DEPARTMENT OF DEFENSE HANDBOOK

ACQUISITION OF SOFTWARE ENVIRONMENTS AND SUPPORT SOFTWARE

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MIL-HDBK-1467
FOREWORD

1. This handbook is approved for use by all Departments and Agencies of the Department of Defense (DOD).

2. This handbook is for guidance only. This handbook cannot be cited as a requirement. If it is, the contractor does not have to comply.

3. In order to provide life cycle software engineering for their assigned systems, life cycle support organizations need rich engineering environments that give them the capabilities needed to satisfy this mission.

3.1 First, life cycle support organizations establish and maintain a common operating environment (COE) which contains most of the items needed to support the systems in their domains or product-lines. A COE is the overarching environment, which is the source of the ingredients from which life cycle support organizations develop and maintain software. The COE can be thought of as a virtual repository. One component is the assets from legacy systems that have been certified for reuse. Another component is the commercial-off-the-shelf (COTS) software that is applicable to the software being developed and maintained. Also, cross-domain reusable assets from other COEs, such as Ada run-time kernels and kalman filters, are included. Other items in the COE include architectures, requirements, design, algorithms, and test cases. Section 4 of this handbook focuses on providing guidance for the acquisition of new items to be integrated into a COE.

3.2 Second, life cycle support organizations support the software of a specific system in their domain or product-line through the use of a Software Engineering Environment (SEE). The SEE is composed of software development and maintenance tools integrated with equipment and unique software for each target computer system. The SEE can be one of the COE repositories. Section 5 of this handbook defines the efforts necessary to ensure the existence of a complete life cycle support capability for contractually deliverable application software when it enters the operational inventory. Since this may include the acquisition of specific items needed to enrich the SEE, some or all of section 4 may also be applicable.

4. This handbook is designed to recognize the needs and constraints of existing life cycle support organizations and, at the same time, allow the contractor the flexibility to develop items and manage the contract in accordance with the contractor's best judgement and practices. Accordingly, this handbook does not indicate the approach to be used by the contractor. The guidance contained in this handbook is predicated on the contracting activity identifying in the request for proposal the life cycle support organization and any of its items that are designated for use by the contractor. Subject to the constraints imposed by the contracting activity, the contractor may propose to use the existing resources of the contracting activity, to use the contractor's own resources (either existing or to be developed), or to select from a wide range of

other options. The contractor should be required to identify the selected approach in the proposal for the contracted effort. The contractor's approach should be considered during source selection and be subject to approval by the contracting activity prior to implementation.

5. This handbook addresses a small portion of the overall software acquisition process. For those organizations that do not have extensive experience in software acquisition, it is recommended that the Software Acquisition Capability Maturity Model (SA-CMM) be consulted. The SA-CMM is a collaborative work of authors from government, industry, and the Software Engineering Institute (SEI) of Carnegie Mellon University in Pittsburgh, PA. The SA-CMM identifies a minimum set of actions that, when implemented, will improve the capability of the organization's software acquisition process. It has been developed to provide organizations a roadmap for implementing software acquisition process improvement. Information regarding the SA-CMM may be obtained from the SEI.

6. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, US Army Tank-automotive and Armament Command, ATTN: AMSTA-AR-FSF-S, Picatinny Arsenal, NJ 07806-5000, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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1. SCOPE

1.1 <u>Purpose</u>. This handbook establishes guidelines for the acquisition of new COE items and ensuring the compatibility of these items with the designated COE. Further, it establishes guidelines for the contracting activity's use in contracting for SEE items, to ensure the compatibility of each SEE item with the contracting activity's designated Life Cycle Software Engineering Environment (LCSEE), and to ensure the existence of a complete life cycle support capability for application software that is to be delivered under the contract. This is for guidance only. This handbook cannot be cited as a requirement. If it is, the contractor does not have to comply.

1.2 <u>Application</u>.

1.2.1 <u>COE items</u>. These guidelines should be applied to all contracts that include the acquisition of items destined for integration into a specific COE. For this type of acquisition, Section 4 of this handbook applies. This handbook is intended to support the contracting activity development of procurement packages that will contain delivery requirements for items that are to be integrated into a particular COE. The prime contractor should be made responsible for invoking all contractual requirements stemming from this handbook's use on any and all subcontractors, vendors, or other sources involved in the production of COE items to be delivered under the requirements of the contract.

1.2.2 <u>SEE items</u>.   These guidelines should be applied to all contracts that include the acquisition of new items needed for the life cycle support of application software to be delivered under the contract. Section 5 of this handbook should be used for this type of acquisition, however some or all of Section 4 may also be applicable. This handbook is intended to support contracting activity preparation of statements of work that must satisfy particular engineering and support requirements for a contracted application software effort. The prime contractor should be made responsible for invoking all contractual requirements stemming from this handbook's use on any and all subcontractors, vendors, or other sources involved in the development of items to be delivered under the requirements of the contract.

1.3 <u>Type of contract</u>.   In situations where the items being acquired are not the subject of a specific contract but the subject of a task or delivery order under a larger contract, the word "contract" as used in this handbook should be interpreted to mean "task or delivery order."

1.4 <u>Non-contractual use</u>. This handbook can be used by any organization obtaining an item from another organization (in-house). For this usage, the term "contractor" refers to the organization producing the item. The term "contracting activity" refers to the obtaining organization and the term "contract" refers to the agreement between the organizations.

2. APPLICABLE DOCUMENTS

2.1 This section is not applicable to this handbook.

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3. DEFINITIONS

The definitions provided in this section describe the terms as they are used in this handbook.

3.1 <u>Common operating environment (COE)</u>. A repository or repositories (some perhaps virtual) that contains the ingredients from which an organization develops new software. Some examples of COE items include a SEE, reusable software and process assets, selected COTS packages, and cross-domain assets.

3.2 <u>Contracting activity</u>. That office, with contract and project directive administrative authority, which has prime responsibility for and authority over the contracted effort.

3.3 <u>Contracting activity-designated resources</u>. Resources that the contracting activity identifies to the contractor to be included and used in the Developmental Software Engineering Environment (DSEE). (Note: The contracting activity may elect to furnish these resources and arrange any necessary licenses, or require the contractor to do so.)

3.4 <u>Contractor</u>. Any organization under contract or tasking agreement with the contracting activity to perform any part of the contracted effort.

3.5 <u>COTS</u>. An acronym for commercial-off-the-shelf.

3.6 <u>Data rights</u>. The rights to use, duplicate, or disclose technical data or computer software in whole or in part, in any manner and for any purpose whatsoever, and to have or permit others to do so.

3.7 <u>Host computer system</u>. Computer equipment, support software, and procedures used to develop and support the contractually deliverable application software for one or more target computer systems. A host computer system may additionally include: a) elements of the target computer systems; b) modifications, emulations, or simulations of the target computer systems; or c) specially designed software or equipment to permit development or support of the application and support software.

3.8 <u>[Item] sources</u>. For the purposes of this handbook, the following terms are used to describe the sources of COE/SEE items.

3.8.1 <u>Commercially available item</u>. A previously developed item used regularly for other than Government purposes and sold, licensed, or leased in significant quantities to the general public at established market or catalog prices; for example, COTS software.

3.8.2 <u>Privately developed item</u>. A previously developed item independently developed by

an industrial source at its own expense. (Note: In contrast with commercially available, this item may have limited availability and may be subject to peculiar or unusual restrictions or limiting agreements.)

3.8.3 Contracting activity-designated item. A previously developed item that the contracting activity requires the contractor to use in association with producing a contractually-required item. (Note: The contracting activity may elect to furnish these items and arrange any necessary licenses, or require the contractor to do so.)

3.8.4 Developmental item. An item to be modified, expanded, created, or that is in any stage of being created.

3.9 Previously developed item. An item that is available for delivery and acceptance prior to award of the contract.

3.10 Product-line. A set of products that share common attributes (technology, design, parts, manufacturing process, etc.) grouped to realize economies of scope, but which have different specific features and functionality satisfying different sets of requirements. A family of functionally similar systems (applications domain).

3.11 Software. A combination of associated computer programs and computer program data definitions required to enable the computer hardware to perform computational or control functions. (Note: This definition includes firmware within its applicability. This definition of software is independent of the type of physical storage media in which the software resides.) Software is categorized as follows:

3.11.1 Application software. All software used to operate, or that is resident in, a target computer system.

3.11.2 Support software. All software used to aid the development, testing, and support of application software. Support software includes all software used to operate, or that is resident in, a SEE.

3.12 Software engineering environment (SEE). A host computer system, plus other related equipment and procedures, located in a facility that provides a total support capability of the software of a target computer system (or a set of functionally or physically related target computer systems). The environment enables the performance of a full range of services, including: performance evaluation, system and software generation, development and testing of changes, simulation, emulation, training, software integration, configuration management, and operational distribution of the software. Two types of software engineering environments are addressed:

3.12.1 <u>Developmental software engineering environment (DSEE)</u>. Those contracting activity-approved resources identified by a contractor to be used to support the software requirements under the contracted effort.

3.12.2 <u>Life cycle software engineering environment (LCSEE)</u>. Those contracting activity resources used by the life cycle support organization to provide a total life cycle support capability of assigned target computer systems.

3.13 <u>Target computer system</u>. Computer equipment, software, and procedures which are physically a part of an operational system.

3.14 <u>Technical architecture</u>. The set of rules governing the arrangement, interaction, and interdependence of the parts or elements that together may be used to form an information system. Its purpose is to enable greater software reuse and interoperability by ensuring that a conformant system satisfies a specified set of requirements. It is the building code for a product-line.

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4. COE ITEMS

This section should be used when the purpose of the acquisition is to obtain new items for integration into a COE.

4.1 <u>Contracting activity guidelines</u>. This paragraph contains guidelines for actions that the contracting activity should take to ensure that the procurement package and subsequent contract contain the necessary requirements to properly address the successful acquisition of COE items. The contracting activity should ensure that the procurement package contains, as a minimum, the following:

4.1.1 <u>Non-technical contractual requirements</u>. The contracting activity should specify the non-technical requirements, such as contractual terms, conditions, and agreements.

4.1.2 <u>Product technical contractual requirements</u>. The contracting activity should specify the technical requirements that each item being acquired must satisfy.

4.1.3 <u>Product compatibility contractual requirements</u>. The contracting activity should define all of the compatibility requirements that each item being acquired must satisfy. The following subparagraphs identify some of the areas that should be taken into account when defining these requirements.

4.1.3.1 <u>Physical repository interface requirements</u>. The contracting activity should designate the repository in which the COE items are to reside. This information can be obtained from the life cycle support organization.

4.1.3.2 <u>Product-line requirements</u>. The product-line of which the items being acquired are to become a part will have membership requirements. All membership requirements must be made a part of the contractual requirements. An important example of such a requirement is complying with the architecture of the product-line.

4.1.3.3 <u>Domain requirements</u>. Similar to product-line requirements, the applications domain in which the new items will operate will have its membership requirements that must be specified.

4.1.4 <u>Organizational requirements</u>. The contracting activity should be sure to address its organizational acquisition requirements. There may be standards to be invoked, such as a formal technical architecture (TA). Organizational policy must also be addressed, such as software management and the use of programming languages.

4.1.5 <u>Documentation requirements</u>. The contracting activity should include in the contract the documentation requirements for each COE item being acquired. Documentation

requirements should be based on the source of the item and on any existing item documentation. See subparagraphs 4.2.2.x.1 that follow.

4.1.6 Quality assessment requirements. Under normal circumstances a contractor in receipt of a contract with the DOD will have in place a functioning quality assessment program that has been approved or certified by a Government organization. If not, the contracting activity should initiate an approval process. Then, the contracting activity should require that the contractor apply the approved quality assessment program to each item being acquired.   The quality assessment program should take into account the source of the item. The contractor's approved quality assessment program provides a vehicle for the contracting activity's management of the contracted effort. See subparagraphs 4.2.2.x.2 that follow.

4.1.7 Configuration management requirements. Under normal circumstances a contractor in receipt of a contract with the DOD will have in place a functioning configuration management program that has been approved or certified by a Government organization. If not, the contracting activity should initiate an approval process. Then, the contracting activity should require that the contractor apply the approved configuration management program to each item being acquired. The configuration management program should take into account the source of the item. The contractor's approved configuration management program provides a vehicle for the contracting activity's management of the contracted effort. See subparagraphs 4.2.2.x.3 that follow.

4.1.8 Change requirements. The contracting activity should include in the contract the requirements that specify the types of changes that can and cannot be made to each item being acquired. Change requirements should be based on the source of the item. See subparagraphs 4.2.2.x.4 that follow.

4.1.9 Acceptance requirements.   The contracting activity should include in the contract the acceptance requirements for each item being acquired. Acceptance requirements should be based on the source of the item. See subparagraphs 4.2.2.x.5 that follow.

4.1.10 Software development requirements. In the course of the acquisition of a specific COE item, that item can be categorized (or recategorized) as a "developmental item." To produce a developmental item, the contractor should be required to utilize the same software engineering process that it uses for all software development efforts. When the acquisition of an item involves a developmental item, the contracting activity should invoke the same contractual mechanism for imposing product development requirements on the contractor that it uses for all software development efforts.

4.2. Contractor requirements. The contractor should be required to deliver items that satisfy the requirements that were placed in the contract in accordance with the guidance contained in paragraph 4.1 of this handbook. The following subparagraphs contain specific guidelines for the items that will originate from each of the sources defined in paragraph 3.8.

4.2.1 <u>Commercially available items</u>. When considering the use of a commercially available item, the contractor should be required to inform the contracting activity of the item's cost, quality, expected life, expected change rate, maintenance requirements, training requirements, security issues, and all risks associated with the item's use. The use of a commercially available item should require contracting activity approval prior to incorporation or use, or prior to any contractor licenses or agreements associated with its purchase or use. The contractor should be required to identify to the contracting activity any limitation of rights, licenses, or similar agreements by the contractor or among the contractor, subcontractors, vendors, or any other source that will impose any constraints on the use of the COE item by the life cycle support organization, or by any agent employed by the life cycle support organization to perform life cycle support of the product-line. Approval to use a commercially available item should not relieve the contractor of obligations to ensure compatibility with the COE.

4.2.1.1 <u>Documentation guidelines</u>. The documentation and delivery requirements for the commercially available items should be specified by the contracting activity in the contract. Where existing documentation satisfies the intent of this handbook, and modification or redevelopment of the documentation is not cost-effective or intended, the existing documentation may be substituted, subject to prior approval by the contracting activity.

4.2.1.2 <u>Quality assessment guidelines</u>. The contractor should be required to apply the contracting activity-approved quality assessment program to each commercially available item. The contractor should be required to include in the contracting activity-approved quality assessment program the procedures necessary to ensure that each item satisfies its specified requirements.

4.2.1.3 <u>Configuration management guidelines</u>. The contractor should be required to apply the contracting activity-approved configuration management program to each commercially available item. The contractor should be required to include in the contracting activity-approved configuration management program the procedures necessary to prevent unauthorized changes to each item.

4.2.1.4 <u>Item changes</u>. The contractor should not be allowed to make any changes to a commercially available item without prior approval of the contracting activity. If this item will be changed from its commercially available version or release, it should be recategorized and managed from that point on as a developmental item. The contractor should be made responsible for identifying and resolving any item defects with the original supplier of the item. The contractor should be required to identify to the contracting activity all changes submitted or released by the original supplier of the item with an assessment of the possible effects. The contracting activity may designate changes submitted or released by the original supplier of the item for incorporation.

4.2.1.5 Item acceptance guidelines. In addition to any other criteria specified by the contracting activity, acceptance of a commercially available item should be predicated upon compatibility with the COE and satisfactory resolution of any limited or restricted rights issues.

4.2.2 Privately developed items.   When considering the use of a privately developed item, the contractor should be required to inform the contracting activity of the item's cost, quality, expected life, expected change rate, maintenance requirements, training requirements, security issues, and all risks associated with the item's use. The use of a privately developed item, whether supplied by the contractor, subcontractors, vendors, or any other source, should require contracting activity approval prior to incorporation or use, or prior to any contractor licenses or agreements associated with its purchase or use. The contractor should be required to identify to the contracting activity any limitation of rights, licenses, or similar agreements by the contractor or among the contractor, subcontractors, vendors, or any other source that will impose any constraints on the use of the COE item by the life cycle support organization, or by any agent employed by the life cycle support organization to perform life cycle support of the product-line. Approval to use a privately developed item should not relieve the contractor of obligations to ensure compatibility with the COE.

4.2.2.1 Documentation guidelines. The documentation and delivery requirements for the privately developed items should be specified by the contracting activity in the contract. Where existing documentation satisfies the intent of this handbook, and modification or redevelopment of the documentation is not cost-effective or intended, the existing documentation may be substituted, subject to prior approval by the contracting activity.

4.2.2.2 Quality assessment guidelines. The contractor should be required to apply the contracting activity-approved quality assessment program to each privately developed item. The contractor should be required to include in the contracting activity-approved quality assessment program the procedures necessary to ensure that each item satisfies its specified requirements.

4.2.2.3 Configuration management guidelines. The contractor should be required to apply the contracting activity-approved configuration management program to each privately developed item. The contractor should be required to include in the contracting activity-approved configuration management program the procedures necessary to prevent unauthorized changes to each item.

4.2.2.4 Item changes. The contractor should not be allowed to make any changes to a privately developed item without prior approval of the contracting activity. If this item will be changed from its privately developed version or release, it should be recategorized and managed from that point on as a developmental item. The contractor should be made responsible for identifying and resolving any item defects with the original supplier of the item. The contractor should be required to identify to the contracting activity all changes submitted or released by the original supplier of the item with an assessment of the possible effects. The contracting activity

may designate changes submitted or released by the original supplier of the item for incorporation.

4.2.2.5 Item acceptance guidelines. In addition to any other criteria specified by the contracting activity, acceptance of a privately developed item should be predicated upon compatibility with the COE and satisfactory resolution of any limited or restricted rights issues.

4.2.3 Contracting activity-designated items. The contractor should be required to manage the items designated by the contracting activity in accordance with the following subparagraphs. Contracting activity-designated items have the same contractual ramifications as does Government Furnished Equipment (GFE) and should be managed in a similar manner.

4.2.3.1 Documentation guidelines. The contractor should not be allowed to change the specifications or descriptive documentation of an item without prior approval and direction by the contracting activity.

4.2.3.2 Quality assessment guidelines. Not applicable.

4.2.3.3 Configuration management guidelines. The contractor should be required to include in the contracting activity-approved configuration management program the procedures necessary to prevent unauthorized changes to the contracting activity-designated items.

4.2.3.4 Item changes. The contractor should not be allowed to make any changes to a contracting activity-designated item without prior approval of the contracting activity. If this item will be changed, it should be recategorized and managed from that point on as a developmental item.

4.2.3.5 Item acceptance guidelines. The contractor should be required to ensure that the configuration of the contracting activity-designated item has not been changed and continues to conform with its specifications and documentation.

4.2.4 Developmental items. All items in this category should be modified, expanded, or created in accordance with the contractually-specified product engineering requirements.

4.2.4.1 Documentation guidelines. The documentation and delivery requirements for each developmental item should be specified by the contracting activity in the contract and/or on the Contract Data Requirements List (CDRL).

4.2.4.2 Quality assessment guidelines. The contractor should be required to apply the contracting activity-approved quality assessment program to each developmental item to ensure that it is modified, expanded, or created according to contractual guidelines. The contracting activity-approved quality assessment program should be supplemented as necessary to ensure the compatibility of each item with the COE.

4.2.4.3 <u>Configuration management guidelines</u>. The contractor should be required to apply the contracting activity-approved configuration management program to each developmental item and its related documentation.

4.2.4.4 <u>Item changes</u>. The contractor should be required to establish internal baselines for the developmental items in accordance with the contractually-specified product engineering requirements. After the internal baselines have been established, all changes to a developmental item should additionally identify the impact of the changes on the COE.

4.2.4.5 <u>Item acceptance guidelines</u>. In addition to any other criteria specified by the contracting activity, acceptance of each developmental item should be predicated upon compatibility with the COE.

4.3 <u>Establishment of COE item supportability with the designated life cycle support organization</u>. Final acceptance of each item should be predicated on establishment of a satisfactory support capability for the item in the designated life cycle support organization. The support capability should include the compatibility of the item with the designated COE and the capability of the designated life cycle support organization to perform support of the contractually deliverable items. The contractor should be required to define for contracting activity approval the proposed approach for ensuring and warranting the support capability. The methods used to satisfy these guidelines, as a minimum, are specified in the following subparagraphs.

4.3.1 <u>Identification of other additions to the designated COE</u>. The contractor should be required to identify any additional support items that are required by the life cycle support organization to properly support each contractually deliverable item throughout its life cycle. The contractor should be required to ensure that these additional support items will be compatible with the existing support items in the designated COE.

4.3.2 <u>Supportability and compatibility requirements</u>. The contractor should be required to implement a contracting activity-approved approach to ensure and warrant that each COE item is completely compatible with the designated COE and that the life cycle support organization has the capability to perform support of each contractually deliverable COE item.

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5. SEE ITEMS

This section should be used, along with section 4.1, when the purpose of the acquisition is to obtain new SEE items that are necessary to provide life cycle support to new application software that is being delivered under the contract.

5.1 Contracting approach. This section makes the assumption that the efforts associated with developing the DSEE items are a part of a larger contractual effort that includes the development and delivery of application software. The approach used in this section centers around three contractor-produced documents: Developmental Software Engineering Environment (DSEE) Plan, Software Support Transition (SST) Plan, and the Life Cycle Software Engineering Environment (LCSEE) Users' Guide.

5.1.1 Initial step. The contracting activity designates the organization that is to provide life cycle support of the contractually deliverable application software. The designated life cycle support organization's identity and a requirement to include a draft DSEE Plan in offerors' proposals are made part of the solicitation package. The contracting activity also includes the LCSEE Users' Guide and SST Plan on the CDRL in the solicitation package. Appendix A contains the format and information requirements for the DSEE Plan. Appendices B and C, respectively, describe the LCSEE Users' Guide and SST Plan. Interested offerors describe their intentions in establishing a DSEE for the proposed effort in a draft DSEE Plan. The contracting activity considers the proposed DSEE Plan in the source selection process.

5.1.2 Next step. Once the contract is awarded, the contractor updates the draft DSEE Plan based on any comments received from the contracting activity. The DSEE Plan is then approved and baselined by the contracting activity. Subsequent changes to the DSEE Plan are managed and controlled. During the course of the contractual effort, the contractor produces the LCSEE Users' Guide and the SST Plan in accordance with the CDRL requirements.

5.1.3 Final step. The completed LCSEE Users' Guide and SST Plan are then used by the contracting activity and the contractor to ensure that the designated life cycle support organization has the tools it needs to provide support for the application software over the remainder of its life cycle.

5.2 DSEE Plan. The contractor should be required to define, implement, and integrate all software and related items that will be used to develop and support the deliverable application software required under the contract. The contractor should be required to identify all software and related items that are recommended by the contractor for use by the life cycle support organization to support the contractually deliverable application software throughout its operational life. The contractor also should be required to identify the approach proposed to ensure and warrant the existence of the capability to perform software support of the contractually deliverable application software by the life cycle support organization. The

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contractor should be required to document the approach to achieving these objectives in a DSEE Plan. The contractor should be required to submit the DSEE Plan to the contracting activity and obtain its approval prior to commencing the contracted effort. The format and information requirements for the DSEE Plan are contained in Appendix A.

5.2.1 <u>Contracting activity-furnished resources</u>. The contracting activity may designate a specific life cycle support organization or concept and, additionally, may direct the use of existing LCSEE resources. The contracting activity may designate other resources to be used by the contractor. The contractor should be required to identify in the DSEE Plan any resources expected to be furnished by the contracting activity to support the contracted effort. The contracting activity retains the option to furnish the resources or to guide, through the contract, the contractor to obtain them.

5.2.2 <u>DSEE identification</u>. The contractor may propose to utilize the resources of the life cycle support organization, to utilize the contractor's internal software development resources, or to use a combination of those resources. The contractor should be required to ensure that any recommendation to incorporate commercially available or privately developed items considers the potential economic commitments (initial and recurring), the risks of long-term dependence on the subcontractor or vendor, the probability of obsolescence, and the projected stability of the proposed items. The contractor's approach should clearly identify the interfaces with the life cycle support organization. The contractor should be required to reconcile the operations and support guidelines identified by the contracting activity with the proposed DSEE. Once it has been approved by the contracting activity, any changes in the contractor's DSEE should be subject to contracting activity approval prior to implementation or use.

5.2.3 <u>DSEE contents</u>. The DSEE should provide, as a minimum, a set of defined user/system interfaces, a set of software support tools, and a central library for the storage of software and all information associated with the development and support of the contractually deliverable application software over its life cycle. The DSEE should provide for storage of software both in a source form and in a form that has been compiled for a host computer system or a particular target computer system. The software support tools should include tools for software development, testing, support, maintenance, and configuration control. The DSEE should support the functions of project management, documentation, and release control. The contracting activity may specify specific data base, tools, interfaces, and procedures for inclusion in the DSEE.

5.2.4 <u>DSEE operation</u>. The contractor should be required to establish procedures and controls for access, use, generation, and change of all items in the DSEE. As a minimum, the contractually-specified software engineering guidelines for library usage and control, software generation, software operation, software configuration management, software quality assessment, and software defect reporting should be included and applied to all items in the DSEE.

5.2.5 <u>Differences between the DSEE and the designated LCSEE</u>. The contractor should be required to describe all differences between the DSEE and the designated LCSEE. The contractor should be required to describe all additions to the designated LCSEE, both items and procedures, that are necessary to ensure the compatibility of the DSEE with the designated LCSEE. The contractor should be required to identify the proposed additions as those that are either required to support a specific application for a particular target computer system or those that have potential for broader usage in the designated LCSEE. The contractor also should be required to separately identify and justify all items or procedures intended for use in the DSEE, but not recommended for inclusion in the designated LCSEE. For each such item, the contractor should be required to provide reasons why this addition is not recommended. The contracting activity may specify items or procedures to be added to the designated LCSEE. No contractually deliverable application software should be dependent on any items or procedures that are not deliverable to, or designated by, the contracting activity. The additions to the designated LCSEE are subject to approval of the contracting activity prior to implementation or use of the DSEE.

5.2.6 <u>Item source identification</u>. The components of the proposed DSEE can come from four sources. These sources can include items that are designated by the contracting activity, commercially available, are privately developed, or are to be modified or developed under the contract.   These item sources are defined in paragraph 3.8 of this handbook. The contractor should be required to identify the proposed sources for all the items to be included in the DSEE. The proposed sources should be subject to approval by the contracting activity prior to implementation or use of, and prior to any contractor licenses or agreements associated with the purchase or use of, any commercially available or privately developed items.

5.2.7 <u>Limited and restricted rights</u>. The contractor may propose the use or delivery of items and documentation with limited or restricted rights, or other potential licensing agreements. The contractor's proposed DSEE Plan should clearly identify for each item with limited or restricted rights the expected economic and other benefits or risks to accrue to the contracting activity and the expected constraints on the rights of the contracting activity. Unless prior approval for the use or delivery of these items is obtained from the contracting activity, the contractor should be required to ensure that the contracting activity will have unlimited rights in all computer items, equipment, and documentation that are required to evaluate, generate, install, integrate, test, modify, support, and operate the contractually deliverable items. All such items necessary to ensure the performance of these functions should be available for delivery by the contractor to the contracting activity. The contractor should be required to obtain contracting activity approval prior to implementation or use of, and prior to any contractor licenses or agreements associated with the purchase or use of, any commercially available or privately developed items and documentation related to the performance of the contract.

5.3 <u>DSEE implementation</u>. Upon approval by the contracting activity, the contractor should be required to implement the DSEE. The following subparagraphs contain specific guidelines for the items in the DSEE that will originate from each of the sources defined in

paragraph 3.8.

5.3.1 <u>Commercially available items</u>. When considering the use of a commercially available item, the contractor should be required to inform the contracting activity of the item's cost, quality, expected life, expected change rate, maintenance requirements, training requirements, security issues, and all risks associated with the item's use. The use of commercially available items should require contracting activity approval prior to incorporation or use, or prior to any contractor licenses or agreements associated with their purchase or use. The contractor should be required to identify to the contracting activity any limitation of rights, licenses, or similar agreements by the contractor or among the contractor, subcontractors, vendors, or other sources that will impose any constraints on the use of these items by the life cycle support organization, or by any agent employed by the life cycle support organization to perform life cycle support of the contractually deliverable items. Approval to use these items should not relieve the contractor of obligations to integrate these items into the DSEE and to ensure compatibility with the LCSEE.

5.3.1.1 <u>Integration guidelines</u>. The contractor should be required to ensure that the commercially available items are properly integrated into the DSEE and will be compatible with the LCSEE. Where existing documentation is used to verify performance, the contractor should be required to either certify the sufficiency and accuracy of the documentation and test results or accomplish added testing as may be specified by the contracting activity. The contractor should be required to integrate these items into the DSEE such that any future defect corrections or enhancements submitted or released by the original supplier of the items can be readily incorporated by the contracting activity. For commercially available items that are unique to the target computer systems, the contractor should be required to design the DSEE to ensure the independence of these items from the rest of the DSEE and the life cycle support organization.

5.3.1.2 <u>Documentation guidelines</u>. The documentation and delivery requirements for the commercially available items should be specified by the contracting activity in the contract. Where existing documentation satisfies the intent of this handbook, and modification or redevelopment of the documentation is not cost-effective or intended, the existing documentation may be substituted, subject to prior approval by the contracting activity.

5.3.1.3 <u>Quality assessment guidelines</u>. The contractor should be required to apply the contracting activity-approved quality assessment program to commercially available items. The contractor should be required to include in the contracting activity-approved quality assessment program the procedures necessary to ensure that each item satisfies its specified requirements and is properly integrated into the DSEE.

5.3.1.4 <u>Configuration management guidelines</u>. The contractor should be required to apply the contracting activity-approved configuration management program to each commercially available item. The contractor should be required to include in the contracting activity-approved

configuration management program the procedures necessary to prevent unauthorized changes to each item. The contractor should be required to identify any problems encountered in the integration and use of each item within the DSEE and provide recommended actions to correct these problems to the contracting activity.

5.3.1.5 <u>Item changes</u>. The contractor should not be allowed to make any changes to a commercially available item without prior approval of the contracting activity. If any item will be changed from its commercially available version or release, it should be recategorized and managed from that point on as a developmental item. The contractor should be made responsible for identifying and resolving with the original supplier of an item any defects or incompatibilities of the item with both the DSEE and the LCSEE. The contractor should be required to identify to the contracting activity all changes submitted or released by the original supplier of an item, with an assessment of the possible effects of incorporation in the DSEE and the LCSEE. The contracting activity may designate changes submitted or released by the original supplier of an item for incorporation in the DSEE and the contractor should be required to integrate all such designated changes into the DSEE.

5.3.1.6 <u>Item acceptance guidelines</u>. In addition to any other criteria specified by the contracting activity, acceptance of a commercially available item should be predicated upon compatibility with the LCSEE and satisfactory resolution of any limited or restricted rights issues.

5.3.2 <u>Privately developed items</u>. When considering the use of a privately developed item, the contractor should be required to inform the contracting activity of the item's cost, quality, expected life, expected change rate, maintenance requirements, training requirements, security issues, and all risks associated with the item's use. The use of privately developed items, whether supplied by the contractor, subcontractors, vendors, or any other source, should require contracting activity approval prior to incorporation or use, or prior to any contractor licenses or agreements associated with their purchase or use. The contractor should be required to identify to the contracting activity any limitation of rights, licenses, or similar agreements by the contractor or among the contractor, subcontractors, vendors, or any other source that will impose any constraints on the use of these items by the life cycle support organization, or by any agent employed by the life cycle support organization to perform life cycle support of the contractually deliverable items. Approval to use these items should not relieve the contractor of obligations to integrate these items into the DSEE and to ensure their compatibility with the LCSEE.

5.3.2.1 <u>Integration guidelines</u>. The contractor should be required to ensure that the privately developed items are properly integrated into the DSEE and will be compatible with the LCSEE. Where existing documentation is used to verify performance, the contractor should be required to either certify the sufficiency and accuracy of the documentation and test results or accomplish added testing as may be specified by the contracting activity. The contractor should be required to ensure that any recommendation to incorporate privately developed items considers the life cycle economic and other benefits or risks to the contractor and the contracting activity.

The recommendation should include an assessment of the items' and documentation's quality, the lost or impaired capabilities that would result if the items are not used, and the effort required to develop or modify added items or documentation to provide similar capabilities. For privately developed items that are unique to the target computer systems, the contractor should be required to design the DSEE to ensure the independence of these items from the rest of the DSEE and the life cycle support organization.

5.3.2.2 Documentation guidelines. The documentation and delivery requirements for the privately developed items should be specified by the contracting activity in the contract. Where existing documentation satisfies the intent of this handbook, and modification or redevelopment of the documentation is not cost-effective or intended, the existing documentation may be substituted, subject to prior approval by the contracting activity.

5.3.2.3 Quality assessment guidelines. The contractor should be required to apply the contracting activity-approved quality assessment program to each privately developed item. The contractor should be required to include in the contracting activity-approved quality assessment program the procedures necessary to ensure that each item satisfies its specified requirements and is properly integrated into the DSEE.

5.3.2.4 Configuration management guidelines. The contractor should be required to apply the contracting activity-approved configuration management program to each privately developed item. The contractor should be required to include in the contracting activity-approved configuration management program the procedures necessary to prevent any unauthorized changes to each item. The contractor should be required to identify any problems encountered in the integration and use of each item within the DSEE and provide recommended actions to correct these problems to the contracting activity.

5.3.2.5 Item changes. The contractor should not be allowed to make any changes to a privately developed item without prior approval of the contracting activity. If any item will be changed from its initial baseline version, it should be recategorized and managed from that point on as a developmental item. All changes proposed by the contractor to an item should identify the impact of the changes on the contractually deliverable application software, the DSEE, and the LCSEE. The contractor should be made responsible for identifying and resolving with the item's original supplier any defects or incompatibilities of the item with both the DSEE and the LCSEE. The contractor should be required to identify to the contracting activity all changes submitted or released by the original supplier of the item, with an assessment of the possible effects of incorporation in the DSEE and the LCSEE. The contracting activity may designate changes submitted or released by the original supplier of the item for incorporation in the DSEE and the contractor should be required to implement all such designated changes into the DSEE.

5.3.2.6 Item acceptance guidelines. In addition to any other criteria specified by the contracting activity, acceptance of a privately developed item should be predicated upon

compatibility with the LCSEE and satisfactory resolution of any limited or restricted rights issues.

5.3.3 <u>Contracting activity-designated items</u>. The contractor should be required to manage the items designated by the contracting activity in accordance with the following subparagraphs. Contracting activity-designated items have the same contractual ramifications as does Government Furnished Equipment (GFE) and should be managed in a similar manner.

5.3.3.1 <u>Integration guidelines</u>. The contractor should be required to integrate the contracting activity-designated items with the proposed DSEE. Any additions or changes required to the contractor's DSEE to integrate contracting activity-designated items should be separately identified and controlled as outlined in other parts of this handbook.

5.3.3.2 <u>Documentation guidelines.</u> The contractor should not be allowed to change the specifications or descriptive documentation of an item without prior approval and direction by the contracting activity. The contractor should be required to fully define and document all additions or changes to the DSEE that were required to properly integrate the contracting activity-designated items. The documentation and delivery requirements for these additions or changes should be specified by the contracting activity in the contract.

5.3.3.3 <u>Quality assessment guidelines</u>. The contractor should be required to include in the contracting activity-approved quality assessment program the procedures necessary to ensure that the contracting activity-designated items are properly integrated into the DSEE.

5.3.3.4 <u>Configuration management guidelines</u>. The contractor should be required to include in the contracting activity-approved configuration management program the procedures necessary to prevent unauthorized changes to the contracting activity-designated items. The contractor should be required to identify any problems encountered in the integration and use of each item within the DSEE and provide recommended actions to correct these problems to the contracting activity.

5.3.3.5 <u>Item changes</u>. The contractor should not be allowed to make any changes to a contracting activity-designated item without prior approval of the contracting activity. If any item will be changed, it should be recategorized and managed from that point on as a developmental item.

5.3.3.6 <u>Item acceptance guidelines</u>. The contractor should be required to ensure that the configuration of contracting activity-designated items has not been changed and they continue to conform with their specifications and documentation.

5.3.4 <u>Developmental items</u>. All items in this category should be modified, expanded, or created in accordance with the contractually-specified software engineering requirements.

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5.3.4.1 Integration guidelines. The contractor should be required to ensure that the developmental items are properly integrated into the DSEE. The contractor should be required to design the items in this category for compatibility with, and operation in, the LCSEE. The contractor should be required to include all necessary testing as part of the overall software and system test program.

5.3.4.2 Documentation guidelines. The documentation and delivery requirements for the developmental items should be specified by the contracting activity in the contract on the CDRL.

5.3.4.3 Quality assessment guidelines. The contractor should be required to apply the contracting activity-approved quality assessment program to each developmental item to ensure that it is modified, expanded, or created according to contractual guidelines. The quality assessment program should be supplemented as necessary to ensure the compatibility of each item with the LCSEE.

5.3.4.4 Configuration management guidelines. The contractor should be required to apply the contracting activity-approved configuration management program to each developmental item and its related documentation. The contractor should be required to include in this program any added documentation and configuration management guidelines that have been specified by the contracting activity.

5.3.4.5 Item changes. The contractor should be required to establish internal baselines for the developmental items in accordance with the contractually-specified software engineering requirements. After the internal baselines have been established, any changes to a developmental item should additionally identify the impact of the changes on the application software, the DSEE, and the LCSEE.

5.3.4.6 Item acceptance guidelines. In addition to any other criteria specified by the contracting activity, acceptance of each developmental item should be predicated upon compatibility with the LCSEE.

5.4 Establishment of item supportability with the designated LCSEE. Final acceptance of each contracted item should be predicated on establishment of a satisfactory support capability for the contractually deliverable item in the designated LCSEE. The support capability should include the compatibility of the DSEE with the designated LCSEE, and the capability of the designated life cycle support organization to perform support of the contractually deliverable application software. The contractor should be required to define for contracting activity approval the proposed approach for ensuring and warranting the support capability. Appendix B describes a document that identifies the methods to be used to ensure the existence of a complete contracting activity life cycle support capability. The methods used to satisfy these guidelines, as a minimum, are specified in the following paragraphs:

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5.4.1 Identification of additions to the designated LCSEE. The contractor should be required to identify in the DSEE Plan all items and procedures that are required by the life cycle support organization to properly support the contractually deliverable application software throughout its life cycle. The contractor should be required to identify how any additions of items and procedures from the DSEE might interfere with the existing items and procedures in the LCSEE.

5.4.2 Description of the designated LCSEE operation. The contractor should be required to describe how the LCSEE should be used to evaluate, generate, install, integrate, test, modify, and operate the contractually deliverable application software. The contractor should be required to describe the procedures required by the life cycle support organization to accomplish performance evaluation, software and system generation, development and testing of changes, simulation, emulation, training, software integration, configuration management, and distribution of the contractually deliverable application software.

5.4.3 Supportability and compatibility requirements. The contractor should be required to implement a contracting activity-approved approach to ensure and warrant that the DSEE is completely compatible with the LCSEE and that the life cycle support organization has the capability to support the contractually deliverable application software. Satisfaction of supportability and compatibility requirements should depend on the following conditions:

a. All contractually deliverable application software is capable of being evaluated, generated, installed, integrated, tested, and modified in the designated LCSEE utilizing only contracting activity-designated items and contractor-delivered DSEE components.

b. All operations or functions identified to or by the contracting activity for inclusion in the LCSEE can be performed by the life cycle support organization.

c. The delivered application software should produce identical results when operated in the target computer system, whether generated in the contractor's DSEE or generated in the LCSEE.

5.5 Item transition to the designated LCSEE. The contractor should be required to plan for and implement the transfer of support of the contractually deliverable items to the life cycle support organization. This effort should be designed to ensure a phased transfer without loss or degradation of the support of the delivered application software or to other tasks currently performed by the life cycle support organization. The contractor should be required to identify the need to use any contracting activity resources during the transfer phase. The contractor should be required to plan lead-time to ensure completion of the transfer prior to activation of the first operational target computer system or prior to the planned assumption of support responsibilities by the life cycle support organization. The contractor should be required to ensure that the procedures for operation of the LCSEE completely describe all methods necessary

to evaluate, generate, install, integrate, test, modify, and operate the contractually deliverable application software. The contractor should be required to make assistance available to support the resolution of any problems encountered by the life cycle support organization personnel during the transfer period and during a period of time subsequent to the transfer as specified by the contracting activity. Appendix C describes a plan that provides for the transfer of support of the contractually deliverable items to the life cycle support organization. These procedures should be subject to approval of the contracting activity prior to implementation.

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6. NOTES

6.1   Intended use. This handbook is intended to be used when an organization is contracting for a COE/SEE item. It is also intended to be used when an organization is contracting for an item needed for the support of software for a target system. This support can include correcting deficiencies as they are discovered, enhancing the system's capabilities, and modifying the system to implement changes in requirements. To provide this support, the life cycle support organization is required to have certain capabilities. This handbook guides the contracting activity in obtaining from the developing contractor those software engineering environment items necessary to ensure that the life cycle support organization has the requisite capabilities.

6.2   Supersession data. This handbook supersedes MIL-STD-1467, Software Support Environment, and MIL-HDBK-782, Software Support Environment Acquisition.

6.3   Cross-reference of classifications and substitutability data. Not applicable.

6.4   Subject term (key word) listing.

        Common operating environment (COE)
        Data rights
        Developmental software engineering environment (DSEE)
        Host computer system
        Life cycle software engineering environment (LCSEE)
        Life cycle support
        Software support transition
        Product-line
        Software engineering environment (SEE)
        Support software
        Target computer system
        Technical architecture

6.5   Identification of changes. Not applicable.

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APPENDIX A

DEVELOPMENTAL SOFTWARE ENGINEERING ENVIRONMENT PLAN

A.1   GENERAL.

A.1.1 Scope. This Appendix delineates a plan that is to describe a contractor's proposed Developmental Software Engineering Environment (DSEE) and the methods intended for use to ensure compatibility of this DSEE with the designated Life Cycle Software Engineering Environment (LCSEE). The information contained in this DSEE Plan (hereinafter "Plan") is intended to be included in the contractor's proposal for the contracted application software effort. The proposed approach should be considered during source selection. This Plan is intended to provide the necessary information for the contracting activity to evaluate and approve the contractor's selected approach for the software support of the contractually deliverable application software. It documents the efforts necessary to ensure the existence of a complete contracting activity life cycle software support capability of the contractually deliverable application software. The approach should clearly identify any resources or approvals expected from the contracting activity that are considered necessary for the contractor to implement the DSEE. The effort described in the Plan is intended to be part of, and integrated with, the contractor's overall contractual effort.

A.1.2 Approach. The contractor should be required to describe in the Plan the software engineering approach. This approach should describe the planned use of all software and related items to be used to satisfy the software requirements under the contracted effort. The contractor should be required to identify all software and related items recommended for use by the designated life cycle support organization to support the contractually deliverable application software throughout its life cycle. The contractor should be required to identify the approach proposed to ensure and warrant the existence of the capability to perform software support of the contractually deliverable application software by the designated life cycle support organization.

A.1.3 Referenced data. The Plan should make extensive use of, and reference to, documentation identified by the contracting activity, as well as existing contractor documentation. Information is to be repeated only where it is essential for understanding and continuity. The Plan should identify the detailed schedule of activities and all other plans to be used in implementing the DSEE. For example, the detailed software development schedules may be referenced or included as necessary to depict, schedule, manage, and monitor the progress of the software engineering activities. Such data should be completely identified.

A.2   GENERAL FORMAT.   The general format requirements are as follows:

A.2.1 Multiple subparagraphs. Any paragraph or subparagraph may be expanded into

A1

multiple subparagraphs to enhance readability and clarity. These added subparagraphs should be numbered sequentially consistent with the original paragraph or subparagraph.

A.2.2 <u>Inapplicable paragraphs</u>. Whenever any required (sub)paragraph does not apply to the contracted effort, the phrase "not applicable" should directly follow the heading of the affected (sub)paragraph. If a paragraph and all its subparagraphs are inapplicable, only the highest level affected paragraph need be so indicated.

A.2.3 <u>Response to tailoring instructions</u>. All paragraphs and subparagraphs described herein should be included in the proposed Plan. In the event a (sub)paragraph has been tailored out, a statement to such effect should directly follow the heading of the affected (sub)paragraph. If a paragraph and all its subparagraphs have been tailored out, only the highest level affected paragraph need be so indicated.

A.2.4 <u>Page numbering</u>. Pages between the cover and the first section should be numbered consecutively in the bottom center of each page with lower case Roman numerals. The cover's number should not be printed. The first section should begin on the next right-hand page as page 1. All pages should be numbered consecutively in the bottom center of the page in Arabic numbers. If the left-hand page preceding the first page of the first section is blank, it should be marked "This page is intentionally blank."

A.3   DETAIL FORMAT.   The Plan should be prepared in accordance with the following content and format instructions. All paragraph headings and numbers should be included in the description. Appendices should be used for voluminous or detailed information. Wherever possible, reference should be made to other deliverable contractual plans or documents where necessary for completeness and consistency. The Plan, however, should include sufficient information from the referenced documents to ensure complete clarity and understanding.

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A.3.1 <u>Title page</u>. The title page should contain the following information in the following format:

[Document control number and date; Volume x of y (if multi-volume)]
[Rev. indicator: date of Rev.]

DEVELOPMENTAL SOFTWARE ENGINEERING ENVIRONMENT PLAN

FOR THE

[SYSTEM NAME]

CONTRACT NO. [contract number]

CDRL SEQUENCE NO. [CDRL number]

[Date of document - day month year]

Prepared for:

[Contracting Activity Name, department code]

Prepared by:

[Contractor Name and address]

Approved by:

[Contracting Activity Official, date]

A.3.2 <u>Table of contents</u>. The Plan should contain a table of contents listing the section/paragraph number, title, and page number of each titled section and paragraph; subparagraphs may be listed. The table of contents should then list the title and page number of each figure, table, and appendix, in that order.

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A.3.3 Scope. This section should be numbered 1 and should be divided into the following paragraphs.

A.3.3.1 Identification. This paragraph should be numbered 1.1 and should contain a brief description of the target computer system(s) and the contracted software effort for which the Plan is developed. This paragraph should begin with the following text: "This Plan describes the DSEE for the (insert the nomenclature or title of the contracted effort), the relationship of this environment with the (insert the designated LCSEE), and the methods proposed by (insert the name of the contractor) to warrant and ensure the existence of the capability to perform software support of the contractually deliverable application software by the (insert the name of the designated life cycle support organization).

A.3.3.2 Introduction. This paragraph should be numbered 1.2 and it is intended to highlight the important elements contained in the following subparagraphs. This paragraph should contain a top level summary of the contents of the Plan. The scope should be outlined briefly by a description of the organization of each section and by a description of the contents of each section so that the user can readily locate the needed information and understand the sequence of events addressed by the Plan.

A.3.3.2.1 Relationship of the DSEE to the application environment and the designated LCSEE. This subparagraph should be numbered 1.2.1 and should reconcile the application and life cycle software support requirements with the contractor's DSEE approach. It should briefly describe the contractor's interpretation of any constraints that these requirements impose on the contractor's DSEE and the contractor's efforts.

A.3.3.2.2 Overview of the DSEE. This subparagraph should be numbered 1.2.2 and should briefly describe the elements of the DSEE and relate them to the contractually specified software engineering requirements.

A.3.3.2.3 Overview of the interface between the DSEE and the designated LCSEE. This subparagraph should be numbered 1.2.3 and should briefly describe the differences between the DSEE and the designated LCSEE. It should summarize the actions planned by the contractor to ensure their compatibility. This subparagraph should summarize the additions proposed by the contractor to the designated life cycle support organization to ensure the capability to perform software support of all contractually deliverable application software.

A.3.3.2.4 Requirements for contracting activity-designated items. This subparagraph should be numbered 1.2.4 and should list all facilities, equipment, software, documentation, or services that the contractor expects to be designated by the contracting activity to be incorporated

in the DSEE in order to support the contracted software effort. This subparagraph should also list all items designated by the contracting activity to be used by the contractor, and the contractor's intended use of these items.

A.3.3.2.5 <u>Limited and restricted rights</u>. This subparagraph should be numbered 1.2.5 and it and its subparagraphs should describe any limited or restricted rights, licensing agreements, or other limitations on the delivery of, or use of, the items and documentation planned for use by the contractor to evaluate, generate, install, integrate, test, modify, engineer, and operate the contractually deliverable application software. If the contractor proposes either the use or delivery of such items and documentation, the expected economic and other benefits or risks to accrue to the contracting activity and the expected constraints on the rights of the contracting activity should be described herein.

A.3.3.2.6 <u>Subcontractor and vendor control</u>. This subparagraph should be numbered 1.2.6 and should identify any subcontractors, vendors, or other sources intended to be used by the contractor to satisfy the software engineering requirements under the contract. It should describe the extent of participation by these organizations and their contractual relationships with the contractor.

A.3.3.2.7 <u>Deviations and waivers</u>. This subparagraph should be numbered 1.2.7 and should describe any deviations and waivers previously approved by the contracting activity, or proposed by the contractor for the performance of the contract.

A.3.4 <u>Applicable documents</u>. This section should be numbered 2 and should be divided into the following paragraphs.

A.3.4.1 <u>Government documents</u>. This paragraph should be numbered 2.1 and should begin with the following text: "The following documents of the exact issue shown form a part of this document to the extent described herein." Government documents should be listed by document number and title.

A.3.4.2 <u>Non-government documents</u>. This paragraph should be numbered 2.2 and should begin with the following text: "The following documents of the exact issue shown form a part of this document to the extent described herein." Non-government documents should be listed by document number and title.

A.3.5 <u>Developmental Software Engineering Environment (DSEE)</u>. This section should be numbered 3 and should be divided into the following paragraphs.

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A.3.5.1 General description. This paragraph should be numbered 3.1 and it and its subparagraphs should show the organizational and procedural relationships of the DSEE with the other elements of the contracted effort. This paragraph and its subparagraphs should depict the internal organization of the DSEE and interfaces with target computer system(s) equipment, software, and procedures. This paragraph and its subparagraphs should present a general overview of the organization and interfaces of the items of the DSEE and their role in the software effort. Graphical depictions, such as work flows, data flows, block diagrams, and figures should be used where possible to depict the relationships.

A.3.5.1.1 Organization and structure. This subparagraph should be numbered 3.1.1 and should begin with the following text: "The DSEE employs software resident on (insert the name, title, or nomenclature of the host computer system or other support system) to develop and support the contractually deliverable application software. The contractually deliverable application software is intended to execute in (define the target computer system(s) and application environment). The DSEE provides a set of defined user/system interfaces, a set of software tools, and a central library for the storage of the contractually deliverable application software and all information associated with the development and support of this software, as described in the following subparagraphs." This subparagraph should describe each item in the structure of the DSEE and the modes of operation implemented. The items should be described in application or functional terms.

A.3.5.1.1.1 User system interface. This subparagraph should be numbered 3.1.1.1 and should describe the operating feature and characteristics of the DSEE including the interfacing and programming features. This subparagraph should include the types of instructions allowed, menu or help features, list of commands, and limitations on the personnel operating or using the DSEE. This subparagraph should also briefly describe the methods to be established for access to, generation, and change of the software in the DSEE.

A.3.5.1.1.2 Tool set. This subparagraph should be numbered 3.1.1.2 and should describe each of the tools within the tool set in terms of its objective or functions, inputs, processes or processing modes, and outputs. The purpose of this subparagraph is to provide the minimum information required to understand the use of each tool and its relationship to the other tools in the DSEE.

A.3.5.1.1.3 Central library. This subparagraph should be numbered 3.1.1.3 and should describe the central library and its structure from the standpoint of its method of operation, interfaces, and limitations. The data base management system and the data files that are referenced, supported, or kept current by the data base management system should be described. The brief description should include the type of data in the files and the usage made of it.

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A.3.5.1.2 Description of the host computer system portion of the DSEE. This subparagraph should be numbered 3.1.2 and should describe the detail of the contents of what the contractor considers the host computer system and related items. The description should include the equipment, resident operating system, and software (to include revision or version number).

A.3.5.1.3 Description of the target computer system(s) portion of the DSEE. This subparagraph should be numbered 3.1.3 and should describe the relationships, contents, interfaces, and details of all of the items in the environment that should be used to represent, simulate, emulate, or provide test beds for items of the target computer system(s) equipment or software, whether they are to be developed or used by the contractor. This subparagraph should describe how the representative items differ or relate to the actual target computer system(s) and should include any limitations or other constraints imposed on the development, engineering, and test of the contractually deliverable application software through the use of these items.

A.3.5.2 DSEE structure. This paragraph should be numbered 3.2 and it and its subparagraphs should describe the items to be used in the DSEE. This paragraph should provide an overview of the structure of the items, including interfaces and relationships. The items should be identified by their essential characteristics, their purpose, and their use in the DSEE. A matrix should be developed and included herein, or in an appendix, that depicts the items and identifies their sources (contracting activity designated, commercially available, privately developed, or developmental), the functional areas for which they are intended to be used, where they are to be resident, other items required for concurrent use, modes of operation allowed for use, and whether or not they are to be part of the designated LCSEE standard set of items.

A.3.5.3 Differences between the DSEE and the designated LCSEE. This paragraph should be numbered 3.3 and it and its subparagraphs should describe all differences between the DSEE and the designated LCSEE. This paragraph should describe all additions to the designated LCSEE, both items and procedures, that are necessary to ensure the compatibility of the DSEE with the designated LCSEE. The subparagraphs should identify the proposed additions as those that are either required to support a specific application for a particular target system or those that have potential for broader usage in the designated LCSEE. A subparagraph should also separately identify and provide justification for all items or procedures intended for use in the DSEE, but not recommended for inclusion in the designated LCSEE.

A.3.5.3.1 Items unique to the target computer system(s). This subparagraph should be numbered 3.3.1 and should identify all items and procedures that the contractor plans to use to support a specific application in the DSEE that may be unique to a particular target computer system(s). This subparagraph should describe how the identified items and procedures are to be

used and how they should interface with the other items in the DSEE.

A.3.5.3.2 <u>Items recommended for addition to the designated LCSEE</u>. This subparagraph should be numbered 3.3.2 and should identify all items and procedures proposed to be used by the contractor in the DSEE that the contractor recommends for addition to the designated LCSEE standard set of items. This subparagraph should describe the projected utility of the proposed additions and any impact on the designated LCSEE's current capabilities.

A.3.5.3.3 <u>Items used only in the DSEE</u>. This subparagraph should be numbered 3.3.3 and should identify all items and procedures proposed to be used by the contractor in the DSEE that are not proposed to be delivered and added to the designated LCSEE. This subparagraph should identify each item, its purpose and projected utility, and the reasons that this item is not recommended for inclusion in the designated LCSEE.

A.3.5.4 <u>Functional areas</u>. This paragraph should be numbered 3.4 and it and its subparagraphs should consist of descriptions of the operating functions and the limitations of the DSEE as it relates to the specific function. The description of the functions performed by the DSEE should be organized into the following areas: performance evaluation, system and software generation, development and testing of changes, simulation, emulation, training, software integration, configuration management, and distribution. Each of the functions should be described in terms of its objective and scope; usage instructions, such as preparation of inputs, software guidelines, and expected results; and operating instructions, such as operator inputs and outputs.

A.3.6 <u>Implementation</u>. This section should be numbered 4 and should be divided into the following paragraphs:

A.3.6.1 <u>Implementation of the DSEE</u>. This paragraph should be numbered 4.1 and it and its subparagraphs should describe the contractor's planned implementation of the DSEE. This paragraph should describe the specific guidelines for all items of the DSEE and should be organized for compatibility with the matrix developed in paragraph 3.2. (See subparagraph A.3.5.2 above.) The purpose of this paragraph is to identify management procedures and guidelines that are not fully covered in other deliverable contract plans or documents. Wherever feasible, reference should be made to the primary contractual documents, such as the software development plan or the software configuration management plan. This paragraph should concentrate on discussing differences or supplementing information contained in these documents and plans.

A.3.6.2 <u>Contracting activity-designated items</u>. This paragraph should be numbered 4.2

and should identify the contracting activity-designated items and should describe the engineering services planned by the contractor to integrate these items into the DSEE and ensure that they continue to satisfy specified requirements. The contractor should fully define any changes or additions to the environment that are required to properly integrate these items and the documentation that is to be delivered for the changes and additions.

A.3.6.3 <u>Commercially available items</u>. This paragraph should be numbered 4.3 and should identify the previously developed items planned for use by the contractor that are commercially available. The contractor should describe the sources of these items and any limitations, restrictions, or licenses affecting their use by the designated life cycle support organization or by any agent employed by the designated life cycle support organization to perform life cycle software support of the contractually deliverable application software. The contractor should also describe the potential economic commitment (initial and recurring), the risks of long-term dependence on the source of these items, the probability of obsolescence, and the projected stability of these items. The contractor should include an assessment of the quality of each item and its documentation, the lost or impaired capabilities that would result if the item is not used, and the effort required to develop or modify the added item or documentation to provide similar capabilities. The contractor should describe the plans for identifying and resolving with the original suppliers of these items, any deficiencies or other changes that are required to these items for integration into the DSEE. The contractor should describe the plans to ensure the compatibility of these items with the designated LCSEE. The contractor should also describe the documentation that is to be delivered for these items.

A.3.6.4 <u>Privately developed items</u>. This paragraph should be numbered 4.4 and should identify the previously developed items planned for use by the contractor that are privately developed. The contractor should describe the sources of these items and any limitations, restrictions, or licenses affecting their use by the designated life cycle support organization or by any agent employed by the designated life cycle support organization to perform life cycle software support of the application software developed or delivered under the contract. The contractor should also describe the potential economic commitments (initial and recurring), the risks of long-term dependence on the source of these items, the probability of obsolescence, and the projected stability of these items. The contractor should include an assessment of the quality of each item and its documentation, the lost or impaired capabilities that would result if the item is not used, and the effort required to develop or modify the added item or documentation to provide similar capabilities. The contractor should describe the plans for identifying and resolving with the original suppliers of these items any deficiencies or other changes that are required to these items for integration into the DSEE. The contractor should describe the plans to ensure the compatibility of these items with the designated LCSEE. The contractor should also describe the documentation that is to be delivered for these items.

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A.3.6.5 Developmental items. This paragraph should be numbered 4.5 and should identify all DSEE items planned to be modified or developed and delivered by the contractor. The contractor should include references to the contractually specified software engineering guidelines and describe how these guidelines should be applied to the modification or development of these items. The contractor should describe the methods to minimize environment dependencies, to isolate and identify all environment dependencies, and to design these items for compatibility with, and operation in, the designated LCSEE. The contractor should identify all changes or adaptations required to these items to accommodate any differences between the two environments. The contractor should also describe the documentation that is to be delivered for each item that is to be developed.

A.3.7 Operation. This section should be numbered 5 and should be divided into the following paragraphs:

A.3.7.1 Operation of the DSEE. This paragraph be numbered 5.1 and it and its subparagraphs should describe the procedures and controls the contractor intends to implement for access, generation, and change of all items in the DSEE. This paragraph should provide a general description of the operation of the DSEE to include modes of operation, normal operating procedure, and interfaces with the configuration management and software quality organizational elements.

A.3.7.2 Operating procedures and modes. This paragraph should be numbered 5.2 and should describe or reference the rules, conventions, and methods that should govern day-to-day operation of the environment. This paragraph should describe methods used to assign priorities, allocate resources, schedule the workload, and authorize access.

A.3.7.3 Integration procedures. This paragraph should be numbered 5.3 and should describe the methods and procedures the contractor intends to use to ensure that all items of the DSEE are properly integrated and continue to satisfy specified performance requirements.

A.3.7.4 Configuration management procedures. This paragraph should be numbered 5.4 and should describe how the contractor intends to identify and control all physical and functional changes to the items in the DSEE. This paragraph should detail or reference the detailed procedures that govern access to, and changes to, the environment, and prevent any unauthorized changes.

A.3.8 Supportability. This section should be numbered 6 and should be divided into the following paragraphs:

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A.3.8.1 Implementation of additions to the designated LCSEE. This paragraph should be numbered 6.1 and it and its subparagraphs should describe the plans and procedures that the contractor intends to use to transfer the added items and documentation to the designated life cycle support organization. This paragraph should describe the methods intended to ensure a phased transfer without loss or degradation of the support of the contractually deliverable application software or to other tasks currently performed by the designated life cycle support organization. This paragraph should also identify all resources expected from the contracting activity during the transfer phase, including access to the facility and availability of contracting activity personnel. The plans and procedures should include detailed schedules and milestones that are integrated into and compatible with the overall contract master schedules and milestones. This paragraph should also describe the plans of the contractor to make assistance available to support the resolution of any problems encountered by the designated life cycle support organization personnel during the transfer period and during a period of time subsequent to the transfer as specified by the contracting activity. The contractor should describe the plans to ensure that all procedures for the operation of additions to the designated LCSEE are complete and described in terms acceptable to the designated life cycle support organization personnel.

A.3.8.2 Methods for ensuring and warranting supportability and compatibility guidelines. This paragraph should be numbered 6.2 and it and its subparagraphs should describe how the contractor intends to ensure and warrant the compatibility of the DSEE with the designated LCSEE, and to ensure that the designated LCSEE has the capability to perform software support of the contractually deliverable application software.

A.3.8.2.1 Execution of additions to the designated LCSEE. This subparagraph should be numbered 6.2.1 and it and its subparagraphs should describe how the contractor plans to ensure that the added software properly executes in the designated LCSEE and that the contractually deliverable application software is capable of being evaluated, generated, installed, integrated, tested, and modified in the designated LCSEE utilizing only contracting activity-designated items and contractor-delivered DSEE components.

A.3.8.2.2 Operation of the LCSEE. This subparagraph should be numbered 6.2.2 and it and its subparagraphs should describe how the contractor plans to ensure that all operations or functions described in the Plan and identified to or by the contracting activity for inclusion in the designated LCSEE can be performed by the designated life cycle support organization.

A.3.8.2.3 Generation and operation of the contractually deliverable application software. This subparagraph should be numbered 6.2.3 and it and its subparagraphs should describe how the contractor plans to ensure that the contractually deliverable application software should

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produce identical results when operated in the target computer system(s), whether generated in the contractor's DSEE or generated in the designated LCSEE.

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APPENDIX B

LIFE CYCLE SOFTWARE ENGINEERING ENVIRONMENT USERS' GUIDE

B.1   GENERAL.

        B.1.1 Scope. This Appendix describes a guide that identifies the items and procedures that are needed to perform life cycle software support of the contractually deliverable application software. It also documents the configuration of this Life Cycle Software Engineering Environment (LCSEE), its operations, and its relationship to the designated life cycle support organization that will operate it. It describes the methods to be used to ensure the existence of a complete contracting activity life cycle software support capability of the contractually deliverable application software.

        B.1.2 Approach. The LCSEE Users' Guide (hereinafter referred to as the "Guide"), is intended to be a reference and procedural manual for the operation of the LCSEE for the software of a particular target computer system or set of functionally and physically related target computer systems. The Guide should provide a summary description of the LCSEE, with extensive references to existing documentation. Information is to be repeated only where it is essential for complete understanding and continuity. The Guide should concentrate on those items that will be added to the existing LCSEE and the changes in procedures or responsibilities required by these additions. All information necessary to describe the essential characteristics of the items to be added to the LCSEE and to perform all of the operations of the resulting environment should either be incorporated herein or referenced to, and included in, contracting activity owned or contractually deliverable documents. It should describe how these additions are integrated into the existing designated life cycle support organization. It should completely reference or describe all the rules, conventions, and procedures necessary for the life cycle support organization personnel to evaluate, generate, install, integrate, test, modify, engineer, and operate the contractually deliverable application software.

        B.1.3 Referenced data. The Guide may reference other plans and documents which contain the required information. Wherever possible, reference should be made to these documents as necessary for completeness and consistency. For example, the detailed software development schedules may be referenced or included as necessary to depict, schedule, manage, and monitor the progress of the software support activities. Such data should be completely identified.

B.2   GENERAL FORMAT.   The general format requirements are as follows:

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B.2.1 <u>Multiple subparagraphs</u>. Any paragraph or subparagraph may be expanded into multiple subparagraphs to enhance readability and clarity. These added subparagraphs should be numbered sequentially consistent with the original paragraph or subparagraph.

B.2.2 <u>Inapplicable paragraphs</u>. Whenever any required (sub)paragraph does not apply to the contracted effort, the phrase "not applicable" should directly follow the heading of the affected (sub)paragraph. If a paragraph and all its subparagraphs are inapplicable, only the highest level affected paragraph need be so indicated.

B.2.3 <u>Response to tailoring instructions</u>. All paragraphs and subparagraphs described herein should be included in the delivered Guide. In the event a (sub)paragraph has been tailored out, a statement to such effect should directly follow the heading of the affected (sub)paragraph. If a paragraph and all its subparagraphs have been tailored out, only the highest level affected paragraph need be so indicated.

B.2.4 <u>Page numbering</u>. Pages between the cover and the first section should be numbered consecutively in the bottom center of each page with lower case Roman numerals. The cover's number should not be printed. The first section should begin on the next right-hand page as page 1. All pages should be numbered consecutively in the bottom center of the page in Arabic numbers. If the left-hand page preceding the first page of the first section is blank, it should be marked "This page is intentionally blank."

B.3   DETAIL FORMAT.   The Guide should be prepared in accordance with the following content and format instructions. All paragraph headings and numbers should be included in a single volume of the Guide. Separate volumes or appendices should be used for detailed information and referenced in the applicable sections of the main volume.

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B.3.1 <u>Title page</u>. The title page should contain the following information in the following format:

[Document control number and date; Volume x of y (if multi-volume)]
[Rev. indicator: date of Rev.]

LIFE CYCLE SOFTWARE ENGINEERING ENVIRONMENT PLAN

FOR THE

[SYSTEM NAME]

CONTRACT NO. [contract number]

CDRL SEQUENCE NO. [CDRL number]

[Date of document - day month year]

Prepared for:

[Contracting Activity Name, department code]

Prepared by:

[Contractor Name and address]

Approved by:

[Contracting Activity Official, date]

B.3.2 <u>Table of contents</u>. The Guide should contain a table of contents listing the section/paragraph number, title, and page number of each titled section and paragraph; subparagraphs may be listed. The table of contents should then list the title and page number of each figure, table, and appendix, in that order.

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B.3.3 Scope. This section should be numbered 1 and should be divided into the following paragraphs.

B.3.3.1 Introduction. This paragraph should be numbered 1.1 and should contain a top level summary of the contents of this Guide. The scope should be outlined briefly by a description of the organization of each section and by a description of the contents of each section so that the user can readily locate the needed information and understand the sequence of events addressed by the Guide.

B.3.3.1.1 Description of the application software to be supported by the LCSEE. This subparagraph should be numbered 1.1.1 and should identify the contractually deliverable application software that is to be supported by the LCSEE, at a level of detail sufficient to provide only an indoctrination or orientation to the software. This subparagraph should also summarize in a table or matrix format the functions of the contractually deliverable application software and its contribution to each target computer system(s)'s performance and readiness requirements.

B.3.3.1.2 Relationship of the designated LCSEE to the application and support concepts. This subparagraph should be numbered 1.1.2 and should briefly describe, for the target computer system(s), the application and support concepts and any constraints that these impose on the operation of the designated LCSEE.

B.3.3.1.3 Overview of the LCSEE. This subparagraph should be numbered 1.1.3 and should briefly describe the designated LCSEE and its elements.

B.3.3.1.4 Overview of the life cycle support organization. This subparagraph should be numbered 1.1.4 and should summarize the current functions of the life cycle support organization as they relate to the LCSEE. This subparagraph should highlight the changes suggested to its operation to accept the support responsibility of the contractually deliverable application software, including both added resources and procedural differences.

B.3.3.1.5 Limited and restricted rights. This subparagraph should be numbered 1.1.5 and should identify all items that have any limited or restricted rights or licensing agreements. This subparagraph should identify any other limitations on the delivery of, or use of, the items and documentation suggested for use by the life cycle support organization or by any agent employed by the life cycle support organization to perform life cycle software support of the contractually deliverable application software. The contractor should include herein, or reference, all agreements, restrictions, or limitations. The contractor should identify the organization or activities responsible for their administration.

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B.3.4 <u>Applicable documents</u>. This section should be numbered 2 and should be divided into the following paragraphs:

B.3.4.1 <u>Government documents</u>. This paragraph should be numbered 2.1 and should begin with the following text: "The following documents of the exact issue shown form a part of this document to the extent described herein." Government documents should be listed by document number and title.

B.3.4.2 <u>Non-government documents</u>. This paragraph should be numbered 2.2 and should begin with the following text: "The following documents of the exact issue shown form a part of this document to the extent described herein." Non-government documents should be listed by document number and title.

B.3.5 <u>Life Cycle Software Engineering Environment (LCSEE)</u>. This section should be numbered 3 and should be divided into the following paragraphs:

B.3.5.1 <u>General description</u>. This paragraph should be numbered 3.1 and should show the relationship of the LCSEE with the contractually deliverable application software. This paragraph should depict the organization of the LCSEE and its interfaces with the target computer system(s)'s equipment, software, and procedures. This paragraph should present a general overview of the organization and interfaces of the items in the LCSEE and their role in software support. This paragraph should clearly identify those items that belong to the existing LCSEE and those items that should be added to implement life cycle software support of the contractually deliverable application software in the LCSEE. Graphical depictions, such as work flows, data flows, block diagrams, and figures should be used where possible to depict the relationships.

B.3.5.2 <u>Description of the host computer system portion of the LCSEE</u>. This paragraph should be numbered 3.2 and should describe the host computer system, paying particular attention to the additions to the LCSEE's existing set of standard host support equipment and software. The description should include any additions or changes to the equipment, resident operating system, software, or procedures suggested to properly support the contractually deliverable application software.

B.3.5.2.1 <u>User/system interface</u>. This subparagraph should be numbered 3.2.1 and should describe the operating features and characteristics of the LCSEE, including the interfacing and programming features. This subparagraph should include the types of instructions allowed, menu or help features, list of commands, and limitations on the personnel using or operating the environment. The purpose of this subparagraph is to provide a top level understanding of the

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procedural aspects of the LCSEE. The detailed procedures, conventions, and so forth should be addressed as part of section 4, which describes the detailed operation. (See subparagraph B.3.6 below.)

B.3.5.2.2 Tool set. This subparagraph should be numbered 3.2.2 and should describe each of the tools in the tool set, paying particular attention to those added to the existing tool set. The tools should be described in terms of their objectives or functions, inputs, processes or processing modes, and outputs. The purpose of this subparagraph is to provide the minimum information required to operate and engineer the tools and understand their relationships with the environment. Information necessary for operation and support of the tools, such as the design, the program structure, and limitations of the tools, should be included in an appendix that also lists the tools, makes reference to their total documentation, and relates each tool to the functions that require their use.

B.3.5.2.3 Central library. This subparagraph should be numbered 3.2.3 and should describe the central library and its structure from the standpoint of its method of operation, interfaces, and limitations. The data base management system and the data files that are referenced, supported, or kept current by the data base management system should be described. The brief description should include the type of data in the files and the usage made of it.

B.3.5.3 Description of the target computer system portion of the LCSEE. This paragraph should be numbered 3.3 and should describe the relationships, contents, interfaces, and details of all of the items that should be used to represent, simulate, emulate, or provide test beds for items of the target computer system(s) equipment or software that are to be used by the designated life cycle support organization. This paragraph should describe how these items differ from, or relate to, the actual items and should include any limitations or other constraints imposed on the support of the contractually deliverable application software through the use of these items.

B.3.5.4 Software structure. This paragraph should be numbered 3.4 and it and its subparagraphs should summarize all the items that are suggested to be used to engineer the target computer system(s) and the associated software in the LCSEE. Included herein, or by reference to an appendix, should be a complete listing or catalog of all the items. The items should be identified in two categories: items that are in the LCSEE standard set and items that are unique to this particular target computer system(s).

B.3.5.4.1 LCSEE standard items. This subparagraph should be numbered 3.4.1 and should list the items that are in the LCSEE standard set. This subparagraph should clearly identify the items that are designated by the life cycle support organization prior to contract award and the items to be added under this contract at the recommendation of the contractor.

B.3.5.4.2 <u>Items unique to the LCSEE</u>. This subparagraph should be numbered 3.4.2 and should list the items that are unique to the LCSEE for this target computer system(s). This subparagraph should describe the objectives or peculiarities of these items and the limitations or dependencies that are responsible for their unique application.

B.3.5.5 <u>Normal operating configuration</u>. This paragraph should be numbered 3.5 and it and its subparagraphs should describe, for each target computer system, a) the mode of operation or functional guideline; b) optional build or run configuration; c) the normal day-to-day LCSEE configuration, by equipment configuration and run-time software; d) software normally loaded in the data base; e) user options; f) adaptation and installation instructions; and g) other miscellaneous information necessary to understand the normal operating configuration(s).

B.3.5.5.1 <u>Minimum equipment set-up guidelines</u>. This subparagraph should be numbered 3.5.1 and should describe the normal computer equipment and peripheral equipment configuration suggested to initiate operation of the LCSEE. Equipment characteristics, functions, capabilities, and organization should be described.

B.3.5.5.2 <u>Normal software guidelines</u>. This subparagraph should be numbered 3.5.2 and should describe the normal complement of software used to initiate and maintain operation of the LCSEE.

B.3.6 <u>Operation</u>. This section should be numbered 4 and should be divided into the following paragraphs:

B.3.6.1 <u>Operation of the LCSEE</u>. This paragraph should be numbered 4.1 and it and its subparagraphs should describe the operations to be performed by the life cycle support organization for each target computer system, mode of operation, or functional guideline. The procedures described herein should be those necessary to allow the life cycle support organization personnel (for example, system analysts, programmers, and computer operators) to properly support the contractually deliverable application software assigned to this LCSEE. References to the applicable documents for procedures that are the same as the existing standard procedures should be made. The data included herein should be compatible with existing standard operating procedures that may be identified by the contracting activity. The lead paragraph may also contain special information concerning any noteworthy or unusual features of the designated LCSEE. The information should be in the form of text, supporting illustrations, and diagrams, with appendices for detailed information.

B.3.6.2 <u>General usage instructions</u>. This paragraph should be numbered 4.2 and it and its

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subparagraphs should describe the designated life cycle support organization personnel interfaces with the LCSEE, and the procedures used to access the items in the LCSEE. Specific instructions for each of the functions to be performed and the tools to be used should either be referenced to, or detailed in, subsequent paragraphs. This paragraph should provide an overview or reference level treatment.

B.3.6.2.1 Initiation of the LCSEE. This subparagraph should be numbered 4.2.1 and it and its subparagraphs should include instructions for preparation and set-up. This subparagraph should include user options, procedures and steps; adaptation and installation options; mode selection; and run options. If automated set-up and run procedures can be used, they should be included herein or referenced. The procedures necessary to initiate and load the application and support software should be described. In the event that optional modes of operation are available, the instructions for selection and initiation of each mode should be provided.

B.3.6.2.2 Operation of the LCSEE. This subparagraph should be numbered 4.2.2 and it and its subparagraphs should describe the detailed procedures for interacting with the LCSEE during operation. Sufficient details of all options and messages suggested to operate all items in the LCSEE, for all modes of operation, should be provided. Log on/off procedures, password use, and file protection guidelines should be described.

B.3.6.2.3 Monitoring operation. This subparagraph should be numbered 4.2.3 and it and its subparagraphs should describe the guidelines for monitoring the items of the LCSEE while in operation. Defect and malfunction indications and corrective actions should be identified. Procedures for resource status checking, resource allocation, and changing modes of operation should be provided.

B.3.6.3 Programming features and techniques. This paragraph should be numbered 4.3 and it and its subparagraphs should describe the architecture of the LCSEE from the programmer's point of view and include the detailed information necessary to program changes and modifications to the contractually deliverable application software. This paragraph and its subparagraphs should describe or reference formats, addressing techniques, special registers or words, patching capabilities, interrupt processing, and so forth. This paragraph should also include any restrictions on the use of these features for support of the contractually deliverable application software.

B.3.6.4 Functional operating instructions. This paragraph should be numbered 4.4 and it and its subparagraphs should either reference or describe the operations to be performed by the designated life cycle support organization in using the LCSEE. This paragraph should contain introductory material providing general information concerning operator actions, including an

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explanation of the purpose of the actions and the expected results. Subparagraphs should contain procedures and expected results for each particular functional operation. The descriptions in the subparagraphs should be compatible with existing procedures and methods of operation employed by the designated life cycle support organization. The contracting activity may identify or provide elements of the information to be included herein.

B.3.6.4.1 <u>Software performance evaluation</u>. This subparagraph should be numbered 4.4.1 and should describe the tools and techniques to be used to perform analyses and reviews of the adequacy of the contractually deliverable application software in satisfying its performance and design requirements. The procedures necessary to identify and isolate deficiencies, to formulate improvements in operation, and to predict the effect of changes on the target computer system(s) should be detailed.

B.3.6.4.2 <u>System and software generation</u>. This subparagraph should be numbered 4.4.2 and it and its subparagraphs should describe the prerequisite information necessary to facilitate compilations or assemblies of the contractually deliverable application software. This subparagraph and its subparagraphs should identify (such as title or version) all equipment and software suggested to perform this function and the appropriate manuals or reference documents. This subparagraph and its subparagraphs should also contain the necessary instructions for loading, executing, or recording the results of the compilations or assemblies. This subparagraph and its subparagraphs should reference or describe the optional methods of producing new object code (such as translating only a portion), how to produce a new listing, how to produce a new object program on different media, and how to load the new object programs into the target computer system(s).

B.3.6.4.3 <u>Change development and testing</u>. This subparagraph should be numbered 4.4.3 and should describe procedures for identifying and processing changes, for developing and testing changes, and for modifying the source code and object code of the contractually deliverable application software and associated computer data.

B.3.6.4.3.1 <u>Object code modifications</u>. This subparagraph should be numbered 4.4.3.1 and should contain details for the procedure of loading object patches directly into the target computer system(s). Such procedures should specifically detail how to modify, within the environment, the media on which the software resides and how to load the object patches. Procedures and capabilities in the environment for controlling and accounting for all object changes should be detailed.

B.3.6.4.3.2 <u>Source code modification</u>. This subparagraph should be numbered 4.4.3.2 and should describe in detail how the source language may be modified. Included in the

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description should be conventions and restrictions on coding practices.

B.3.6.4.3.3 Implementation and testing. This subparagraph should be numbered 4.4.3.3 and should describe how the modified software may be debugged and tested. Included in such descriptions should be the procedures for using any available software tools or simulators, emulators, and so forth.

B.3.6.4.4 Simulation. This subparagraph should be numbered 4.4.4 and should detail the equipment, software, and procedures necessary to simulate the functions of the contractually deliverable application software. This subparagraph and its subparagraphs should identify all modes of simulation available and any limitations imposed by the simulation methods.

B.3.6.4.5 Emulation. This subparagraph should be numbered 4.4.5 and should detail the equipment, software, and procedures necessary to emulate the target computer system(s). This subparagraph should identify all modes of operation that are emulated, the relationships with the simulation modes described above, and any limitations imposed by emulation.

B.3.6.4.6 Training. This subparagraph should be numbered 4.4.6 and it and its subparagraphs should detail the equipment, software, and procedures necessary to utilize the environment in a training mode(s) for application and designated life cycle support organization personnel. This subparagraph should identify any limitations to the operation of the LCSEE during training.

B.3.6.4.7 Software integration. This subparagraph should be numbered 4.4.7 and it and its subparagraphs should detail the procedures necessary to fully test all software modifications. These procedures should be able to identify and accommodate the limitations of the designated LCSEE. This subparagraph should be able to identify portions of changes that need further testing in the application environment, and should provide guidelines for determining, developing, and verifying the amount of testing suggested.

B.3.6.4.8 Configuration management. This subparagraph should be numbered 4.4.8 and should describe the procedures and practices necessary to identify, define, and control change implementation processes, to track change development and status, and to ensure that the documentation is changed to reflect the current status of the software. The information contained herein should be compatible with, and reference, the configuration management systems identified by the contracting activity that are used, or planned for use, by the designated life cycle support organization.

B.3.6.4.9 Application distribution. This subparagraph should be numbered 4.4.9 and

should describe all available modes for distributing, installing, and verifying operation of the contractually deliverable application software. This subparagraph should provide guidelines for determining the level and extent of installation and testing suggested, and the level or organizational authorization. If an electrical method of distribution and installation is available, this subparagraph should describe the limitations on using this method. The information contained herein should be compatible with the application and support concepts, as documented in the integrated logistics engineering plan and similar plans.

B.3.6.5 <u>Error detection and diagnostic techniques</u>. This paragraph should be numbered 4.5 and should describe or reference error detection and diagnostic features. The description should include condition codes, overflow and addressing exception interrupts, and input/output error status indicators. Evaluation techniques for fault isolation, on-line operator interventions, trap recovery, and operator communications should be provided.

B.3.6.6 <u>Administrative procedures</u>. This paragraph should be numbered 4.6 and it and its subparagraphs should reference or describe any staff function and controls unique to operation of the LCSEE in the designated life cycle support organization.

B.3.6.6.1 <u>Access procedures and inputs</u>. This subparagraph should be numbered 4.6.1 and should describe the authorizations and approvals suggested for access and input to the LCSEE. This subparagraph should provide a description of the rules and conventions that should be observed in preparing input to the host computer and target computer systems. Log on/off and password provisions, access verification, status of access, and provisions to identify and record unsuccessful attempts to access the system should also be included. The information contained herein should be compatible with, and reference, the control systems identified by the contracting activity that are used, or planned for use, by the designated life cycle support organization.

B.3.6.6.2 <u>Security provisions and other restrictions</u>. This subparagraph should be numbered 4.6.2 and should identify applicable security provisions for the designated LCSEE, including classification guidelines for documentation and software. The organizational security responsibilities should be identified, as well as security provisions for classified computer interfaces, access to and storage of classified computer information. This subparagraph should also identify legal modes of operation (such as system high/low). This subparagraph should specifically identify any items that have legal restrictions on the use or access of the items or their documentation by the designated life cycle support organization through limited or restricted rights or other licensing agreements. The information contained herein should be compatible with, and reference, the security systems identified by the contracting activity that are used, or planned for use, by the designated life cycle support organization.

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B.3.6.6.3 <u>Reproduction and distribution</u>. This subparagraph should be numbered 4.6.3 and should describe the procedures and personnel involved in duplicating, labeling, and certifying the deliverable software products from the controlled and tested master copies. The information contained herein should be compatible with the application and support concepts, as documented in the integrated logistics engineering plan and similar plans.

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APPENDIX C

SOFTWARE SUPPORT TRANSITION PLAN

C.1   GENERAL.

C.1.1 Scope. This Appendix describes a plan that contains the activities and events necessary to transfer software support for the contractually deliverable application software (including documentation) from the contractor's Developmental Software Engineering Environment (DSEE) to the designated Life Cycle Software Engineering Environment (LCSEE). The Software Support Transition Plan (hereinafter the "Plan") is intended to be a top level document that describes all of the activities and events necessary to transfer from the contractor the equipment, software, and documentation to be added to the existing LCSEE to support the contractually deliverable target computer system(s). The Plan is designed to ensure a phased transfer without loss or degradation of the support of the contractually deliverable application software, or for the other tasks currently performed by the designated life cycle support organization.

C.1.2 Approach. The contractor should be required to describe the plans and procedures necessary to transfer the items and documentation suggested for the designated life cycle support organization to properly support the contractually deliverable application software throughout its life cycle. The contractor should also describe all resources expected from the contracting activity during the transfer phase, including access to the facility and availability of contracting activity personnel. The contractor's plans and procedures should include detailed schedules and milestones that are integrated into and compatible with the overall contract master schedules and milestones. The contractor should describe all these activities and events in the Plan. The effort described by the Plan is intended to be part of, and integrated into, the contractor's overall contract effort. The Plan should be subject to approval of the contracting activity prior to implementation. The submittal of the Plan should provide sufficient lead time for the contracting activity to approve the Plan and arrange for any resources that are to be furnished by the contracting activity

C.1.3 Referenced data. The Plan should make extensive use of, and reference to, other contractual documentation. The Plan may reference other plans and documents which contain the required information. Wherever possible, reference should be made to these documents as necessary for completeness and consistency. For example, the detailed software development schedules may be referenced or included as necessary to depict, schedule, manage, and monitor the progress of the software transition activities. Such data should be completely identified.

C.2   GENERAL FORMAT.   The general format requirements are as follows:

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C.2.1 <u>Multiple subparagraphs</u>. Any paragraph or subparagraph may be expanded into multiple subparagraphs to enhance readability and clarity. These added subparagraphs should be numbered sequentially consistent with the original paragraph or subparagraph.

C.2.2 <u>Inapplicable paragraphs</u>. Whenever any required (sub)paragraph does not apply to the contracted effort, the phrase "not applicable" should directly follow the heading of the affected (sub)paragraph. If a paragraph and all its subparagraphs are inapplicable, only the highest level affected paragraph need be so indicated.

C.2.3 <u>Response to tailoring instructions</u>. All paragraphs and subparagraphs described herein should be included in the delivered Plan. In the event a (sub)paragraph has been tailored out, a statement to such effect should directly follow the heading of the affected (sub)paragraph. If a paragraph and all its subparagraphs have been tailored out, only the highest level affected paragraph need be so indicated.

C.2.4 <u>Page numbering</u>. Pages between the cover and the first section should be numbered consecutively in the bottom center of each page with lower case Roman numerals. The cover's number should not be printed. The first section should begin on the next right-hand page as page 1. All pages should be numbered consecutively in the bottom center of the page in Arabic numbers. If the left-hand page preceding the first page of the first section is blank, it should be marked "This page is intentionally blank."

C.3 DETAIL FORMAT. The Plan should be prepared in accordance with the following content and format instructions. Separate volumes should be used where logically sound and where such divisions should improve the clarity and usability of the Plan. If separate volumes are necessary, all paragraph headings and numbers should be included in a single volume of the Plan, with reference as necessary to the information contained in the separate volumes.

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C.3.1 Title page. The title page should contain the following information in the following format:

[Document control number and date; Volume x of y (if multi-volume)]
[Rev. indicator: date of Rev.]

SOFTWARE SUPPORT TRANSITION PLAN

FOR THE

[SYSTEM NAME]

CONTRACT NO. [contract number]

CDRL SEQUENCE NO. [CDRL number]

[Date of document - day month year]

Prepared for:

[Contracting Activity Name, department code]

Prepared by:

[Contractor Name and address]

Approved by:

[Contracting Activity Official, date]

C.3.2 Table of contents. The Plan should contain a table of contents listing the section/paragraph number, title, and page number of each titled section and paragraph; subparagraphs may be listed. The table of contents should then list the title and page number of each figure, table, and appendix, in that order.

C.3.3 Scope. This section should be numbered 1 and should be divided into the following paragraphs.

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C.3.3.1 Identification. This paragraph should be numbered 1.1 and should describe the objectives of the Plan and the organizational relationships of all participants in the transition. This paragraph should begin with the following text: "This Plan describes the activities and events necessary to transfer software support of the (insert the nomenclature or title of the contracted effort) from the (insert the title or designation of the contractor) to the (insert the name or title of the designated life cycle support organization).

C.3.3.2 Description of the differences between the DSEE and the LCSEE. This paragraph should be numbered 1.2 and it and its subparagraphs should summarize the differences between the DSEE and the LCSEE. This paragraph should describe all the changes or additions to the LCSEE recommended by the contractor in the approved DSEE Plan for delivery and use in the LCSEE in order to properly support the contractually deliverable application software throughout its life cycle.

C.3.3.3 Transition objectives and phases. This paragraph should be numbered 1.3 and should identify the overall objectives of the Plan and all technical or application issues to be addressed as part of the transition effort. This paragraph should identify the phases and events planned for the transition effort and the transition requirements to be satisfied by each. The objectives should be reconciled with this handbook's guidelines to establish software supportability in the designated life cycle support organization, as amplified by the supportability planning described in the DSEE Plan. The Plan should identify pre-transition, transition, and post-transition phases. Each phase should identify and address, as a class of event, a) the implementation of additions to the LCSEE, and b) the satisfaction of the supportability and compatibility requirements.

C.3.3.4 Transition management and organization. This paragraph should be numbered 1.4 and should summarize the management approach to be used throughout each transition phase and class of events. The transition management decision making process, general responsibilities, organizational relationships, and authorities for each contractor and contracting activity should be identified for each phase and class of event.

C.3.4 Applicable documents. This section should be numbered 2 and should list all documents referenced in the Plan by document number, title, revision number, and date. This section should also identify the source for all documents not available through Government stocking activities.

C.3.5 Approach. This section should be numbered 3 and should be divided into the following paragraphs:

C.3.5.1 Description of the transition effort. This paragraph should be numbered 3.1 and

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should identify the overall structure of the Plan as outlined in section 1. (See subparagraph C.3.3 and its subparagraphs above.) This description should be sequentially arranged to include all significant events and activities associated with each phase and class of event; identification of all specific items and documentation which should be included in the transition effort; identification of all test plans and procedures, and other documentation associated with each event or activity; locations and contractor or contracting activity resources involved; the organizations responsible for, and their roles in, each activity and event; and any other added information which clarifies the description and implementation of the transition effort.

C.3.5.1.1 <u>Objectives of the transition effort</u>. This subparagraph should be numbered 3.1.1 and should specify the objectives of each phase and class of event. It is particularly important that this subparagraph establishes a comprehensive and unified set of objectives for the entire effort, so that conflicts and misunderstandings may be eliminated, and the transition may proceed smoothly through each succeeding phase. The structure of the transition effort should be designed, to the maximum practical extent, to separately ensure and warrant the supportability and compatibility guidelines as described in the approved DSEE Plan, including a) execution of additions to the designated LCSEE, b) operation of the LCSEE, and c) generation and operation of contractually deliverable application software.

C.3.5.1.2 <u>Transition support requirements</u>. This subparagraph should be numbered 3.1.2 and it and its subparagraphs should identify and describe, for each contractor or contracting activity involved, all the significant technical and logistical support suggested to implement each phase and class of event. The support needed from the contracting activity should be limited to those resources originally identified in the contractor's approved DSEE Plan to be furnished by the contracting activity, or as subsequently agreed to by the contracting activity. In general, consideration should be given to the following guidelines for each phase and class of event as applicable:

C.3.5.1.2.1 <u>Facilities</u>. This subparagraph should be numbered 3.1.2.1 and should identify the facilities to support the effort, including those of the contracting activity, and the extent to which those resources should be dedicated to, or made available for, the transition effort. Planning and scheduling estimates of the times for use of, or access to, these facilities should be provided.

C.3.5.1.2.2 <u>Personnel</u>. This subparagraph should be numbered 3.1.2.2 and should, for each contractor or contracting activity organization involved, identify personnel support guidelines, including the kind of skills, number of personnel, required security clearances, and skill level and authority of each.

C.3.5.1.2.3 <u>Other resources</u>. This subparagraph should be numbered 3.1.2.3 and should identify the guidelines for other resources such as maintenance, supply, transportation, equipment,

software instrumentation, data reduction and analysis, and so forth. This subparagraph should identify each contractor or contracting activity organization that is expected to participate in the transition effort and detail its responsibilities.

C.3.5.1.3 <u>Transition methods and planning information</u>. This subparagraph should be numbered 3.1.3 and should describe the basic methods and planning information suggested to accomplish the objectives stated in subparagraph 3.1.1. (See subparagraph C.3.5.1.1 above.) This subparagraph should define the key parameters that should be used to measure achievement of the objectives, the methods that were used to identify and select these parameters, and the methods to be used to determine that the parameters have been satisfied. This subparagraph should include such information as approval and coordination guidelines, overview of the procedures planned, identification of constraints and assumptions, procedures for conducting and reporting on tests, test conduct, data collection and reduction methods, analysis and evaluation techniques, and presentation and review of results. This subparagraph should also define the problem identification and resolution mechanisms, both to identify and track deficiencies outstanding at the beginning of the effort, and those that are identified during the effort.

C.3.5.1.4 <u>Master schedule and milestones</u>. This subparagraph should be numbered 3.1.4 and should provide a comprehensive, detailed, event-oriented description of all activities and milestones in the transition effort. This information should show start dates, completion dates, event dependencies, participating organizations, and resources involved. The relationship of these events and activities with the overall contract master schedules should be described. At least one overall diagram should be developed to show the complete structure, phasing, class of event, and relationships of all the events and activities.

C.3.6 <u>Procedures</u>. This section should be numbered 4 and should be divided into the following paragraphs:

C.3.6.1 <u>General</u>. This paragraph should be numbered 4.1 and should define the detailed procedures to be used to ensure the achievement of each objective and to complete each phase and class of event described in section 3. (See subparagraph C.3.5 and its subparagraphs above.) To the maximum extent practical, a separate set of procedures should be developed and described herein or referenced for each objective identified in subparagraph 3.1.1. (See subparagraph C.3.5.1.1 above.) If the procedures are intended to be used for more than one phase or class of event, or to achieve more than one objective, a matrix should be developed and described herein that relates each procedure, or portion of each, to each objective or class of event. Each of the procedures should be described herein in sufficient detail to establish confidence in the ability of the method to properly measure the achievement of the particular objectives. Parameters should be stated in terms of presence or absence of specified outcome and tolerances (where applicable). The situations or conditions under which the objective should be considered to be achieved should be stated in specific terms. Methods of measuring or evaluating

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the observed results against the expected results should be stated.

C.3.6.2 <u>Pre-transition event</u>. This paragraph should be numbered 4.2 and should describe the activities and events suggested to prepare for the formal transition period. This paragraph should address, as a minimum: a) identification and resolution of outstanding omissions, changes, or deficiencies connected with the items involved in the transition effort; b) orientation and familiarization of personnel with the DSEE operation and the transition effort; c) installation and dry-run or shakedown activities; and d) review, coordination, and approval processes for the detailed procedures and schedules.

C.3.6.3 <u>Transition events</u>. This paragraph should be numbered 4.3 and it and its subparagraphs should describe for each objective and event the procedures to be used to implement this plan and ensure the achievement of the objectives. An overview and a matrix should be developed that relates each procedure to the events and activities it is designed to describe and the objectives it is designed to achieve. Each procedure should be self-contained to allow separate review, approval, and accomplishment, and may be separately bound, provided it is summarized herein. Each procedure should contain, as a minimum, the following topics:

C.3.6.3.1 <u>Identification and statement of objectives</u>. This subparagraph should be numbered 4.3.1 and each procedure should be uniquely identified and reconciled with the events and activities to be performed and the objectives it is designed to achieve.

C.3.6.3.2 <u>Location and schedule</u>. This subparagraph should be numbered 4.3.2 and the detailed sequence and timing of activities for each procedure should be provided. The identification of activities leading up to, and needed to complete, the effort should be included.

C.3.6.3.3 <u>References</u>. This subparagraph should be numbered 4.3.3 and all documents applicable to perform this effort should be referenced herein.

C.3.6.3.4 <u>Manning and responsibilities</u>. This subparagraph should be numbered 4.3.4 and positions, security clearances, and skill levels should be identified for all operators and managers of the effort for each contracting activity or contractor organization involved.

C.3.6.3.5 <u>Resource guidelines</u>. This subparagraph should be numbered 4.3.5 and all facilities, equipment, software, and documentation needed to perform the effort should be identified. The initial set-up and any changes in configuration that are suggested during the effort should be described.

C.3.6.3.6 <u>Sequence of operations</u>. This subparagraph should be numbered 4.3.6 and the actual sequence of steps to be performed to initiate the effort, maintain operation throughout the effort, and terminate the effort should be identified. Any special or unique operations should be

included, such as operator intervention or restart. Each step should be described in terms of inputs, events, and expected results.

C.3.6.3.7 <u>Data reduction and analysis</u>. This subparagraph should be numbered 4.3.7 and the procedures for reduction and analysis of data resulting from the effort should be described in a manner and detail such that the resulting information should clearly show whether the objectives have been achieved.

C.3.6.4 <u>Post-transition events</u>. This paragraph should be numbered 4.4 and should describe the plans of the contractor to resolve any deficiencies or other outstanding actions resulting from the transition effort and to provide a continuing availability for assistance to the designated life cycle support organization after the transition. This paragraph should include a description of the type and nature of this support, including any limitations on the access to and use of this support by the contracting activity and any guidelines of the contractor for access to, or use of, the designated life cycle support organization.

CONCLUDING MATERIAL

Custodian: Preparing activity:
  Army-AR   Army-AR
  Navy-EC
  Air Force-10
  Defense Information Systems Agency-DC1   (Project MCCR-0109)

Review activities:
  Army-AV, CR

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.

2. The submitter of this form must complete blocks 4, 5, 6, and 7.

3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced documents(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-HDBK-1467	2. DOCUMENT DATE (YYMMDD) 971210

3. DOCUMENT TITLE

Acquisition of Software Environments and Support Software

4. NATURE OF CHANGE (*Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.*)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (*Last, First, Middle Initial*)	b. ORGANIZATION	
c. ADDRESS (*Include Zip Code*)	d. TELEPHONE (*Include Area Code*) (1) Commercial (2) AUTOVON (*if applicable*)	7. DATE SUBMITTED (*YYMMDD*)

8. PREPARING ACTIVITY

a. NAME U. S. Army ARDEC	b. TELEPHONE (*Include Area Code*) (1) Commercial (973) 724-6671 (2) AUTOVON 880-6671
c. ADDRESS (*Include Zip Code*) ATTN: AMSTA-AR-EDE-S, B-12 Picatinny Arsenal, NJ 07806-5000	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340

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