the contractor's commercial practices when damage is the result of faulty packaging. The government may elect to conduct an in-process inspection if a contractor elects to utilize military specification packaging. Commercial packaging should be tested and approved in accordance with commercial practices.

The program manager and PHS&T specialist must determine the period of time and environment in which packaging is to be required to protect an item. The contracting officer will ensure that these performance requirements are included in the solicitation and contract in order to ensure that they are covered by either an express or an implied warranty. Failure to do so may require the government to repack an item so that it may be shipped to another or ultimate destination. The omission of specific time periods and environmental conditions forces the government to rely on the contractor's normal limited warranties which may be inadequate to protect the government's interests.

Government Assumption of Liability

The government accepts full responsibility for items packaged in accordance with military specifications and DoD standard practices for military packaging, once they have been accepted by the government. The contractor's responsibility is to package items in accordance with the military specifications and standards called out in the contract, and the government is responsible for loss when compliant packaging does not provide adequate protection. Although the contractor remains liable for defects or deficiencies in the delivered item that are not caused by inadequate military packaging or improper military handling, any issues as to non-compliant packaging should be resolved before acceptance if feasible.

In acquisition programs with unique military requirements for packaging, such as special containers or airdrop requirements, the government must identify the special requirements in the solicitation and contract. In such cases, the contractor should be

required to demonstrate the adequacy of its proposed packaging practices to the specific purpose and item.

Warranties

Warranties are a contractor's guarantee of proper performance of contract requirements that reduces the government's risk. If defective or inadequate commercial packaging results in damage to the item, a warranty allows the government to seek a remedy against the contractor. As previously noted, if packaging is done to a government specification or standard the government accepts responsibility for the effectiveness of that packaging and any warranties are available only if the contractor failed to comply with the government specification or standard. There are two general types of warranties: express and implied (as defined in the Federal Acquisition Regulation (FAR)).

Express Warranties

Express warranties are specific guarantees of performance by the contractor, usually limited in nature. An express warranty will often limit or exclude all other implied warranties to ensure that the express warranty is the only guarantee given by the contractor. Unless specifically excluded, an express warranty of an item would include its packaging.

In order to manage the government's risk, it is important that the logistics manager and contracting officer understand the extent of any express warranties, including exactly what the contractor is warranting and the full extent and any limitations or conditions of the warranty. Of particular interest are the scope and duration of the warranty and the specific remedies available to the government under it. An express warranty should provide a contractual right to correction of defects notwithstanding any other contract provisions dealing with acceptance of the supplies by the government. Also, an express warranty must not limit the government's rights with regard to latent defects discovered under an inspection clause of the contract. Where there are specific contract requirements for packaging in order to meet extended or extraordinary shipping, storage or environmental requirements, the contracting officer may seek to include these into an express warranty.

The FAR does not require express warranties but provides guidance that applies when a warranty is deemed appropriate for an acquisition. The Federal Acquisition Streamlining Act requires contracting officers to take full advantage of any commercial warranties offered by the contractor for replacement or repair of commercial items provided that the commercial warranty is deemed to be adequate and in the government's best interest.

The FAR should be reviewed when making determinations regarding the appropriateness of warranties on acquisitions of commercial items. It also provides information regarding the tailoring of commercially available warranties for inclusion in the contract terms and conditions. Logistics managers and contracting officers should ensure that the benefits from an express warranty are commensurate with the likely additional cost of the warranty to the government.

Implied Warranties

There are two types of unwritten, implied warranties that are imposed by operation of commercial law:

- The implied warranty of merchantability provides that an item is reasonably fit for the ordinary purposes for which such items are used. In the case of packaging, these ordinary purposes may vary depending on the extent and expected conditions of shipment and the length and conditions of storage. The implied warranty of merchantability for packaging of normal commercial items will be very different from that of packaging designed to protect items shipped overseas for long periods of expected storage in harsh environments.

- The implied warranty of fitness for a particular purpose provides that an item is fit for use for the particular purpose for which the government will use the items. To enforce this warranty, it is important that the government be able to prove that the contractor is aware of the particular purposes for which the government will use the warranted items. In the case of packaging, this would include the extent and expected conditions of shipment and the length and conditions of storage.

Remedies

Remedies are monetary compensation or other compensatory actions designed to minimize damage done to the government due to a failure of contract performance. Remedies under an express warranty will be as stated in the warranty. Remedies under an implied warranty will be as provided for in the law or as agreed to by the parties. Appropriate defective/deficient packaging remedies might include an equitable adjustment of the contract, repair or replacement of damaged items at the contractor's expense, or repackaging at the contractor’s expense.

In the area of packaging, logistics managers and contracting officers should evaluate the need for and the appropriate level of reliance upon an express warranty as compared with the implied warranties. When doing so, they should consider the types of remedies necessary to protect the interests of the government and consult with counsel to select the type of warranty that will provide that level of protection.

Appendix A
The Packaging Pilot Program

History

The Packaging Pilot Program, initiated in September 1998, has been conducted by a joint industry/government working group – the Packaging Integrated Product Team (IPT) – under the sponsorship of the Deputy Under Secretary of Defense (Acquisition Reform) and the Deputy Under Secretary of Defense (Logistics) to pursue possible opportunities for reducing packaging costs through the application of commercial packaging practices. General Electric and AlliedSignal (now Honeywell) were the initial participants in the pilot program and Raytheon has recently joined the program.

Pilot Program Objectives

The Packaging Pilot Program's overall objectives were to:

- Provide industry flexibility to use innovative packaging practices.
- Use best practices from both military and commercial environments.
- Deliver quality products with packaging that will provide protection within the military distribution system.
- Operate in a collaborative environment.
- Accelerate identification and application of performance-based packaging practices.
- Test the feasibility of integrating the commercial and military packaging processes at selected contractors.
- Evaluate commercial packaging methods for use with items that will enter the military distribution system.
- Develop lessons learned for applications.

The Packaging Pilot Program is an element of the Department of Defense (DoD) goal to foster integration of commercial and defense industrial practices and, where practical, to eliminate the distinction between doing business with the government and other buyers for the purpose of meeting future military, economic, and policy objectives in support of the DoD and the warfighter. The Packaging Pilot Program offers a model approach for more rapid experimentation and institutionalization of flexible packaging practices and performance-based requirements.

Pilot Program Contracting Provisions

Special contract provisions were established for segments of General Electric, Honeywell and Raytheon through the Single Process Initiatives (SPI) program. The Pilot Program Contracting Provisions included:

- If this contract or any order issued under this contract specifies that items to be delivered shall be packaged in accordance with a version of MIL-STD-2073-1 or any standard other than the contractor's commercial packaging practices, those packaging requirements shall be deemed to be for information only and not contractually binding except where specified. The contractor shall, instead, package such items in accordance with its standard commercial packaging methods adequate to prevent deterioration and physical damage to the item(s). The contractor's standard commercial packaging methods shall be the methods described in its Quality System manual or other written media which are based on the elements of ISO 9000.

- If specified by the government in this contract or any order issued under the contract, the contractor shall utilize reusable shipping containers provided the shipping container has been assigned a national stock number (NSN) and has been provided by the government as government furnished property (GFP) or procured by the government under this contract.

- Where F.O.B. Origin is specified, the government shall notify its carrier in accordance with its standard procedures upon discovery of any damage resulting from transportation of the items. Where F.O.B. Destination is specified, the government shall notify the contractor in accordance with its standard procedures upon discovery of any damage resulting from transportation of the items.

- The government shall notify the contractor of any concealed damage to the item(s) resulting from the failure of the contractor's packaging methods within 150 days of the discovery of the concealed damage or within 42 months of the date the contractor packed the items, whichever occurs first. The contractor shall repair or replace, at its option, any item the parties agree has been damaged as a result of the failure of the contractor's packaging methods, provided the government has exercised reasonable care in its transportation, handling and storage of the item(s) in the military distribution system.

- Any exception to the requirements of this clause shall be mutually agreed to by the parties.

Pilot Program Results

The results of the packaging pilot program indicate that savings are achievable. The participating sites have reported reductions in cycle time and material costs through consolidation, streamlining and innovative packaging methods and materials. All of this has been accomplished without any supply discrepancy reports attributable to packaging practices of the pilot program.

Successful attainment of the pilot program's objectives led to the recommendation for the provisions of the pilot program to be made permanent for the initial participants and for the expansion of the program to include other industry partners. The experience gained in this short period of time validated numerous changes and resulted in a closer alignment with the commercial marketplace. The pilot program achieved a greater integration of

military and commercial processes, improved the communication between the DoD and industry, and advanced the understanding of packaging requirements for our weapons systems through the implementation of flexible packaging practices.

Findings from the Pilot Program

- This pioneering effort has demonstrated the potential for greater use of commercial packaging practices.

- The new, more flexible packaging procedures can result in reduced packaging material costs, reductions in packaging times and increased government and industry productivity.

- The adoption of these new commercial packaging practices serves to align DoD packaging practices with that of their commercial counterparts, thereby encouraging broader industry participation and expanding DoD's supplier base.

- The success of the Packaging Pilot program has led to recommendations for the provisions from the pilot to be made permanent for program participants and that the program be expanded to include other industry partners.

- The adoption and expansion of packaging reforms promises to pay additional dividends in future years and serves as an example of how the DoD is improving its efficiency and effectiveness.

Benefits and Savings

The pilot program has measured two parameters that relate to the labor and material costs of packaging. The reduction in the cost of packaging material was a direct measure of costs compared to baseline material costs. Labor savings were indirectly measured by monitoring cycle time for the packaging operations. Both pilot contractors perceived increased productivity but demonstrated significantly different cycle time measurements. Reductions in cycle time and personnel require additional management action to result in savings.

What Other Benefits Can Be Derived?

The packaging pilot program offers the opportunity to consolidate and streamline packaging processes, to experiment with innovative packaging practices and materials and to leverage packaging advances in the commercial sector. It fosters the integration of the commercial and defense sectors of the industrial base and, where practical, eliminates the distinction between doing business with the government and other buyers. In this way it permits greater use of commercially available items (in customary commercial packaging and under customary commercial terms) and it broadens the supplier base. Suppliers that shun military requirements are better able to respond to the Department, and lower tier suppliers that have been unable to meet military requirements are now available to prime contractors. Of a less tangible nature, the packaging pilot program has improved the communication between the government and the contractors, increased the element of trust and provided a greater level of understanding by all parties.

JUN 21 2001

MEMORANDUM FOR COMPONENT ACQUISITION EXECUTIVES
DIRECTOR, DEFENSE CONTRACT AUDIT AGENCY
DIRECTOR, DEFENSE CONTRACT MANAGEMENT AGENCY
DIRECTOR, DEFENSE LOGISTICS AGENCY

SUBJECT: Packaging Pilot Completion for General Electric and Honeywell

For the past 24 months, General Electric (GE) and Honeywell have been participating in the Department's packaging pilot program to move Defense packaging practices to commercial practices. I commend all of those involved in this initiative from the Defense Contract Audit Agency, Defense Contract Management Agency, Defense Logistics Agency, the components and industry for your pioneering efforts to change Defense packaging practices. The pilot participants have demonstrated meaningful reductions in cycle time and material costs, and have significantly increased productivity within their packaging operations.

Accordingly, I direct the components to adopt these commercial packaging practices in all contracts with GE and Honeywell. Defense Contract Management Agency administrative contracting officers or the cognizant contracting officers should apply these practices to all new contracts and modifications reflecting the attached interim authority, addressing consideration as appropriate. This provision will remain in effect until the other changes I have directed in my June 2001 memorandum, subject, "Revisions to Department of Defense (DoD) Packaging Standards, Regulations and Guidance," institutionalize the revised packaging practices.

Please extend my appreciation to the packaging community for their support to those who have pioneered these changes in packaging practices. I look forward to additional reform and pilot program participation. My point of contact for this initiative in the Office of the Deputy Under Secretary of Defense (Acquisition Reform) is Craig Curtis, (703) 697-6399.

// Signed //
Dave Oliver

Interim Packaging Authority

General Electric (GE) and Honeywell (formerly AlliedSignal) are participants in an Interim Packaging Program designated by the Principal Deputy Under Secretary of Defense (Acquisition & Technology) related to the use of commercial packaging methods. The following contract language is to be included in all new contracts and modifications to implement this authority:

1. If this contract or any order issued under this contract specifies that items to be delivered shall be packaged in accordance with a version of MIL-STD-2073[5] or any standard other than the contractor's commercial packaging practices, those packaging requirements shall be deemed to be for information only and not contractually binding except where specified in accordance with paragraph 2. The contractor shall, instead, package such items in accordance with its standard commercial packaging methods adequate to prevent deterioration and physical damage to the item(s). The contractor's standard commercial packaging methods shall be the methods described in its Quality System manual or other written media which are based on the elements of ISO 9000.

2. If specified by the Government in this contract or any order issued under the contract, the contractor shall utilize reusable shipping containers provided the shipping container has been assigned a national stock number (NSN) and has been provided by the Government as Government Furnished Property (GFP) or procured by the Government under this contract.

3. Where F.O.B. Origin is specified, the Government shall notify its carrier in accordance with its standard procedures upon discovery of any damage resulting from transportation of the items. Where F.O.B. Destination is specified, the Government shall notify the contractor in accordance with its standard procedures upon discovery of any damage resulting from transportation of the items.

4. The Government shall notify the contractor of any concealed damage to the item(s) resulting from the failure of the contractor's packaging methods within 150 days of the discovery of the concealed damage or within 42 months of the date the contractor packed the items, whichever occurs first. The contractor shall repair or replace, at its option, any item the parties agree has been damaged as a result of the failure of the contractor's packaging methods, provided the Government has exercised reasonable care in its transportation, handling and storage of the item(s) in the military distribution system.

5. Any exception to the requirements of this clause shall be mutually agreed to by the parties.

[5] MIL-STD-2073 in this memorandum refers to MIL-STD-2073-1 Department of Defense Standard Practice for Military Packaging.

JUN 21 2001

MEMORANDUM FOR COMPONENT ACQUISITION EXECUTIVE
ACTING DEPUTY UNDER SECRETARY OF DEFENSE (ACQUISITION REFORM)
DEPUTY UNDER SECRETARY OF DEFENSE (LOGISTICS, MATERIEL READINESS)
DIRECTOR, ACQUISITION RESOURCES AND ANALYSIS
DIRECTOR, DEFENSE LOGISTICS AGENCY
DIRECTOR, DEFENSE CONTRACT MANAGEMENT AGENCY
DIRECTOR, DEFENSE CONTRACT AUDIT AGENCY
DIRECTOR, DEFENSE PROCUREMENT

SUBJECT: Revisions to Department of Defense (DoD) Packaging Standards, Regulations and Guidance

Progress to the Department's Packaging practices has been made, yet there is greater potential for further reforms to military unique packaging practices. The draft changes, as addressed in the attachment, have been made to reinforce the Department's policy of reducing costs, eliminating barriers to doing business with the Department and to enable making common sense decisions about the applicability of military packaging requirements.

I appreciate the comments received in response to my December 29, 2000 memorandum which requested comments on changes to MIL-STD-2073[6]. In accordance with the recommendations, I direct the following:

Acting Deputy Under Secretary Of Defense (Acquisition Reform), assisted by Director, Defense Procurement, shall develop a Defense Federal Acquisition Regulation Supplement case to ensure contracts are structured to default to commercial packaging practices.

DUSD(Logistics, Materiel Readiness) (DUSD(L,MR)) and ADUSD(Logistics Plans & Programs) (LP&P), assisted by DUSD(AR), shall coordinate changes to MIL-STD-2073, DoD Standard Practice for Military Packaging, that will further clarify that the default packaging practice is commercial. The changes should be implemented through the Defense Standards Improvement Council (DSIC) and managed by your office. Additionally, you shall coordinate changes to the DoD 4140.1-R, DoD Materiel Management Regulation to ensure that only military packaging requirements are appropriately referred to MIL-STD-2073.

Director, Acquisition Resources and Analysis, assisted by DUSD(AR), shall coordinate changes into the DoD 5000 policy series to ensure packaging requirements are programmatically addressed.

[6] MIL-STD-2073 in this memorandum refers to MIL-STD-2073-1 Department of Defense Standard Practice for Military Packaging.

After implementation of the changes directed in this document and the supporting offices, the components shall develop new supporting guidance implementing the changes directed above.

The changes, as highlighted in Attachment 1, will significantly reduce the roles played by Service and component organizations that specialize in packaging requirements development, training and certification. A list of packaging-related organizations are listed Attachment 2.

These modifications are important and will require you to dedicate the resources necessary to expedite the revisions. My point of contact for this initiative in ODUSD(Acquisition Reform) is Craig Curtis, (703) 697-6399.

// Signed //
Dave Oliver

Attachment:
As Stated

cc:
General Counsel Of The Department Of Defense
Defense Acquisition Policy Steering Group
Defense Acquisition Policy Working Group

Sample Commercial Packaging Program Plan

Commercial Packaging Pilot Program
Pilot Program Description and Implementation Plan

1. **Purpose of this paper:** This Pilot Program Description and Implementation Plan documents [pilot contractor name] intent to participate in the DoD sponsored Commercial Packaging Pilot Program. This plan evolved from the various meetings, briefings and discussions between [pilot contractor name] and members of the DoD Packaging IPT.

2. **Background:** On September 10, 1998, The Deputy Under Secretary of Defense (Acquisition & Technology) (DUSD(AR)) and the Deputy Under Secretary of Defense (Logistics) (DUSD(L)) initiated a Pilot Program related to the packaging of items sold to the Department of Defense. The purpose of the Pilot Program is threefold:

- Test the feasibility of integrating the commercial and military packaging processes at selected contractors;
- Evaluate commercial packaging methods for use with items that will enter the military distribution system; and
- Develop lessons learned for application to government packaging practices.

On October 7, 1998, General Electric and AlliedSignal (later Honeywell) were selected to participate in this Pilot Program. A formal Charter for the Pilot Program was signed on October 29, 1998 by the Principal Deputy Under Secretary of Defense for Acquisition, Technology and Logistics (PDUSD(AT&L)). On December 14, 1998, the DoD SPI Executive Council concurred with the execution of the Pilot Program.

The PDUSD(AT&L) approved the commercial packaging pilot program by memorandum to the Service Acquisition Executives, DCAA and DLA dated March 5, 1999. The block change implementing the pilot program at GE and AlliedSignal was issued on May 3, 1999.

Progress made by the pilot program contractors was recognized by the PDUSD(AT&L) in June 2001. Since that time the pilot program has been opened up to permit participation by other contractors.

3. **Period of Pilot Program:** This Pilot Program is authorized for 3 years from the date of the implementing Block Change contract modifications, unless terminated earlier. Termination of this Pilot Program shall be by mutual agreement of DoD and [pilot contractor name]. At the conclusion of the initial three year Pilot Program, the parties may mutually agree to continue the Pilot Program if doing so is deemed beneficial for both parties. Once the Pilot Program is complete, or if agreement has been reached to terminate the Pilot prior to that date, [pilot contractor name] shall be afforded a maximum of six months to return its packaging processes and materials to compliance with the then current version of MIL-STD-2073-1. Adjustments in contract costs may be necessary to accommodate this return to military packaging practices.

4. **Relationship of the Pilot Program to the DoD Single Process Initiative (SPI):**
- The SPI "Block Change" process was used to implement the Pilot Program in all existing [pilot contractor name] contracts as described below.

5. **Affected facilities:** Once approved, the Pilot Program is planned to be implemented on all US Government contracts at the following [pilot contractor name] sites:
[list facilities by CAGE codes]

In addition, [pilot contractor name] may, during the life of the Pilot Program, notify the government that it intends to expand the implementation of the Commercial Packaging Pilot Program to include additional [pilot contractor name] sites. The appropriate DCMA organization shall, in a timely manner and without the requirement for additional higher-level approvals, modify affected contracts at those additional sites to incorporate the approved Pilot Program contract language. Packaging of items at [pilot contractor name] subcontractors shall be at [pilot contractor name] discretion and in accordance with the terms of the [pilot contractor name] subcontract.

6. **Affected items:** This Pilot Program applies to all items (spare parts, repaired components, assemblies, sub-assemblies, etc.) required to be packaged in accordance with a version of MIL-STD-2073-1 or any government-specified standard other than the contractor's commercial packaging practices. Items that require packaging in accordance with the contractor's best commercial packaging or other similar language are not affected by this Pilot Program. The packaging of full-up missiles and other types of ordnance is outside the boundaries of the Pilot Program.

7. **Implementing the Pilot Program in contracts/orders:** To adequately assess the results of the test, it is imperative that the commercial packaging methods be implemented across all US Government contracts at the affected sites. To accomplish this, existing and future contracts that specify packaging of an item in accordance with any version of MIL-STD-2073-1 or any standard other than the contractor's commercial packaging practices are to be modified as follows:

- *Existing contracts*. Using the Block Change process, all existing contracts that cite a requirement for packaging in accordance with a version of MIL-STD-2073-1 or any government-specified standard other than the contractor's commercial packaging practices have been modified by DCMA to incorporate the approved Pilot Program contract language. A list of the affected contracts is included in the implementing block change. In accordance with the MOA between [pilot contractor name] and the DCMA office, other contracts that may have been inadvertently overlooked, will be modified when identified to incorporate the approved Block Change language.

- *Existing subcontracts*. Where [pilot contractor name] is a subcontractor and the subcontract specifies packaging in accordance with a version of MIL-STD-2073-1 or any standard other than the contractor's commercial packaging practices, the DCMA office shall notify the prime contractor that [pilot contractor name] is participating in a Pilot Program and is authorized to package items using its standard commercial packaging methods. The DoD buying activity shall modify the prime contract, if necessary, to allow

[pilot contractor name] to use its commercial packaging practices in performance of its subcontract.

Subcontracts that may be awarded after the pilot program is implemented and subcontracts that may have been inadvertently overlooked will be added once identified.

- *Future contracts*. DoD will continue to specify the use of MIL-STD-2073-1 in solicitations where the item will enter the military distribution system and the requirement for MIL-STD-2073-1 is continued to be deemed appropriate by the Contracting Officer. [Pilot contractor name] will notify the contracting office that it is participating in the Pilot Program and, if requested, provide to the Contracting Officer a copy of the approved Block Change. The Contracting Officer will retain the references in the contract to MIL-STD-2073-1, but also incorporate the approved Pilot Program contract language. Orders issued under delivery order contracts will be subject to the Block Change language contained in the basic instrument

- *Contracts not citing MIL-STD-2073-1*. Where MIL-STD-2073-1 is not cited as a contract requirement, [pilot contractor name] shall continue to utilize its best commercial practices. Such contracts and orders are not impacted by the Pilot Program.

8. **Pilot Program Contract Language:** The following language has been approved by DoD to be inserted in all affected [pilot contractor name] contracts as described above:

"***Packaging Pilot Program***. [Pilot contractor name] *is a participant in a Pilot Program designated by the Principal Deputy Under Secretary of Defense (Acquisition & Technology) related to the use of commercial packaging methods. The following contract language is included in this contract to implement this Pilot Program:*

1. If this contract or any order issued under this contract specifies that items to be delivered shall be packaged in accordance with a version of MIL-STD-2073-1 or any standard other than the contractor's commercial packaging practices, those packaging requirements shall be deemed to be for information only and not contractually binding except where specified in accordance with paragraph 2. The contractor shall, instead, package such items in accordance with its standard commercial packaging methods adequate to prevent deterioration and physical damage of the item(s). The contractor's standard commercial packaging methods shall be the methods described in its Quality System manual or other written media which are based on the elements of ISO 9000. NOTE: All-up round missiles and ordnance are excluded from this Pilot Program.

2. If specified by the government in this contract or any order issued under this contract, the contractor shall utilize reusable shipping containers provided the shipping container has been assigned a national stock number (NSN) and has been provided by the government as government furnished property (GFP) or procured by the government under this contract.

3. Where F.O.B. Origin is specified, the government shall notify its carrier in accordance with its standard procedures upon discovery of any damage resulting from transportation of the items. Where F.O.B. Destination is specified, the government shall notify the contractor in accordance with its standard procedures upon discovery of any damage resulting from transportation of the items.

4. The government shall notify the contractor of any concealed damage to the item(s) resulting from the failure of the contractor's packaging methods within 150 days of the discovery of the concealed damage or within 42 months of the date the contractor packed the items, which ever occurs first. The contractor shall repair or replace, at its option, any item the parties agree has been damaged as a result of the failure of the contractor's packaging methods, provided the government has exercised reasonable care in its transportation, handling and storage of the item(s) in the military distribution system.

5. Any exception to the requirements of this clause shall be mutually agreed to by the parties."

9. [Pilot contractor name] **Commercial Packaging Practices:** [pilot contractor name] will utilize the current version of its commercial packaging practices to package selected spare parts, repaired components, assemblies, sub-assemblies, etc. The commercial marketplace dictates that these commercial packaging practices continually evolve to reflect improved packaging practices and technologies. In addition, one of the purposes of the Pilot Program is to develop lessons learned from [pilot contractor name] commercial practices that may be applicable to other DoD contractors. Therefore, [pilot contractor name] shall have the flexibility to evolve its commercial packaging practices, at its discretion, to meet these needs. [pilot contractor name] will notify on-site DCMA representatives of significant changes planned in these procedures and instructions.

10. [pilot contractor name] **Packaging of Government items under the Pilot Program:** Under the Pilot Program, [pilot contractor name] will utilize the following guidelines with regard to the packaging of items on affected contracts:

- Utilize packaging instructions as follows:
  -- Comply with the quantity of unit pack (QUP) specified;

  -- Consider the government-specified "level of packing" (A, B or commercial) in developing the packaging methods as an indication of the expected shipping/storage environment;

  -- Comply with Special Packaging Instructions requesting use of a reusable shipping container where the shipping container has been assigned a national stock number (NSN) and has been provided by the government as GFP or procured on behalf of the government under the contract. The choice of packaging materials, if any, to be used in conjunction with any reusable container shall be at [pilot contractor name] discretion;

  -- All other packaging instructions contained in the contract will be for information only and not contractually binding. [pilot contractor name] shall not be required to package items utilizing the requirements of MIL-STD-2073-1.

- Utilize MIL-STD-129 for marking of all packages. All items affected by this Pilot Program and packaged by [pilot contractor name] after the effective date of the block change contract modification shall include the DoD-provided Project Code in Block 8 of the DD Form 1387 exterior shipping label to identifying the package as being included in the Pilot Program. [pilot contractor name] will also include the project code on interior unit packages for items affected by this Pilot Program.

- If [pilot contractor name] selects a packaging material that does not meet the applicable requirements contained in MIL-STD-2073-1, it will make available a sample of the material and any associated vendor technical information to the on-site DCMA representative for the government's information.

- [pilot contractor name] shall work to minimize the use of plastics and not decrease the use of marine degradable materials in packaging items to be provided to the Navy for use aboard ship.

- If required by contract, [pilot contractor name] agrees to provide MIL-STD-2073-1 compliant packaging design information for newly developed items.

- If notified by the government that an item is believed to have been damaged as a result of the failure of [pilot contractor name] packaging methods, [pilot contractor name] representatives may be asked to examine the part and associated packaging materials. If [pilot contractor name] personnel are not available on site to evaluate the part, the part and associated packaging materials will be shipped to an agreed to location for [pilot contractor name] evaluation.

- All-up round missiles and ordnance are excluded from the Pilot Program.

11. [pilot contractor name] **proposed time phased implementation actions:** [pilot contractor name] is proceeding with the phase-in of commercial-based packaging methods. Because of the nature of the activities, many of the activities will occur in parallel. These activities include:

- Involve local DCMA representative in execution planning

- Execute the block change modifications

- Modify direct foreign sale contract packaging requirements

- Establish a method for identifying packages subject to warranty (DD Form 1387, Block 8)

- Identify innovation opportunities in packaging materials, processes and technologies

- Revise [pilot contractor name] internal packaging work instructions

- Revise packaging designs for active contracts

- Draw down existing stocks of military spec packaging materials and replace with [pilot contractor name] selected packaging materials

- Train personnel performing packaging operations

- Inform on-site DCMA representatives on contractor's commercial packaging practices

- Proactively seek information from DoD packaging specialist, as necessary, to understand government packaging performance requirements

- Establish an appropriate methodology for collecting agreed upon metrics

- Identify new packaging materials, processes and technologies to DoD for their information

- On-site DCMA representative reviews of contractor's compliance with its commercial packaging process

- Collect and report agreed upon metrics data

- Revise packaging designs and materials, per feedback.

12. **Government actions required:** The following government actions are a critical element of the success of the Pilot Program:

- Provide [pilot contractor name] with a letter notifying Contracting Officer of [pilot contractor name] participation in the Pilot Program and directing cooperation in that Pilot Program

- Provide [pilot contractor name] with a Project Code for identification of items included in the Pilot Program

- Advise and train, when necessary, government personnel at depots and other facilities to ensure awareness of their responsibilities under the Pilot Program

- Assess [pilot contractor name] compliance with its commercial packaging processes (DCMA)

- Where FOB Origin is specified in the contract, notify government's carrier of damage to item(s) resulting from transportation of the item(s); where FOB Destination is specified, notify the contractor of damage to items resulting from transportation of the items;

- Notify [pilot contractor name], through the Supply Discrepancy Report (SDR) procedures or other method, of items it believes have been damaged as a result of the failure of [pilot contractor name] packaging methods. Such parts and their associated packaging materials will be protected pending [pilot contractor name] evaluation. If no [pilot contractor name] personnel are available on site, the government will forward the part and its packaging materials to a mutually agreed upon location for evaluation.

- Establish a process for evaluating the operational impact of the Pilot Program.

13. **Cost savings resulting from Pilot Program:**

(a) Within 90 days of entry into the pilot program, [pilot contractor name] will submit to the DCMA Administrative Contracting Officer a decreased cost proposal for contracts affected by the pilot program during its 3-year period. The parties shall negotiate an appropriate adjustment in the costs of the affected contracts.

(b) Contracts awarded to [pilot contractor name] more than 60 days after the commencement as a participant in the pilot program will be considered to already reflect any projected cost savings from participation in the pilot program.

(c) At the end of each year of participation in the pilot program, [pilot contractor name] shall submit to the DCMA Administrative Contracting Officer its calculations of actual changes in the cost of its packaging operations, and its estimated attribution to changes made possible by the changes in packaging requirements resulting directly from participation in the pilot program. The submitted information will be for the government's information and reference in assessing packaging practices and policies, and will not require renegotiation of consideration provided under (a) above.

14. **Metrics:** [pilot contractor name] will collect the following data to evaluate the success of the Pilot Program. This data is based upon the DoD Commercial Packaging Pilot Program Implementation Plan and Guidelines, dated 30 April 1999.

(a) ***Quality protection***:
Goal: No more than 1% of affected items returned under warranty.
Measure: Number of packaging failures resulting in part damage/failure.

(b) ***Cost of packaging***:
Goal: Reduction in overall pack cost due to increased use of commercial materials
Measure: Dollars.

(c) ***Minimization of plastics***:
Goal: No increase in the quantity of plastic materials over 3 years. No decrease in marine degradable materials over 3 years.
Measures: Vendor efforts to reduce plastics and increase use of degradables.

(d) ***Innovation***:
Goal: Report to IPT on tested innovations within 1 year for possible transfer to other activities.
Measure: Number of innovations submitted to DoD.

Periodic reporting: [pilot contractor name] shall prepare periodic reports on the success of the Pilot Program as may be mutually agreed to by [pilot contractor name] and DoD.

Appendix B
Packaging References and Guidance

DoD Specifications, Standards and Handbooks

ASSIST is the official source of DoD specifications and standards. ASSIST Quick Search provides direct access to defense and federal specifications, standards, and related standardization documents cataloged in the DoD master repository—the ASSIST database. Users may enter search criteria to locate and download most unrestricted documents available from the DoD Single Stock Point (DODSSP). http://131.82.253.19/quicksearch/

DoD 4140.1-R DoD Materiel Management Regulation

DoD Directive 5000.1 The Defense Acquisition System

DoD Instruction 5000.2 Operation of the Defense Acquisition System

DoD 5000.2-R Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs

MIL-HDBK-129 Military Marking

MIL-STD-129 DoD Standard Practice for Military Marking

MIL-HDBK-502 DoD Handbook Acquisition Logistics (ALH)

MIL-STD-2073-1 DoD Standard Practice for Military Packaging

MIL-PRF-49506 Performance Specification Logistics Management Information (LMI)

Joint Publications

Guide for Basic Military Preservation and Packing
TC 38-3/MCO P4030.23E/NAVSUP PUB 442/AFPAM(I) 25-204/DLAI 4145.1
http://www.adtdl.army.mil/cgi-bin/atdl.dll/tc/38-3/toc.htm

Packaging of Materiel
AR 700-15/NAVSUPINST 4030.28D/AFJMAN 24-206/MCO 4030.33D/DLAD 4145.7
http://www.dscc.dla.mil/downloads/packaging/dlad4145_7.pdf

Packaging of Materiel, Preservation
FM 38-700/MCO P4030.31D/NAVSUP PUB 502/AFPAM(I) 24-237/DLAI 4145.14
http://www.adtdl.army.mil/cgi-bin/atdl.dll/fm/38-700/toc.htm

Packaging of Materiel, Packing
FM 38-701/MCO 4030.21D/NAVSUP PUB 503/AFPAM(I) 24-209/DLAI 4145.2
http://www.adtdl.army.mil/cgi-bin/atdl.dll/fm/38-701/toc.htm

Preparing Hazardous Materials for Military Air Shipments
AFJMAN 24-204/TM 38-250/NAVSUP PUB 505/ MCO P4030.19G/DLAI 4145.3
http://www.dscc.dla.mil/downloads/packaging/dlai4145_3.pdf
https://www.afmc-pub.wpafb.af.mil/Hazmat/

Packaging of Hazardous Materials
DLAD 4145.41/AR 700-143/AFJI 24-210/NAVSUPINST 4030.55B/MCO 4030.40B
http://www.dscc.dla.mil/downloads/packaging/dlad4145_41.pdf

Note: Joint publications may be designated by unique service numbers.

Service Specific Documents

Air Force[7]

Air Force Instruction 24-202 Preservation and Packing
http://web1.deskbook.osd.mil/reflib/MAF/422FG/001/422FG001DOC.HTM#T2

Army[8]

AR 700-15 Packaging of Materiel
AR 700-15/NAVSUPINST 4030.28D/AFJMAN 24-206/MCO 4030.33D/DLAD 4145.7
http://books.usapa.belvoir.army.mil/cgi-bin/bookmgr/BOOKS/R700_15/CCONTENTS

Marine Corps[9]

MCO 4030.16 Marine Corps Packaging And Packaging Maintenance Of Small Arms Weapons Using Volatile Corrosion Inhibitor (VCI) Treated Materials

MCO P4030.19 (AFMAN 24-204(I)) Preparing Hazardous Materials For Military Air Shipment
(AFJMAN 24-204/TM 38-250/NAVSUP PUB 505/ MCO P4030.19G/DLAI 4145.3)
http://www.dscc.dla.mil/downloads/packaging/dlai4145_3.pdf

MCO 4030.33 (AR 700-15) Packaging Of Materiel
(AR 700-15/NAVSUPINST 4030.28D/AFJMAN 24-206/MCO 4030.33D/DLAD 4145.7)
http://www.adtdl.army.mil/cgi-bin/atdl.dll/fm/38-700/toc.htm

MCO P4030.36 Marine Corps Packaging Manual

MCO 4030.40 (DLAD 4145.41) Packaging Of Hazardous Materials
(DLAD 4145.41/AR 700-143/AFJI 24-210/NAVSUPINST 4030.55B/MCO 4030.40B)
http://www.dscc.dla.mil/downloads/packaging/dlad4145_41.pdf

SECNAVINST 4355.18 (DLAI 4140.55) Reporting Of Supply Discrepancies

[7] See additional Air Force guidance in Appendix D.
[8] See additional Army guidance in Appendix E.
[9] See additional Marine Corps guidance in Appendix F.

Navy[10]

Naval Aviation Systems Team Acquisition Logistics Support Plan (ALSP) Guide
http://www.nalda.navy.mil (see Policy Tools/ALSP Guide)

Naval Air Systems Command Contracting for Supportability Guide (CFSG)
http://www.nalda.navy.mil (see Policy Tools/CFSG/Chapter 15)

Naval Aviation Systems Team APML Desk Guide for Packaging, Handling, Storage and Transportation
http://www.navicp.navy.mil/phst/apml/toc.htm

Naval Air Systems Command Independent Logistics Assessment (ILA) and Acquisition Program Planning Guidebook
http://www.nalda.navy.mil (see Policy Tools/ILA/guidebook)

Defense Logistics Agency[11]

DLAD 4145.7 (AR 700-15) Packaging of Materiel
AR 700-15/NAVSUPINST 4030.28D/AFJMAN 24-206/MCO 4030.33D/DLAD 4145.7
http://www.dscc.dla.mil/downloads/packaging/dlad4145_7.pdf

DLAD 4145.12 The DLA Packaging Program
http://www.dscc.dla.mil/downloads/packaging/dlad4145_12.pdf

DLAI 4145.12 The DLA Packaging Program
http://www.dscc.dla.mil/downloads/packaging/dlai4145_12.pdf

DLAD 4145.41 Packaging of Hazardous Materials
http://www.dscc.dla.mil/downloads/packaging/dlad4145_41.pdf

Other Government Guidance

Radioactive Materials Packaging Handbook
Oak Ridge National Laboratory (ORNL) is responsible for developing the Radioactive Materials Packaging Handbook, published in 1998. The handbook assembles contributions from numerous Department of Energy (DOE) and industry experts into a single, definitive reference, that covers not only the traditional technical topics needed for package design, including structural, thermal, criticality, containment, shielding and testing, but also examines the effect of package operations and maintenance on that design. The handbook also addresses the important topics of transportation and packaging regulations, quality assurance, and the package certification process. The handbook is available from ORNL Transportation Technology Group (TTG). Advice on packaging design is also available from TTG. To order a copy, contact Larry Shappert at 865-576-2066.

[10] See additional Navy guidance in Appendix G.
[11] See additional DLA guidance in Appendix H.

Other Department of Energy publications available through ORNL:

DOE Departmental Materials Transportation and Packaging Management
DOE Packaging and Transportation Safety Guide

Non-governmental Standards

American Society of Testing and Materiel (ASTM)
The American Society for Testing and Material develops and maintains commercial packaging standards that are widely followed and referenced throughout the commercial packaging area. While these standards are not requirements, they are considered leading guidance on packaging practices and as such, DoD personnel who will deal with commercial packaging should take an interest in becoming familiar with its packaging guidance.

The applicable ASTM Standards are D 3951 entitled Standard Practice for Commercial Packaging, ASTM D 4169 – 99 Standard Practice for Performance Testing of Shipping Containers and Systems, and ASTM D 6198 Standard Guide for Transport Packaging Design. These resources are commercially available and may be ordered through ASTM in the following way. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through website at: www.astm.org. (Note: these resources are available for a fee, but may have to be bought from ASTM before copying and publishing. For further information, contact ASTM.)

Appendix C
Special Considerations for Packaging

HAZARDOUS MATERIALS PACKAGING

All DoD-managed hazardous materials will be provided minimum required packaging protection at the lowest overall cost without compromising established DoD safety standards. Packagings shall provide adequate continuous protection to the packaged hazardous material and shall prevent any release of the hazardous material into the environment. When hazardous materials are shipped, the packaging and marking used shall conform to the applicable modal regulations. Modal regulations include the International Civil Aviation Organization (ICAO) Technical Instructions, the International Air Transport Association (IATA) Regulations, the International Maritime Dangerous Goods (IMDG) Code/International Maritime Organization (IMO), Title 49, Code of Federal Regulations (49 CFR) and AFJMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19/DLAI 4145.3, Preparing Hazardous Materials for Military Air Shipment.[12] Hazardous materials packaging which has been tested and passed the United Nations (UN) performance specification requirements will be applied to hazardous materials for domestic shipments consistent with 49 CFR, Parts 100-199, except for Class 2 and 7. Original single containers and/or single packagings of hazardous material where a portion of the contents have been consumed must be repackaged prior to induction into the commercial and/or Defense transportation systems.

For more detailed guidance, consult applicable regulations at the following web sites:

Code of Federal Regulations, Title 49 Transportation
49 CFR -- http://www.access.gpo.gov/cgi-bin/cfrassemble.cgi?title=200149
NOTE: This URL changes in October every year when 49 CFR is published.

Packaging of Hazardous Materials
DLAD 4145.41, AR 700-143, AFJI 24-210, NAVSUPINST 4030.55B, MCO 4030.40B
http://www.dscc.dla.mil/offices/packaging/specstdslist.html

Preparing Hazardous Materials for Military Air Shipments
AFMAN 24-204(I), TM 38-250, NAVSUP PUB 505, MCO P4030.19H, DLAI 4145.3
https://www.afmc-pub.wpafb.af.mil/Hazmat/
~~or~~
http://www.dscc.dla.mil/offices/packaging/specstdslist.html

[12] *The IMDG Code and ICAO Technical Instructions are copyrighted material, and are readily available from many commercial sources.*

PRESERVATION

There are a number of drivers behind the military packaging paradigm for preservation. They are the inherent characteristics of the item, the environmental and logistics conditions to be encountered, and economic factors, as well as, the duration of storage, duration of production capability, environmental factors in storage, and environmental factors existing at the point of utilization.

Duration

In terms of duration, the uncertainty of when military items will be utilized is driven by the unpredictability of when large or small scale military operations or build-ups will take place. Food, ammunition, vehicles and even electronics can sit for years if not decades on board prepositioning ships or depots in anticipation of events that may or may not come to fruition. The inability of industry to produce and the government to procure or transport large stocks of military related equipment when they are needed means that stockpiling equipment purchased in bulk may be necessary. One example of this would be food stuffs designed to support a large troop deployment to an austere operational environment. Because the logistics capability to provide needed equipment for the warfighter in short order may not be possible, it is critical to have these stocks on hand and easily transportable should a large scale deployment of forces occur. To accomplish this they must spend an undetermined amount of time in storage in preparation for deployment.

Duration of Production Capability

Production runs of certain items and war materiel are often, due to economic constraints, of a limited duration. The inability and unwillingness of industry to keep specific production lines available for an unlimited duration means that the government needs to stockpile materiel it projects will be used to support future operations. In addition, production lines that produce similar products on the same line may have commercial customers demanding items at the same time government demand becomes acute, this may result in a delay of getting needed items to support operations. For these reasons large scale stockpiling of materiel is necessary and for the most part a unique feature of the military preservation landscape.

Environmental Factors in Storage

Because of the global nature of military operations and the vastly different environments in which equipment is employed to support deployments, items are preserved in different environments which vary in their respective degrees of austerity. Equipment prepositioned in a desert environment such as Kuwait have different preservation requirements that equipment stored on maritime prepositioning vessels which are consistently exposed to the a corrosive saltwater and air environment. In addition, some equipment must be preserved at a given temperature and must be accessible for testing during its period of preservation. All of these factors create complex and varying requirements in terms of determining the type and level of preservation required.

AR 700-15[13] establishes levels or packaging which work hand-in-hand with determining the type of preservation needed for given items. The two levels of packaging enunciated are as follows:

- "Level A. Protection to meet the most severe worldwide shipment, handling, and storage conditions. A level A pack must, in tandem with the applied preservation, be capable of protecting materiel from the effects of direct exposure to extremes of climate, terrain, and operational and transportation environments. Examples of situations which indicate a need for use of a level A pack are: mobilization, strategic and theater deployment and employment, open storage, and deck loading. Examples of containers used for level A packing requirements include, but are not limited to, overseas type wood boxes, and plastic and metal reusable containers.

- Level B. Protection to meet moderate worldwide shipment, handling, and storage conditions. A level B pack must, in tandem with the applied preservation, be capable of protecting materiel not directly exposed to extremes of climate terrain and operational and transportation environments. Examples of situations which indicate a need for use of a level B pack are: security assistance (e.g., Foreign Military Sales (FMS)) and containerized overseas shipments. Examples of containers used for level B packing requirements include, but are not limited to, domestic wood crates, weather-resistant fiberboard containers, fastpack containers, weather-resistant fiber drums, and weather-resistant paper and multi-wall shipping sacks"

Environmental Factors at the Point of Utilization

Appropriate preservation of items on the battlefield or operational area is also a driver behind employing military unique preservation practices. While the storage environment and duration place demands on the packaging and preservation of goods, the operational environment in which they are employed may be equally if not more demanding. For items that need to be refrigerated, the necessary facilities may not be readily available, temperatures and external factors outside the general storage environment may not be as constant as before, and transportation and handling may not be as gentle or organized as was the case in a longer term storage facility, whether on land or at sea. To the extent possible the short term preservation requirements dictated by the operational environment of the item needs to be considered when determining the type and level or preservation necessary.

[13] AR 700-15 Packaging of Materiel (AR 700-15/NAVSUPINST 4030.28D/AFJMAN 24-206/MCO 4030.33D/DLAD 4145.7)

GENERAL GUIDELINES FOR SELECTION OF LEVELS OF PACKING

The nature of an item determines the type and extent of protection needed to prevent its deterioration. Shipping modes, handling, and the length and type of storage are additional considerations that must be considered when determining the required level of preservation, packaging and packing. Acquiring commands and components should select and apply packaging protection based on known and/or anticipated requirements.

The matrix below provides general guidelines for selection of levels of protection. Commercial packaging will be acceptable for any level of protection when the technical design of the commercial package meets all the conditions of the military level of protection specified. The commercial package must provide the same protection, as the military level specified, at no additional cost or increase in size, or weight.

General Guidelines for selection of Levels of Packing

DISTRIBUTION PATTERN	MILITARY LEVEL OF PACK
SECURITY ASSISTANCE/FOREIGN MILITARY SALES/GRANT AID (Unless otherwise directed by country)	B
WAR READINESS/RESERVE	A
WAR READINESS/RESERVE (<25 LBS. AND <= 1 cubic ft)	B
DELIVERY OF SERVICEABLE DLRS TO WHOLESALE DEPOT STOCK	B
OVERSEAS (surface transportation and/or outdoor storage)	A
OVERSEAS (Air transportation and covered storage)	B

DEFINITIONS FOR REPARABLES AND SPECIAL CONSIDERATIONS FOR REPARABLES[14]

Reparable Item: An item of supply subject to economical repair and for which the repair (at either depot or field level) is considered in satisfying computed requirements at any inventory level.

Depot Level Reparable Item: A reparable item of supply that is designated for repair at depot level or below the depot level, but if repair cannot be accomplished at that level, will have its unserviceable carcasses either forwarded to the depot for repair or condemnation, or reported to the ICP for disposition.

Field Level Reparable Item: A reparable item of supply that is normally repaired below the depot level of maintenance and for which condemnation authority can be exercised below the depot level of maintenance.

Packaging of Depot Level Reparables (DLRs)
When developing or specifying packaging requirements for reparable items, logistics managers must provide packaging that will not only protect the item during initial shipment, but also during future returns to the point of repair or overhaul, subsequent storage, and reissue. Because reparable items may repeat this cycle many times, reusable containers should be considered especially when developing packaging requirements for entire weapon systems and their major components (i.e., LRUs or WRAs) where high cost, fragility, size, weight or irregular shape or military criticality are issues.

Reusable Containers
Reusable containers are available in the following types (see MIL-STD-2073-1 for reusable container definitions):

Long Life Container (100 Trips Minimum)
Information concerning selection and management of long life reusable containers can be found in AR 700-15/NAVSUPINST 4030.28/AFJMAN 24-206/MCO 4030.33/DLAD 4145.7.

Short Life Reusable Container (10 Trips Minimum)

Multi-application Containers

Specialized Containers
If it is determined that a specialized long life container is required, the services of the Container Design Retrieval System (CDRS) must be solicited prior to initiating detailed engineering design of the container. Details concerning submission requests for CDRS services are available in AR 700-15/NAVSUPINST 4030.28/AFJMAN 24-206/MCO 4030.33/ DLAD 4145.7 and Appendix H of MIL-STD-2073-1.

[14] For consumable items of supply, see PACKAGING CRITERIA FOR CONSUMABLE ITEMS in Appendix H.

PACKAGING TESTING (excerpted from AR 700-15)

Lead Activities for Packaging Testing

6-1. Objectives

Lead services for testing and evaluating packaging materials and processes are established to attain the following objectives:

Eliminate duplication of effort in testing and evaluating packaging materials and processes.

Provide package testing focal points.

Improve skills and increase productivity through specialization.

Standardize test equipment.

6-2. Lead Service Designations

Lead activities are shown below along with their designated areas of responsibility for testing and evaluating materials and processes:

a. The U. S. Army Soldier Chemical and Biological Command (SCBC), AMSBC-I-SPS, Integrated Material Management Center, Kansas Street, Natick, Massachusetts 01760-5052, is assigned as lead activity for personal support materiel, (i.e., clothing, textiles, and subsistence) and is the lead for testing biodegradable packaging materials.

b. The U.S. Air Force packaging Technology and Engineering Facility (AFPTEF), AFMC LSO/LOP, 5215 Thurlow Street, Wright-Patterson AFB, Ohio 45433-5540, is assigned as lead activity for the materials and processes listed in table 6-1.

Table 6-1. AFPTEF Lead Service Responsibilities

MATERIALS	PROCESSES
Containers, Metal, and Plastic	Foam-In-Place Systems
Shock Indicators	Fast-pack Container Systems
Crates, Wood and Metal	Cushioning Systems
Cushioning Materials	Strippable Coating Systems
Humidity Indicators	Computer Aided Design System and Computer Aided Finite Element Structural Analysis
Foam (pre-foamed or foam-in-place)	Magnetic Shielding
Pallets, Metal	
Metal and Plastic Drums	

c. The U.S. Army Materiel Command, LOGSA Packaging, Storage, and Containerization Center (AMCLOGSAPSCC), 11 Hap Arnold Blvd, Tobyhanna, PA 18466-5097, is assigned as the lead activity for the materials and processes listed in table 6-2.

Table 6-2. AMCLOGSAPSCC Lead Service Responsibilities

MATERIALS	PROCESSES
Adhesives	Unitization Systems (MIL-HDBK-773)
Preservation Materials	Stretch Wrap Systems
Barrier Materials	Shrink Wrap Systems
Boxes, Wood and Wire bound	Marking and Labeling Systems
Boxes and Sheet Stock, Fiberboard	Vacuum Formed Thermoplastic Systems
Pallets, other that Metal	Cold-seal Packaging Systems
Tapes	Dehumidification Systems
Marking and Labeling Materials	Plastic Wrap System
Desiccant Materials	Plastic Bag/Package Forming Systems
Tags, Document Protectors, Packing Lists	Shrink Wrap Systems
Bags and Sacks	Marking and Labeling Systems

d. The U.S. Army Defense Ammunition Center, (USADAC), SIOAC-DEV, 1 C Tree Road, McAlester, Oklahoma, 74501, is designated as the lead activity for processes related to automatic banding systems.

e. The Naval Packaging, Handling Storage, and Transportability Center, U.S. Naval Weapons Station Earle, Code 5014, Colts Neck, New Jersey 07722-5023, is designated as the lead activity for strapping materials (metal and nonmetal).

f. The Naval Air Systems Command, Research and Engineering Group, AIR 4.3.5E, Buildings 562-3, Lakehurst, NJ 08733-5049, is designated as the lead activity for ESDS test and evaluation criteria, equipment, and methodologies.

6-3. Exclusions: Under the lead activity concept for testing and evaluating packaging materials and processes, the following categories of material are excluded:

a. Materials and processes related to specific end items or weapons systems or subsystems.

b. Testing and evaluation of packaging equipment related to specific operational requirements.

c. Compliance testing of contractor products unless specifically justified and not covered by contract requirements.

d. Medical items regulated by the U.S. Food and Drug Administration.

e. HAZMAT package certification testing to document conformance with UN standard package performance requirements.

CONIFEROUS NON-MANUFACTURED WOOD PACKAGING MATERIAL (NMWPM)

Pallets, boxes, crates and reels shipped to DoD activities inside the European Union (EU) will be treated and marked to the requirements of the EU Emergency Decision on Phytosanitary Measures Required for NMWPM. In the US, the United States Department of Agriculture, Animal and Plant Health Inspection Service (USDA/APHIS) oversees this process and implements the EU requirements. This process will be overtaken as individual countries adopt the Guidelines approved by the United Nations International Plant Protection Committee (IPPC) in March 2002.

For up-to-date information, consult the following web sites:

http://www.dscc.dla.mil/Offices/Packaging/NMWPMnotice.html

http://www.aphis.usda.gov/ppq/swp/

Appendix D
Air Force Packaging Guidance

Air Force Instruction 24-202 Preservation and Packing
http://web1.deskbook.osd.mil/reflib/MAF/422FG/001/422FG001DOC.HTM#T2

Contracting Clauses for Packaging (from AFMCAC 97-1)

5352.247-9005 Shipping Container Marking.

As prescribed in 5347.305-10(a)(91), insert the following clause, substantially as written, in Section D:

SHIPPING CONTAINER MARKING (AFMC) (SEP 1998)

All shipping containers shall be marked using the following criteria:
(a) MIL-STD-129N, Standard Practice for Military Marking bar code format shall conform to bar code symbology Format 3 of 9, Code 39 as specified in MIL-STD-129.
(b) Additional marking or bar coding requirements: (if additional bar coding or marking requirements exceeding those of MIL-STD-129N such as unit serial numbers are specified on the AFMC Form 158, insert them here.) (End of clause)

5352.247-9006 Marking of Warranted Items.

As prescribed in 5347.305-10(a)(92), insert the clause, substantially as written, in Section D:

MARKING OF WARRANTED ITEMS (AFMC) (JUL 1997)

The Contractor shall mark the items or otherwise furnish notice with the items to show the existence of the warranty; its substance and duration; and the name, address, and telephone number of the person to notify if the items are defective in accordance with FAR 46.706(b)(5), Warranty terms and conditions. (End of clause)

5352.247-9007 Specification Commercial Packaging.

As prescribed in 5347.305-10(a)(93), insert the following clause in Section D:

SPECIFICATION COMMERCIAL PACKAGING (AFMC) (SEP 1998)

(a) Items shall be packaged in accordance with American Society for Testing and Materials (ASTM) Specification D3951-95, Standard Practice for Commercial Packaging. Individual shipments exceeding 150 pounds, 108 inches in length, or 130 inches in girth plus length shall be packaged on skidded crates or palletized to allow handling by forklift.
(b) The exterior container shall be marked (readable from 24 inches): "ASTM D 3951 - NOT FOR OUTSIDE STORAGE." (End of clause)

5352.247-9008 Contractor Commercial Packaging.

As prescribed in 5347.305-10(a)(94), insert the following clause in Section D:

CONTRACTOR COMMERCIAL PACKAGING (AFMC) (SEP 1998)

(a) Items shall be packaged in accordance with the Contractor's commercial best practice to ensure undamaged arrival at destination. Individual shipments exceeding 150 pounds, 108 inches in length, or 130 inches in girth plus length shall be packaged on skidded crates or palletized to allow handling by forklift.

(b) The exterior container shall be marked (readable from 24 inches): "NOT FOR OUTSIDE STORAGE." (End of clause)

5352.247-9009 Military Packaging and Marking.

As prescribed in 5347.305-10(a)(95), insert the following clause in Section D:

MILITARY PACKAGING AND MARKING (AFMC) (SEP 1998)

Items shall be packaged in accordance with MIL-STD-2073-1C, Standard Practice for Military Packaging. Shipping and storage markings shall be in accordance with MIL-STD-129N, Standard Practice for Military Marking. (End of clause)

5352.247-9010 Engineered or Specialized Containers.

As prescribed in 5347.305-10(a)(96), insert the following clause, substantially as written, in Section D:

ENGINEERED OR SPECIALIZED CONTAINERS (AFMC) (SEP 1998)

(a) Existing containers or designs already in the DoD inventory shall be evaluated for use or adaptation prior to the development of new containers (MIL-STD-2073-1C, Standard Practice for Military Packaging). Modification of existing containers or designs are an acceptable alternative to new containers when approved by the Government. The Contractor's recommendation shall be based on information received from queries using DI-PACK-80683A, Container Design and Retrieval System (CDRS) Search Request

(b) Air Force acceptance of proposed new engineered or specialized containers shall be by written notice from the Contracting Officer and identify each container accepted. Considerations for acceptance include life-cycle cost, capability to interface with DoD distribution systems (storage and transportation), ability to meet operational requirements, and qualification testing requirements.

(c) When accepted, the Contractor shall comply with DI-PACK-80684A, Container Design and Retrieval System (CDRS) Data Input. (End of clause)

5352.247-9011 Packaging and Marking of Hazardous Material.

As prescribed in 5347.305-10(a)(97), insert the following clause, substantially as written, in Section D:

PACKAGING AND MARKING OF HAZARDOUS MATERIAL (AFMC) (SEP 1998)

Hazardous materials shall be prepared for shipment in accordance with the following applicable regulations for the individual shipment hazard, ultimate destination, and mode of transportation:

(a) Code of Federal Regulations (CFR) Title 29, Part 1910.1200;

(b) Code of Federal Regulations (CFR) Title 49;

(c) Air Force Joint Manual (AFJMAN) 24-204, Preparing Hazardous Materials for Military Air Shipment;

(d) International Civil Aviation Organization (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air; and

(e) International Maritime Dangerous Goods (IMDG) Code. (End of clause)

5352.247-9012 Packaging for Inspection and Acceptance at Destination.

As prescribed in 5347.305-10(a)(98), insert the following clause in Section D:

PACKAGING FOR INSPECTION AND ACCEPTANCE AT DESTINATION (AFMC) (JUL 1997)

Items requiring inspection and acceptance of material at destination shall be preserved, packaged, and packed so that all containers are capable of being opened and resealed. The Contractor is responsible for ensuring that delivered items are provided adequate physical protection to prevent corrosion or damage during shipment and storage, unless the damage or deterioration is due to fault of the Government. (End of clause)

5352.247-9013 Packaging Data.

As prescribed in 5347.305-10(a)(99), insert the following clause in Section D:

PACKAGING DATA (AFMC) (SEP 1998)

The Contractor shall provide packaging data in accordance with DD Form 2326, Preservation and Packing Data, and/or DD Form 2169, Special Packaging Instructions. MIL-STD-2073-1C, Standard Practice for Military Packaging, identifies the applicable data elements. DI-PACK-80120B, Preservation and Packing Data, and DI-PACK-80121B, Special Packaging Instructions, apply. (End of clause)

Packaging Requirements (AFMC Form 158 front)
[See image file: *fm158 front.jpg*]

Packaging Requirements (AFMC Form 158 back)
[See image file: *fm158 back.jpg*]

Appendix E
Army Packaging Guidance

Army Requirements Process Documented in the following:

AR 700-15 Packaging of Materiel
(AR 700-15/NAVSUPINST 4030.28D/AFJMAN 24-206/MCO 4030.33D/DLAD 4145.7)
http://books.usapa.belvoir.army.mil/cgi-bin/bookmgr/BOOKS/R700_15/CCONTENTS

Appendix F
Marine Corps Packaging Guidance

MCO 4030.16 Marine Corps Packaging And Packaging Maintenance Of Small Arms Weapons Using Volatile Corrosion Inhibitor (VCI) Treated Materials

MCO P4030.19 (AFMAN 24-204(I)) Preparing Hazardous Materials For Military Air Shipment
(AFJMAN 24-204/TM 38-250/NAVSUP PUB 505/ MCO P4030.19G/DLAI 4145.3)
http://www.dscc.dla.mil/downloads/packaging/dlai4145_3.pdf

MCO 4030.33 (AR 700-15) Packaging Of Materiel
(AR 700-15/NAVSUPINST 4030.28D/AFJMAN 24-206/MCO 4030.33D/DLAD 4145.7)
http://www.adtdl.army.mil/cgi-bin/atdl.dll/fm/38-700/toc.htm

MCO P4030.36 Marine Corps Packaging Manual

MCO 4030.40 (DLAD 4145.41) Packaging Of Hazardous Materials
(DLAD 4145.41/AR 700-143/AFJI 24-210/NAVSUPINST 4030.55B/MCO 4030.40B)
http://www.dscc.dla.mil/downloads/packaging/dlad4145_41.pdf

SECNAVINST 4355.18 (DLAI 4140.55) Reporting Of Supply Discrepancies

Appendix G
NAVY Packaging Guidance

PHS&T Processes/Functional Areas

Packaging, Handling, Storage and Transportation (PHS&T) Logistics

Ensuring the effectiveness of PHS&T is essential to the overall success of aircraft, ships and weapon system program management. The degree to which PHS&T contributes to the success of the system is directly dependent upon the management emphasis received during all phases of the life cycle. Proper PHS&T management has a significant impact on system effectiveness, reliability, maintainability, corrosion prevention and control, safety and the environment and is a significant element of life cycle investment. While he need for PHS&T should be evaluated in the Systems Development and Demonstration Phase. PHS&T should be addressed during each supportability milestone, with it being completed prior to production and deployment, except for spare and repair parts packaging.

Navy Logistics Managers shall notify the NAVICP Subject Matter Expert (SME) of new or existing programs, which require PHS&T support. The NAVICP (Code 077) will, in-turn, assign the PHS&T SME duties for that given program to the appropriate activity. For example, Naval Weapons Station Earle PHST Center (NWS Earle) will typically be assigned PHS&T SME functions for ordnance programs. After initial contact with NAVICP, the Navy Logistics Manager coordinates directly with the SME for the specific type of support required. The SME provides several different types of support under the supportability planning and requirements support umbrella. The Navy Logistics Manager typically provides the following supportability documents to the PHS&T SME for development/review.

Acquisition Logistics Support Plan (ALSP)
Statement of Work (SOW)
Acquisition Support Plan (ASP)
Logistics Requirements and Funding Summary (LRFS)
PHS&T Milestone Chart

Packaging, Handling, Storage and Transportation (PHS&T) Program Management

NAVICP, Code 077, provides Navy weapons system program offices at NAVAIR, NAVSEA and SPAWAR with PHS&T subject matter expertise. The Packaging, Handling, Storage, and Transportation (PHS&T) Program Management Office (NAVAIR 3.5.3/ NAVICP 077) provides all NAVAIR programs with early integration of PHS&T technology and practices to maximize protection of program assets and to minimize life-cycle costs and can provide similar expertise to other Navy systems commands. Throughout the logistic cycle this office maximizes savings by integrating and analyzing the affects of transportation systems, turn-around times, inventory levels, handling hazards, environmental hazards, and maintenance issues as early in the program as possible. This office manages issues such as policies and procedures for various PHS&T subjects, funding for aviation PHS&T initiatives, and identification of facilities that can perform aviation PHS&T functions.

Reusable Containers

New programs/systems are reviewed by government/contractor PHS&T SME to determine candidates for reusable containers. Once a candidate is identified, the container SMEs (NAVICP, for non-ordnance containers and NWS Earle for ordnance containers), is responsible for:

Performing a preliminary technical investigation to determine container general requirements.

Providing Navy Logistics Managers with POA&Ms and cost estimates for approval/funding.

The Navy Logistics Manager integrates the requirements into the overall program schedule/budget. Upon Navy Logistics Manager's approval/funding, the CFA:

Gathers detailed end item technical information (e.g., fragility, dimensions, weight, and interface).

Determines procurement method [e.g. weapons system prime contract, Full and Open Competition/Formal Source Selection, NAVICP container BOA, Organic (NWS Earle)]. In-house development may be advantageous in programs where standardization is a priority. Contractor-assisted development may be advantageous in cases where either the contractor's inherent item knowledge is critical or it is determined to be economically advantageous to the Government.

Develops container performance specification.

Conducts design reviews and authorizes prototype fabrication. (Design reviews involve the CFA and contractors with input from the Navy Logistics Manager's and fleet/field personnel.)

Verifies that design qualification testing results meet performance requirements.

Authorizes production pending successful qualification testing.

Approves the Technical Data Package (TDP).

Packaging Coding, Navy Spares

The Packaging Requirements Code is a standardized alphanumeric code found in MIL-STD-2073-1D and used by DOD to describe the packaging materials and processes necessary to protect items from the physical and environmental effects of the military logistics cycle. Some of the packaging codes are developed by contractors, with guidance from the NAVICP, and are provided as part of the supportability data delivered to the government. Navy Packaging Specialists also develop codes. The data is input into the NAVICP Master Item File (MIF) for future procurements and for use by field activities.

Transportation of Aircraft, Weapons and Components

The NAVAIR Transportation Manager at NAVICP-Phil provides transportation guidance and data requirements for any new NAVAIR acquisition documents. The Transportation Manager reviews documents in response to a Navy Logistics Manager's request. The Transportation Manager also provides a transportation clause check-sheet for solicitations, which includes the applicable FAR clauses and any other information, which should be included in the contract.

Transportation Plans

Whenever a new acquisition program is expected to result in procurement of an item that might pose problems during transportation, a transportation plan is typically required. This plan

should adequately assess the requirements for safely transporting the item to its intended destination, or it should address how those requirements will be developed e.g., for ordnance items, NWS Earle develops unitization/transportation standards. Items meeting the definition of a transportability problem item include items which are oversized, overweight, hazardous, sensitive, wheeled and tracked vehicles, and others for which special transportation regulations are imposed. Transportation plans are also required for special situations such as when procuring from a foreign source.

Technical Assistance for Repairables Protection (TARP) WebPort
http://www.icptarp.net

Naval Aviation Systems Team Acquisition Logistics Support Plan (ALSP) Guide http://www.nalda.navy.mil (see Policy Tools/ALSP Guide)

Naval Air Systems Command Contracting for Supportability Guide (CFSG)
http://www.nalda.navy.mil (see Policy Tools/CFSG/Chapter 15)

Naval Aviation Systems Team APML Desk Guide for Packaging, Handling, Storage and Transportation
http://www.navicp.navy.mil/phst/apml/toc.htm

Naval Air Systems Command Independent Logistics Assessment (ILA) and Acquisition Program Planning Guidebook
http://www.nalda.navy.mil (see Policy Tools/ILA/guidebook)

(Milestone Assessment Questions for PHS&T listed on the following pages)

MILESTONE A

1. Have potential PHS&T related problems been discussed? This may include packaging, transportability or environmental issues (i.e. electrostatic sensitive components, shelf life, over-sized loads or hazardous materials)? Does the SOW identify requirements for these types of items?

2. Are there any deteriorable elastomers or other components with an expected shelf life of five (5) years or less being considered for selection? If so, did the contractor attempt to find an alternate material with a shelf life of greater than five (5) years?

3. If new hazardous material is being introduced, will it pose PHS&T problems? Has hazardous material been coordinated with the NAVICP hazardous material representative? Do the appropriate sections of the supportability documents address the problems?

4. Is there an environmental impact and has it been addressed in environmental plans?

5. Are there any items, which require special storage requirements (i.e. freezers for storage of composites (adhesives), hazardous materials, etc) If so, does the facilities chapter of the supportability documents reflect these requirements?

6. Do the supportability documents reflect planning to ensure PHS&T requirements are met?

7. Does the LRFS identify PHS&T funding requirements, including all CFA functions, new specialized reusable container design (if applicable) and transportation costs to be paid by the Government prior to initial production?

8. Who is the PHS&T representative assigned to the program?

9. How will the contractor manage PHS&T? Is this identified in the SOW? Has the PHS&T LEM reviewed and provided input to the SOW?

10. If unusual PHS&T requirements impact any other area, has that manager taken necessary steps to support the requirement? (i.e. item requiring special handling/support equipment)

11. Have PHS&T milestones been established (e.g., SOW inputs, new container design development and testing, and container deliveries)?

12. Does the Operational Requirements Document (ORD) identify transportation modes and means (e.g., type of vehicles, aircraft) by which the item(s) must be capable of being transported?

13. Is a transportation plan/transportability report required if transportability problems are anticipated?

Note: Oversized, overweight items, or items requiring special transportation modes or items that are classified suggest the need for a transportation plan/transportability report.

MILESTONE B

1. Have potential PHS&T related problems been identified? **Note:** This may include packaging, transportability or environmental issues (e.g., electrostatic sensitive components, shelf life, over-sized loads or hazardous materials)

2. Does the SOW identify requirements for these types of items?

3. How will electrostatic/electromagnetic sensitive items be handled?

4. Are these requirements identified in the SOW?

5. Are there any deteriorable elastomers or other components with an expected shelf life of five (5) years or less being considered for selection?

6. If so, did the contractor attempt to find an alternate material with a shelf life of greater than five (5) years?

7. If new hazardous material is being introduced, will it pose PHS&T problems?

8. Do the appropriate sections of the supportability documents address the problems?

9. Is there an environmental impact and has it been addressed in environmental plans?

10. What handling equipment is required?

11. Has the requirement for the contractor to provide PHS&T data been identified?

12. Who will use this data to develop Packaging Requirements Codes (PRCs)?

13. .Do the PRCs specify how each item will be packaged? Are these requirements identified in the SOW?

14. Have PHS&T milestones been established (e.g., SOW inputs, new container design development/testing and container deliveries)?

15. If the Navy is a participating service, have peculiar PHS&T requirements been forwarded?

16. Does the contract address the contractor's responsibility for transportation functions?

17. Is a transportation plan/transportability report required if transportation problems are anticipated?

18. Does Section D of the contract prescribe appropriate preservation, packaging, packing and marking (including bar coding) requirements for the anticipated shipping, storage and issue conditions?

19. If reusable containers are a line item in Section B of the contract, does Section C contain an appropriate specification? Was the applicable Cognizant Field Activity (CFA) for the reusable container contacted for input?

20. Does the LRFS identify PHS&T funding requirements, including all CFA functions, new specialized reusable container design (if applicable) and transportation costs to be paid by the Government prior to initial production?

21. Does the Test and Evaluation Master Plan include transportability testing requirements, if needed?

22. How will residual materials from modifications be handled?

MILESTONE C and FRP

1. Has a PHS&T representative been assigned to the program and has that person been contacted for input?

2. What PHS&T problems were identified during testing and early fielding of the system?

3. How are these problems being addressed?

4. Are there any unresolved PHS&T problems including transportability?

5. Were supportability documents updated to reflect changes/lessons learned during the E&MD and previous phases?

6. If the Acquisition Plan has changed, does the change affect previous PHS&T decisions?

7. If the Navy is a participating service, have the executive service and the contractor accepted Navy peculiar PHS&T requirements?

8. If reusable containers are a line item in Section B of the contract, does Section C contain an appropriate specification? Was the applicable cognizant field activity (CFA) for the reusable container contacted for input?

9. Have new reusable containers been funded, designed and tested?

10. Does container delivery coincide with item delivery? If not, has appropriate alternate packaging requirements been established?

11. Are required specialized and multi-application containers available for fleet use?

12. Are the PHS&T milestones being met?

13. Does Section D of the contract prescribe appropriate preservation, packaging, packing and marking (including bar coding) requirements for the anticipate shipping, storage and issue conditions?

14. Have packaging requirements for repairable items been added to documents for fleet use?

15. Does the contract address the contractor's responsibility for transportation functions?

16. Has the LRFS been updated to support continuing PHS&T requirements and is that funding available?

17. If special handling equipment is required, is it in place and supportable?

18. How has data been provided to the fleet for use when repackaging hazardous materials or packaging hazardous waste?

Appendix H
Defense Logistics Agency (DLA) Packaging Guidance

DLAD 4145.7 (AR 700-15) Packaging of Materiel
AR 700-15/NAVSUPINST 4030.28D/AFJMAN 24-206/MCO 4030.33D/DLAD 4145.7
http://www.dscc.dla.mil/downloads/packaging/dlad4145_7.pdf

DLAD 4145.12 The DLA Packaging Program
http://www.dscc.dla.mil/downloads/packaging/dlad4145_12.pdf

DLAI 4145.12 The DLA Packaging Program
http://www.dscc.dla.mil/downloads/packaging/dlai4145_12.pdf

DLAD 4145.41 Packaging of Hazardous Materials
http://www.dscc.dla.mil/downloads/packaging/dlad4145_41.pdf

PACKAGING CRITERIA FOR CONSUMABLE ITEMS[15]

One of DLA's Defense Supply Centers (DSC) will generally manage items that are considered to be consumable by virtue of having no required degree of reparability or recoverability. Each DSC follows this baseline criteria for assigning the type of packaging needed for a given distribution pattern:

Type of Shipment	Preservation	Packing
MICAP/999/NMCS	Commercial	Commercial
Prepositioned War Reserves/Mobilization	Military	A
Security Assistance Programs (i.e. FMS, Grant Aid)	Military	B
Overseas Small Parcel Shipment	Commercial	Commercial
CONUS Small Parcel Shipment	Commercial	Commercial
FMS Small Parcel	Commercial	Commercial
Delivery for Wholesale Depot Stock	Military	Commercial
Direct Vendor Delivery (CONUS)	Commercial	Commercial
Overseas Delivery, other than Small Parcel Priority 01-08, IPG I or II	Commercial	Commercial
Overseas Delivery, Other than Small Parcel Priority 09-15, IPG III	Military	B

[15] Consumable Item—An item of supply (except explosive ordnance and major end items of equipment) that is normally expended or used up beyond recovery in the use for which it is designed or intended.

The DSCs vary these general criteria for some specialized, critical application items, such as:

- Small, electronic components susceptible to damage from electrostatic discharge and/or electromagnetic forces
- Items used in nuclear propulsion systems
- Flight Safety Critical Aircraft Parts
- Hazardous Materials

Each of these variances resulted from problems users encountered with previously specified packaging, military and commercial alike, that did not meet the logistics demands for the given item.

Appendix I: Packaging Points of Contact

Name	Agency	Phone	Email
Rick Arter	Navy Rep (NAVICP)	215-697-2183	richard_arter@icpphil.navy.mil
Craig Curtis	OUSD-AT&L (AI)	703-697-6399	craig.curtis@osd.mil
Mike Dawson	USMC Rep/DPPG	703-695-8970	dawsonmm@hqmc.usmc.mil
Vickie Edgar	NAVICP Mech/DPPG	717-605-5623	vickie_m_edgar@icpmech.navy.mil
Frank Guerrero	DCMA Rep	703-428-0957	fguerrero@hq.dcma.mil
Yvonne Jackson	SMPT	410-278-4451	yvonne.jackson@ocs.apg.army.mil
Kinter (Pete) Koontz	Army Rep	570-895-6587	kinter.koontz@logsa.army.mil
Col John Long	OSD(OGC)	703-697-9136	longj@dodgc.osd.mil
Frank Magnifico	NAVAIR	732-323-4282	magnificofj@navair.navy.mil
Joe Maloney	DLA Rep	703-767-3673	joe_maloney@hq.dla.mil
Sherry McNeil	DUSD (L&MR)	703-693-5717	sherry.mcneil@osd.mil
Kathy Reid	OUSD-AT&L (AI)	703-697-6398	kathy.reid@osd.mil
Walter (Jim) Roos	Army Rep	570-895-7105	walter.roos@logsa.army.mil
Elaine Smith	NAVICP Phil	215-697-2887	elaine_smith@icpphil.navy.mil
Frank Stoudt	NAVICP Mech	717-605-5520	frank_h_stoudt@icpmech.navy.mil
Mike Werneke	USAF Rep	937-257-2638	mike.werneke@wpafb.af.mil
Rich Wojciechowski	OUSD-AT&L (DP)	703-697-1360	richard.wojciechowski@osd.mil

Appendix J
Packaging Glossary and Acronyms

Acquisition and Logistics Acronyms
http://web2.deskbook.osd.mil/htmlfiles/DBY_Acronyms.asp

Glossary: Defense Acquisition Acronyms and Terms
http://www.dsmc.dsm.mil/pubs/glossary/Glossary.doc

LogisticsWorld Logistics Glossary
http://www.logisticsworld.com/logistics/glossary.htm

US Army Materiel Acquisition Glossary
http://www.almc.army.mil/amd/ALMC-ML/GLOSSARY.HTM

Additional Acronyms

AFJMAN	Air Force Joint Manual
AFMC	Air Force Materiel Command
AFMCAC	Air Force Materiel Command Acquisition Circular
AR	Army Regulations
ASTM	American Society for Testing and Materiel
ADUSD (LP&P)	Assistant Deputy Under Secretary of Defense (Logistics Plans and Programs)
CAGE	Commercial and Government Entity
CCA	Clinger-Cohen Act
CDRS	Container Design and Retrieval System
CFA	Cognizant Field Activity
CFR	Code of Federal Regulations
CLIN	Contract Line Item
CMI	Civil/Military Integration
CONUS	Continental United States
DCAA	Defense Contract Audit Agency
DCMA	Defense Contract Management Agency

DDL	Delegation of Disclosure Authority Letter
DFARS	Defense Federal Acquisition Regulation Supplement
DLA	Defense Logistics Agency
DLSIE	Defense Logistics Studies Information Exchange
DOE	Department of Energy
DPPG	Defense Packaging Policy Group
DSB	Defense Science Board
DSIC	Defense Standards Improvement Council
DUSD (AR)	Deputy Under Secretary of Defense (Acquisition Reform)
DUSD (L)	Deputy Under Secretary of Defense (Logistics)
DUSD (L&MR)	Deputy Under Secretary of Defense (Logistics & Materiel Readiness)
E&MD	Engineering and Manufacturing Development
FAR	Federal Acquisition Regulation
FARA	Federal Acquisition Reform Act of 1996
FASA	Federal Acquisition Streamlining Act of 1994
F.O.B.	Free On Board
FTMS	Federal Test Method Standard
GE	General Electric
GFP	Government Furnished Property
GPRA	Government Performance and Results Act
HCA	Head of the Contracting Activity
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods
IPT	Integrated Product Team
ISO	International Organization for Standardization
LEM	Logistics Element Manager
LIDB	Logistics Integrated Database
LOGSA	Logistics Support Activity

LRFS	Logistics Requirements and Funding Summary
MAIS	Major Acquisition Information Systems
MDA	Milestone Decision Authority
MIL-STD	Military Standard
NAVICP	Naval Inventory Control Point
NEPA	National Environmental Policy Act
NGS	Non-Government Standards
NSN	National Stock Number
ORD	Operational Requirements Document
ORNL	Oak Ridge National Laboratory
PEO	Program Executive Officer
PHS&T	Packaging, Handling, Storage and Transportation
PM	Program Manager
PRC	Packaging Requirements Codes
RIT	Rapid Improvement Team
SOW	Statement of Work
SPI	Single Process Initiative
TTG	Transportation Technology Group
USC	United States Code
USD (AT&L)	Under Secretary of Defense (Acquisition, Technology & Logistics)