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Note: The following is most of a draft functional description for the TD/CMS dated 01 Apr 84. It only contains the text portion of the document, the graphics are not included.

2.1 Background

2.1.1 The Technical Data/Configuration Management System (TD/CMS) is a comprehensive procedure for recording, maintaining, and reporting the configuration management life cycle and engineering data that identifies and describes the relationships of items and technical/ engineering documents. The scope of the system extends to contractors conducting business with DARCOM pertaining to hardware items and engineering documents, as well as functional elements of the different commands. This system is centralized at each command where the TD/CMS computerized operations personnel record the data they receive from the numerous contractors and facilitates the interchange of technical data between the Command, the contractors, and other governmental agencies.

2.1.2 The objectives of this system are to provide the identification and status reporting of items that are necessary to exercise effective * Configuration Management while providing managers at all levels with sufficient information for making appropriate, timely decisions during design, development, production, and operation of items. TD/CMS also attains maximum* economical consistency in technical data, forms, and reports within DARCOM and with other DOD components and industry. Additionally, it provides a system for use in control of project design and engineering that will:

a. Support optimum competitive procurement.
b. Lend uniformity to contract administration.
c. Support project definition.
d. Assure the efficient and timely implementation of all aspects of approved changes.
e. Increase effectiveness of standardization and item control.
f. Assure that the evaluation of a proposed configuration change is timely and includes a thorough consideration of the change's total impact on operational capability, and the support of both the item and the documentation.

2.1.3 The present day TD/CMS system is an outgrowth of the multiple systems that each major command of DARCOM had developed in the 1960's. An effort was made in the early 1970's to consolidate the fragmented systems into one standard system.* The effort did not succeed as it could not fulfill the total requirements of all the commodity commands. Since that time, the * requirements of the major commands have changed drastically to the extent* that updating of the current TD/CMS software would exceed two man-years work of programming. Required changes for the current system number approximately 35 with more being identified at every FCG meeting. This lack of a standard system necessitated that some commands develop unique systems. To date, several systems exist with different software configurations and sort

procedures while the hardware is basically the same, the IBM 4341, and upgrade of the IBM 360-65 computer.

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*This standard system was developed and implemented under contract

2.2 Objectives:

In order to provide the capability for a complete and responsive engineering data base for support of the engineering technical data/configuration management, standardization, and various other system development and readiness functions, the TD/CMS redesign was initiated. The objectives of the TD/CMS redesign effort are to have available one standardized interactive data base management system (DBMS) which will provide maximum real-time interactive ADP support to configuration management and technical data management mission needs of each using command. The redesigned TD/CMS will also provide for expeditious inter-command exchange of configuration management information and technical data. The combination of new and improved functions in the redesign effort will relieve much of the labor intensive activity within configuration management, and will provide an improved visibility of many functions. The major performance requirements and goals of the TD/CMS redesign are detailed in paragraph 2.2.1. Due to the magnitude of the redesign effort, it was determined that redesign will be accomplished in phases. A description of the phased approach and objectives for each phase are provided in paragraph 2.2.2.

2.2.1 System Requirements and Goals:

2.2.1.1 Implement Outstanding Changes:

There are numerous outstanding changes applicable to the existing TD/CMS. Review of those changes indicates that many will be resolved by simply providing DBMS capability. However, other changes are more complex and require file restructuring in order to accommodate them. Specific changes to be included in the redesign are identified in paragraph 2.4.1.1.

2.2.1.2 Convert To DBMS:

Convert the existing TD/CMS to an on-line interactive DBMS retaining all of the current TD/CMS capabilities. This conversion will provide for improved system response time, reduced manual efforts for system use, reduced user training requirements, reduced ADP system maintenance requirements and costs, reduced quantity and complexity of input formats, reduced quantity of standardized hardcopy output products, improved capabilities for routine processing, and on-line inquiry capabilities. Details of the conversion are identified in paragraph 2.4.1.2.

2.2.1.3 Reduced Administrative Lead Time:

Reduce administrative lead time (ALT) for those DARCOM subordinate commands that are not currently using the DARCOM Standard TD/CMS. Further explanation of details for this capability are identified in paragraph 2.4.1.3.

2.2.1.4 Provide Security System:

Provide positive security controls for specific data inputs and user access to the data base. Details of the security system are identified in paragraph 2.4.1.4.

2.2.1.5 Provide Electronic Transmission Capability:

Provide the capability for colocated, non-colocated and worldwide user activities to electronically transmit inquiries/report requests and data inputs/transfers. Details of the electronic transmission capability are identified in paragraph 2.4.1.5.

2.2.1.6 Provide Capability to Identify and Control Baselines:

Provide the capability to properly identify system hardware and computer software configuration baselines, and to control changes to those baselines. Details of this capability are identified in paragraph 2.4.____.

2.2.1.7 Provide Precious Metals Identification:

Provide the capability to identify the kind and amount of precious metals in items being procured or salvaged. Details of this capability are identified in paragraph 2.4 ___.

2.2.1.8 Provide Milestone Tracking System:

Provide as significantly improved and expanded milestone reporting and tracking capability for recording required actions and tracking status. Details of this capability are contained in paragraph 2.4 ___.

2.2.1.9 Provide Alert Notice System:

Provide the capability to generate alert notices and accomplishment reports for individual milestone actions. Details of this capability are contained in paragraph 2.4 ___.

2.2.1.10 Provide Improved Interface/Coordination System:

Provide the capability to improve the identification of interface requirements and coordination of proposed changes. Details of this capability are contained in paragraph 2.4 ___.

2.2.1.11 Reduce Redundant Data:

Reduce the quantity of redundant data contained in TD/CMS and associated document storage and retrieval equipment. Details of this capability are contained in paragraph 2.4 ___.

2.2.1.12 Provide Interface with Other CCSS Systems:

Provide the TD/CMS interface with other CCSS systems as required. Details of this capability are contained in paragraph 2.4 ___.

2.2.1.13 Provide Capability to Reconstruct Configuration Identification:

Provide the capability to construct or reconstruct the configuration identification for a configuration item relative to specified present or past applications. Details of this capability are contained in paragraph 2.4 ___.

2.2.1.14 Provide For Optional Use of Features:

Provide the capability for local commanders to override (not use) certain features provided in the redesigned TD/CMS when the commander determines that his command has no application for or need of that feature. Details of this capability are contained in paragraph 2.4 ___.

2.2.1.15 Increase Specifications and Standards Capability:

Provide expanded capability for the identification of the various conditions associated with the numerous types/forms of military and federal specifications and standards. Details of this capability are contained in paragraph 2.4 ___.

2.2.1.16 Provide Temporary Input Data Holding Capability:

Provide an input data holding capability for use in verification/validation of data input transactions prior to release to the master data base. Details of this capability are contained in paragraph 2.4 ___.

2.2.1.17 Accommodate International Programs:

Provide data elements to accommodate international program requirements. Details of this capability are contained in paragraph 2.4. ___.

2.2.1.18 Provide Supplemental Procurement Information:

Provide for an optional supplemental procurement information sheet which identifies technical information/requirements related to procurement of an item. Details of this capability

are contained in paragraph 2.4. __.

2.2.2 TD/CMS Redesign Approach:

The initial approach taken for the TD/CMS redesign was to define, develop, and implement an entirely new and comprehensive system. Due to the magnitude, complexity and highly technical nature of TD/CMS and the functions supported, the Functional Coordinating Group (FCG) determined that the redesign effort should be accomplished in manageable increments. In February 1983, the FCG adopted a three phased approach. In April 1983, this approach was briefed to the DARCOM Logistics Systems Review Committee (LSRC), and authorization to proceed with this approach was provided. The three phases are further explained in paragraphs 2.2.2.1 and 2.2.2.2. Table 2.2.2 relates the redesign objectives (see paragraphs 2.2.1.1. through 2.2.1.18) to the redesign phases.

2.2.2.1 PHASE I:

This phase will consist of:

a. Converting the existing TD/CMS to an on-line DBMS which retains existing functional capabilities. (Para 2.2.1.2)

b. Incorporating the outstanding System Change Requests (SCR). (Para 2.2.1.1)

c. Providing a limited security system that allows access only to authorized users. (Para 2.2.1.4)

d. Provide a milestone/event tracking capability for standard and user defined milestones/actions. (Para 2.2.1.8)

e. Provide an automated Configuration Control Board (CCB) roster and Configuration Manager (C/Mgr) cross-reference index. (Para 2.2.1.10)

f. Provide for an expanded 32-character part/document number. (Para 2.2.1.17)

g. Provide an optional procurement information/cover sheet. (Para 2.2.1.18)

h. Provide a “holding” capability/concept for input data until such data is cued for release. (Para 2.2.1.16)

I. Provide support to other objectives indicated as Phase I in Table 2.2.2.

2.2.2.2 Phase II and Phase III:

Those redesign objectives not accomplished in Phase I will be accomplished in Phases II and III. In addition, many of the capabilities provided in Phase I will be further

improved/expanded during the Phase II and III efforts (para 2.2.1.1., 2.2.1.3, 2.2.1.4, 2.2.1.5, 2,2,1,8, 2.2.1.10. 2.2.1.11, 2.2.1.12, 2.2.1.13, 2.2.1.14, and 2.2.1.15). The scope and specific requirements for Phases II and III will be defined and incorporated into this FD as Phase I progresses.

2.2.3 ANTICIPATED OPERATIONAL CHANGES:

The current environment in which the TD/CMS redesign effort is being undertaken consists of numerous major thrusts directed toward modernizing and improving the efficiency of automated logistics support systems and providing new concepts for the application of automation in general. Such efforts as the Logistics 2000 Study and the emerging concept for Technical Information Management System (TIMS) will undoubtedly result in changes in methods of operation, new systems, interface and data requirements. Of immediate concern to TD/CMS users is the development of the Digital Storage and Retrieval Engineering Data Systems (DESREDS). To assure compatibility of TD/CMS, FCG members are participating in the TIMS task group and the DSREDS development program. Information exchanges are also accomplished through participation in LSRC activities and direct FCG to FCG discussions. As new or revised requirements are identified which affect TD/CMS they will be considered and incorporated, as appropriate, to assure compatibility with current and future needs.

2.3 Existing Methods and Procedures:

2.3.1 GENERAL: The current system employed buy DARCOM subordinate commands to date is comprised of: The DARCOM/Standard TD/CMS, US Army Belvoir Research and Development Center (BRDC) TD/CMS, MICOM Master TD/CMS, and AMCCOM TD/CMS. These system were designed to operate on an IBM 36-65 computer in a batch mode operation. The manual card input system is a cumbersome, labor-intensive exercise and requires extensive training for preparing input and obtaining output from the system. The present standard TD/CMS prepares the Technical Data Package (TDP) and while it can store and process some Configuration Management which are intended to assure the integrity of the technical description of an item and to the support of Configuration Management functional requirements.

2.3.2 SYSTEM DEFICIENCIES:

a. Many of the present program modules are large and complex. Program level documentation is inadequate. User manuals are voluminous, complex, and do not meet all user requirements. As a result, the present computer programs are difficult and costly to change and maintain. Preliminary estimates of the effort required to change the present file structure and computer programs to meet the new regulatory and document recording requirements are sufficient to justify using data base management technology as a cost-effective alternative.

b. The current system utilizes an input format requiring 20 distinct and different card types. On each of these cards, different sections are utilized depending on the type of data which is to be input into the system. After the format sheets are completed they are

keypunched for input into the system. This task, as indicated previously, is very labor intensive and cumbersome and results in entering duplicate data elements into the system. Validating the data on the current input formats requires extensive training of personnel because of the large variety of input formats. Inputting the punched cards is a major area of concern which is critical to data accuracy. A lost card, an erroneously punched card, or a machine malfunction will cause a considerable number of error messages in an otherwise good batch of data. The dropped card is very hard to find in batches in which an average of 2,000 cards or more are processed. Because of the massive amounts of data that are being stored by the user commands, the editing processes employed by these commands are cumbersome. Many obsolete and/or duplicate data elements are being retained due to this system's inability to track such items.

c. Perhaps the most troublesome feature of the present system is the output product. There are approximately 127 different types of outputs available. Some of these programs may have been used only once or twice during the life cycle of this system. Many outputs are identical to others in the system but vary in either the sort of that report, tabulations being in different columns, or by having one or more columns deleted for an output. Massive amounts of paper are required when running a single report. The way the present system is programmed, a numerous amount of outputs may be required in order to obtain a single output value. The amount of computer time and paper make this an ineffective and costly way to obtain information.

d. Some of the other major deficiencies, not identified above, are as follows:

(1) Timely updates required during mobilization are unobtainable under current system capability.

(2) Program level documentation is inadequate.

(3) Current system requires waivers form most CCSS ADP Standards.

2.3.3 EXISTING SYSTEM DATA FLOW: Appendix A provides data flow diagrams for applications 559 and 560 of the existing TD/CMS. Figures A-1 through A-5 describe application 560, the Selection and Retrieval process. Figures A-6 through A-8 describe application 559, the Maintenance process. Narrative descriptions for the various process blocks are provided following the figures.

2.3.4 Initial Release of TDP

Figure 2-1 indicates how the present TD/CMS initially captures the Configuration Identification of an item when released to the product baseline. This release is normally made by either a contractor or in-house activity. Initial input (file creation of the item) is made by either a centralized TD/CMS Control group or by the contractor. All engineering documentation associated with the configuration item being released is technically are reviewed and all relevant data is extracted and entered onto computer input sheets. This data

is then keypunched/verified and batch processed daily/weekly into the TD/CMS digital files. As engineering changes are approved by the Configuration Manager, engineering documentation changes are physically made to the original documents. These changes are released and processed in the same manner as initial file creation efforts are accomplished.

2.3.5 Configuration Control Document (CCD) Processing

Initial entries are made to TD/CMS when the CCD's are received in the Government Control Activity, as identified in figure 2-2. Upon receipt, a technical review of the CCD is conducted and data is extracted from the CCD documentation and entered onto computer input sheets. This data is keypunched and verified and batch processed into the TD/CMS digital files. The CCD is then processed on to the Configuration Manager for action and, after technical disposition (approval/rejection), returned to the Government Control Activity for additional TD/CMS digital file entries. These entries are processed in the same manner as the initial file entries. Final entries to the system involving CCD's are made after Government Procurement Activity data is submitted to the Control center.

2.4 PROPOSED METHODS AND PROCEDURES:

Continual manipulation and reproduction of physical aperture cards introduces problems that make the task of maintaining accurate engineering data more difficult than it need be. The new SYSTEM does not introduce radical changes to the existing procedures but, by taking advantage of newer technology, streamlines existing methods and provides new capabilities. One area that simplifies existing methods is the ability to obtain on a screen (or hardcopy) visual images from stored digitized images without using diazo copy as an intermediary step. In other words, the tasks associated with technical reviewing and quality assurance can be done simultaneously via graphic display terminals accessing the same digitized document.

Some functions supplied by the new SYSTEM cannot be performed by existing methods, for example, the transmission of visual information from an aperture card over a communications link, however, many of the functions of the proposed SYSTEM can be directly associated with functions performed today.

A sub-set of the SYSTEM's manually or electro-mechanically placing newly arrived aperture cards into storage devices, the SYSTEM stores digitized equivalents of aperture cards directly into its database. Once an original aperture card has been submitted to the SYSTEM, any further access to the information within the aperture card can be obtained on-line to the SYSTEM without further manipulation of the original aperture card.

Instead of filming hardcopy and then creating an aperture card for inclusion into an engineering aperture card file, hardcopy can be submitted, digitized and immediately stored within the SYSTEM's database.

Output from automated "treeing systems" (TD/CMS format) can be currently available

submitted as input into the SYSTEM via a peripheral device. The equivalent of "pulling (obtaining the engineering documents for building a technical data package) will be performed by the SYSTEM concurrently with its other functions.

2.4.2 STORAGE AND RETRIEVAL

All digitized images of engineering documents are accessible by the SYSTEM's storage and retrieval mechanism. A single stored copy of an engineering document could be displayed on a graphic data terminal, reproduced as hardcopy, reproduced as an aperture card, or transmitted to another site. All these various representations of a single stored image can occur selectively and without the need to create diazo copies. This flexibility of form is in addition to the more obvious advantage of the greater speeds achieved when accessing a data processing storage facility as opposed to a manual or semi-automatic mechanical system.

Due to the reduced physical size of the storage medium used for digitized image storage it becomes practical to maintain accurate back-up copies without the physical space problems attendant with copying and storing other media. Furthermore, back-up copies can be physically placed geographically distant from the site of origin. This capability will be advantageous for meeting requirements for Continuity Of Operations Policies and Planning (COOP) and wartime contingencies.

When digitized images are placed within storage and retrieval, a reference is built into the stored item at that time. Although the data processing technique is fundamental, it does eliminate those problems due to misfiling that can occur when manual filing is used.

2.4.3 OUTPUT

Aperture cards will be produced from stored digitized images within the SYSTEM's storage and retrieval function. Hardcopy output will also be produced from these same stored digitized images. For aperture cards, the stored digitized images will use rolled film as an intermediary between the stored image and the aperture card itself.

2.4.4 REPORTING

The existing methods and procedures provide the detail for work load reporting in a distributed manner because the functions themselves are distributed. Because all access to engineering images is performed either by TDP processing or by terminals whose identification and purpose is known, the SYSTEM generates and stores the detail required for summary and detailed reporting. In addition, the SYSTEM stores alphanumeric data for use by VDT inquiries as well as for reporting capabilities.

2.4.5 REVISORY

The revisory function can be performed on-line to any of the digitized images in concert with the storage and retrieval function. This means that a drawing can be revised, and

the revision performed at a terminal can be stored in the same digitized form as used for digitized aperture or hardcopy input. This obviates the need for always using a drawing/film/aperture card process.

Figure 2-2 illustrates the SYSTEM's functions within a user organization.

2.4 Proposed Methods and Procedures

a. For the redesign, one basic concept is used. A data base, maintained at each command, accessible by all other commands in an on-line mode of operation, is to be utilized to increase accuracy and reduce redundancy of data. Other considerations are to give each command the flexibility of generating reports based on their individual requirements, yet maintain standard data elements in the files and provide a system that would enable the user to retrieve data when required in any format without the need of a programmer.

b. The system is defined as five major data bases with one located at each Readiness Command, linked via c communication network. Each project manager, research and development center and laboratory will be connected to a data base at their respective Readiness Command. This will unable each user to view data on any of the five major data bases whenever required and in the sequence desired. The communications network will make the individual systems appear to be one total DARCOM data base. File building and maintenance will be accomplished by the responsible organization (PM. Lab, R&D center, Readiness, etc.) with security levels that would limit the file maintenance only to those who are responsible for the data.

c. The technical data portion of TD/CMS would provide the Technical Data Package List (TDPL), Generation Breakdown List (GBL) Parts List (PL) Engineering Data List (EDL) and Where-Used List as standard hardcopy output reports. The TDPL, GBL, and EDL will remain essentially the same as they are in the current system, however, PLS.. and where-used list will be more comprehensive. The parts list will start with the requested item and include parts listing of all lower level items. The where-used list will be available in four formats. The first is the where-used within system. This format will show all of the next higher assemblies for a specific part within a given system. The second format will list all the end item applications for a specific part. The third will show all of the next higher assemblies. The fourth format will combine all the where-used information into one report.

d. The redesigned TD/CMS will provide the current status of all documents within the system; for example, pending ECP/VECP, deviation or waivers and approved ECP/VECP.

e. TD/CMS will also provide a standard means to generate a TDP for procurement utilizing interfaces with the rest of CCSS and a direct link with the Automated Document Storage and Retrieval systems installed at the various commands. This will expedite the processing of TDPs at the front end of the procurement cycle and will assist in reducing the PALT throughout the DARCOM community.

f. The end result of the redesign effort will be better control of the configuration of Army systems, an overall reduction of manual effort, and a more standard approach to configuration management throughout the DARCOM community.

g. As shown in figure 2-3, the data flow for this system starts with an input from the functional users. The users will have the option of input via a terminal, EAM punched card or by magnetic tape. In the case of terminal input, the users shall have various formats available to them for the specific type of data which is to be inputted. Also, a variety of security measures will be built in the system to insure the integrity of the data base by denying access to the data unless the user code is applicable to the type of updating or querying that is to be accomplished. In addition, this "security buffer" will allow the Configuration Manager to maintain the prerogative to enforce any or all of the data integrity measures built into this system.

h. After the data is entered, it is to be edited based on the format of its entry. The data will be structured so that all "clean" data will immediately be processed and the data with errors in it shall be held temporarily for any and all corrections that have to be made. The computer shall have a built-in means to identify whether the data is an new item configuration baseline which is to be entered or a change to an existing baseline. Base on the identification as to type of data, different approaches to the processing of the data shall occur.

I. In the case of new item or changed configuration baseline identification data, the data shall be stored in the "development file". This data, consisting of all requirements documents, engineering drawings, specifications, standards, and all associated documents, will not be subject to all routine measures that the main file will have. This file will have certain output requirements which will be identified in the required output description.

j. The remaining input data, (i.e., corrections to existing data) shall be directed to the main storage sector for processing. The change control documentation data, while being processed by the development file, will scan the main file to determine if any type of coordination is needed with another configuration manager. This coordination data will be output along with a transaction record to the inputting functional user. The user can then, either through written communication with the configuration managers affected or by use of electronic notification with his terminal, inform the respective managers of the changes which are taking place to keep all data compatible.

k. As a function of the total TD/CMS file, a provision for an electronic engineering release record will be incorporated into this data base. After all initial building of the baseline for the new or changed configuration item, and after a successful review of that data, the configuration manager shall be able to "move" the data from the development file to the main file by use of his unique code and transaction code with a printout of a formal ERR document as a hardcopy record of the release. It is to be noted that this transformation can only occur after review of the data by the configuration manager. The milestone or suspense date for this action, will alert the configuration manager, after her queues his terminal, of the impending date for this transfer.

I. The outputs from this system will be available from both files. The outputs from the development file shall either be terminal query information or hard copy printouts. The printouts will be a Technical Data Package Listing (TDPL), a General Breakdown Listing (GBL), or a where-used report with a notification that the printout is pre-approved type data. The outputs from the main file will consist of those identified later in this document. As identified later, any type of terminal inquiry about any number of data elements will also be available, either through summation/tabulation or by individual identification.

m. Other functions of outputs from the files are:

(1) the main file will provide the information necessary to retrieve the documents stored in the document storage and retrieval equipment which currently is the Automated Microfilm Storage and Retrieval (AMSR) System. The data requirements for this queue to the document storage and retrieval equipment will probably remain the same. This queue shall contain the document type code, document number and FSCM, a document revision date, a sequence code and in the case where the document is going forward to procurement, a PRON.

(2) The development file will develop a Document Identification Queue which will be used for the initial identification of new or revised documents to be stored in the document storage and retrieval system. This will be accomplished upon release of the data from the development file to the main file. Development documents (drawings and associated documents) will not be stored in the automated storage and retrieval system.

n. The main storage file of TD/CMS will be part of the Commodity Command Standard System (CCSS). This will provide TD/CMS with access to these other, following applications: ILSMR, LSAR, PADDS, PASS, PIP, PMR, MODWORS, NSN/MDR, 404 and contract data information which is vital to TD/CMS to present a complete listing of information to the users.

o. The users of this data, as listed on figure 2-3, are some of the potential benefactors of the redesigned system. As the system is utilized and the benefits are made available, it is envisioned that more functional areas will make use of the system.

2.4.1 Summary of Improvements

The improvements that were identified in Section 2.2. provide the basic inputs to this area. These improvements will fall into one of four different categories.

2.4.1.1 Functional Improvements

a. Use of Data Base Management Principles and Techniques - System redesign will replace the current, antiquated system with modern DBMS principles and techniques. This capability will significantly improve system responsiveness, provide the required flexibility, and reduce the system maintenance burden.

b. Inter and Intra Command Compatible and Interoperable TD/CMS - As a result of this redesign effort, this capability will be provided for each of the DARCOM MSC's as well as user elements within the other services and international arena. This capability will: facilitate the exchange of data between the various commands and user elements; permit user elements to verify data contained in other user activity data bases, when required; permit the use of data from one data base in another user system; and significantly improve communications and coordination capabilities among user elements.

c. Recognition of all the Unique Characteristics Associated with Baseline Documentation - Each military specifications and standard MIL-STD 490 specifications, computer software documents, etc. has peculiar regulatory requirements relative to their identification, use of amendments, revisions etc. The redesigned TD/CMS will address each of these characteristics and allow proper but complete identification thereby facilitating its control and identification of each application.

d. Identification of Precious Metals - This new feature will permit compliance with DOD Directive requiring identification of precious metals by type and quantity. This capability permits identification of previous metals required to support procurement of hardware early in the procurement process. In addition, conservation of valuable resources is possible by identifying precious metal content of items at the time of salvage and recycling these materials.

e. RD/CMS Interface with other CCSS Application - TD/CMS will be provide with appropriate and improved interfaces with other CCSS applications for the purpose of reducing the amount of redundant data in the various data bases and automatic update of one data base by another without manual intervention. This capability will reduce possible errors and provide overall improvement in the availability of accurate data for interfacing CCSS applications.

f. Electronic Transmission of Data - By use of an on-line, interactive network among the various user activities, electronic transmission of data from one activity to another can be accomplished. This capability will be utilized for scheduled, routine data transfers and in response to electronically transmitted requests for data and will significantly reduce the manual effort and time required to transfer/exchange data.

g. CCD Processing and Implementation Action Tracking - The capability will be provided for monitoring CCD status and implementation actions. The number of actions to be identified, monitored, and tracked will be increased; target and completion dates and activity responsible for each action will be assigned, and overall status reporting will be improved. This capability will significantly improve configuration control and status accounting

capabilities at each user activity, and will provide managers with necessary information to effectively manage their programs.

h. Real Time Identification of All Affected Activities - This new function will provide immediate identification of potentially affected Configuration Times (CIs) Configuration Managers/Configuration Management Officers (CMOs), Configuration Control Board (CCB) member, contracts, solicitations, and PRONs. This capability will eliminate the labor intensive, and often incomplete effort of the present manual procedures. Interface with other CCSS applications is required for contract, PRON and solicitations data so as not to require input of data which is available data in other CCSS files.

I. Construction (or reconstruction) of the Configuration Identification of a CI for any Past or Present Application - This capability will permit the redesigned TD/CMS to construct the latest released version of the Configuration Identification; to reconstruct the Configuration Identification for any past application associated with a PRON, solicitation, contract, contract milestone, or serial/lot number; and to specify the difference between the latest version and the previous or original version. This new capability will eliminate the labor intensive effort of the present manual procedures and the readily available information will greatly improve the effectiveness of Configuration Management.

j. Program Override Feature Exercised at Local Commander's Option - Selected portions of the redesigned TD/CMS program which satisfy a specific functional requirement will contain an override feature which will permit the tailoring of those programs to the specific needs of the local installation. In addition, this tailoring will be under the control of the local Commander who has the responsibility of approval for the configuration item's Configuration Management Plan.

k. Complete "Where-Used" Retrieval Capability for Both Baseline Documents and Configuration Items - The redesigned TD/CMS will have the capability to identify every configuration item which includes a specific baseline document in its configuration identification and every next high level CI which includes a specific CI/item for each of these CI's so identified it will be capable to "tree-up" every level up to the highest level. If an interface requirement is affected, it will provide a "used-with" listing. "Used-with" listings is a listing of systems or equipment with which the item must interface, either mechanically, electronically or optically. A variation of this capability will be for the computer to identify common documents and/or part used in two or more specifically identified items. This capability will enhance TD/CMs's ability to support a potential impact evaluation.

2.4.1.2 Improvements of Degree

a. Implementation of ECPs - This will be an upgrade for the existing TD/CMS system by allowing the numerous user-generated ECPs to be incorporated at a much quicker pace than if done one at a time. Due to the present lack of software documentation, the time needed to implement an ECP is quite lengthy.

b. Immediate Application of Approved ECP/VECP to Affected Documents and Configuration Items - With the application of the electronic Engineering Release System the entering of an "approved" decision by the Configuration Manager will automatically apply the approved ECP/VECP (with NOR/SCN) to all affected documents and will create a new version of the configuration identification for all impacted CI's. This is a logical step since the redesigned TD/CMS contains a feature which permits an"approved" position to be entered only of all impacted Configuration Managers have previously entered an "approval recommended" decision. The combination of these features permits the redesigned TD/CMS to do some of the routine processing and policing associated with a CCD and will in turn prevent a change from being made if it is not completely concurred in.

c. Consolidation of Inputs - This upgrade from the existing system will provide an administrative relief for the user by streamlining the input formats. It is believed at this time that only ten different format will be needed to load the data elements into their respective files. This will reduce the current level of input formats by approximately 50 percent. Also, the training needed to perform this task will also be reduced.

d. Storage of Electrical Wiring Diagrams - This upgrade of current capabilities is mainly a file structure change. The numerous volumes which are currently in the system have exceeded the current space allocations and to extend the space is a major task. By using the redesign effort, the task of file structure design can be accomplished more quickly.

2.4.1.3 Timeliness - A decrease in response time is foreseen with the redesign of the TD/CMS network by: streamlining the cumbersome software providing an on-line data base management system (DBMS); state-of-the-art equipment; and by using different input modes.

2.4.1.4 Elimination or Reduction of Existing Capabilities That Are No Longer Needed

a. Elimination of Redundant Data - Redundancy is a result of the complex procedures required for entry of data into the current system. Valuable storage space is wasted by the amount of stored redundant data. The redesign will incorporate labor-saving input procedures and input formats which will drastically reduce if not eliminate all duplicate data.

b. Reduction in Training Required - Required training can be significantly reduced by using a state-of-art system with adequate documentation. Utilizing improvements previously identified and incorporated in this redesign will minimize training.

c. ADP Cost and System Maintenance - The current system lacks adequate documentation to troubleshoot the system, let alone understand it. Continual revisions to the existing system only compounds this problem as the software becomes more complex and personal turnovers become more frequent. The more revisions required to the existing software, the efficient the system becomes, which results in higher operation costs. A simple, direct program with complete documentation will result in significant system operation and maintenance cost reductions.

2.4.2 Summary of Impacts

This redesign effort will be a complete overhaul of the current system. It is envisioned that no module will be left intact. The user community will be the prime benefactors from this redesign. The concepts for redesign effort will save future man-hour efforts and allow for more detailed information to be automated. The following paragraphs will elaborate on these details and benefits.

With the current fielding plans of the digital storage and retrieval engineering data system (DSREDS), the redesigned TD/CMS will be the data base for driving the storage and retrieval system. By utilizing a single terminal, the user will then control all facets of configuration management from a single data base.

2.4.2.1 User Organization Impacts

a. No major changes in the current user organization and staff are anticipated as a result of implementation of this system. The duties and responsibilities of the functional staff will remain basically the same under the new system as they are with the current system, i.e. those functions required in support of the mission today will be essentially the same tomorrow. Although the functions are expected to remain the same, the methods of conducting business in both the functional and DMIS communities, will change dramatically, which may require slight restructuring and reallocation of resources within the user organization. The specific nature of such changes must be determined by each user based on current organizational structure versus operational concept requirements of the new system. The major change in operational concept will be the shift of operational responsibility from the DMIS community to the functional staff. Under this concept, scheduling and execution of the system functions will be the responsibility of the functional manager.

b. Since accomplishment of them mission involves several functional disciplines within the user organizations, there will continue to be competition within the functional elements for scheduling, prioritization, and execution of the functional system operations. Thus the functional manager will have the added responsibility of resolving those issues. The nature of the decisions required will determine the functional management level required to make them. This will demand that even higher level functional managers be thoroughly familiar with systems operating concepts and procedures. At the worker level, increased use of terminal facilities in the functional areas for input, output, and system execution will require that a certain portion of the work force be dedicated to the terminal operation function. In view of the fact that the proposed system is intended to greatly reduce hard-copy output requirements, it would be logical to divert a portion of the clerical staff required for paper handling under the former system to the new terminal operation functions. The net effort in the total user organization will be a reduced frequency of personnel interactions between the functional and DMIS communities without significantly impacting the number and types of skills required in either area. Although much of the system operation responsibility will be shifted to the functional area, the DMIS staff requirements for computer operators and monitors will remain essentially the same as with the former system. Likewise, it is anticipated that current user organizational strength and structure, with the exception of some reallocation of clerical

resources, will remain the same. In addition, initial start-up surges at each user command may demand additional personnel resources temporarily to offset the learning curve impact on routine business.

2.4.2.2 User Operational Impacts

a. The functional users and the DMIS community are to benefit immediately upon installation and implementation of the system. Considerable change in their current procedures will be necessary, the details of which will be left for the using commands to implement. A discussion of the concepts and facilities, however, are offered to facilitate that task. Formerly, the DMIS community had an active role and the functional user group had a passive role in the operation and use of the system. These roles are to be reviewed with the implementation of this system. Many of the activities formerly accomplished by DMIS and operations center personnel will be automated, others will be transferred to the system's users but a few will remain the responsibility of the DMIS community. From the DMIS and operations center point of view, scheduling, as such, will be unnecessary since the system user group will schedule and control the system's functional performance through an automated facility via terminals. Backup and recovery, as well as restart, will appear to be automatic to the user but will require the mounting of predesignated tapes/disks and initiation of the tape/disk drives by DMIS. System start-ups will be accomplished by system command messages input by the console operator. Once the system is started, data of any type can be input at any time and will be transferred from the external storage media to the data collection and dissemination facility of the automated system. It is anticipated that the role of DMIS operations center personnel will not change in this regard.

b. The quantity of input data is expected to at least double over the next five years. But at the outset, the quantity and type of input data is expected to approximate that of the current system. Timeliness of input, on the other hand, is expected to change since the data entry as well as other automated system facilities will be operational at all times, thus, functional operations personnel are expected to input data upon receipt limited only by available hardware. The initiation of hardware operations will remain a DMIS operations responsibility. The retention of data is automatic except for off-line storage of log tapes, data base dumps and the original input data. System performance is to be passively monitored by the CCSS monitor via a terminal and printer. System functional tasks and resources can be logically disabled via the functional manager's terminal with appropriate notifications to the user terminal. This facility is anticipated to be useful in system maintenance and system change implementation. The hours of system operation are to be determined by each using command. It should be noted, however, that when the system is in operation, it is to be totally operable. Further, all system resources are reserved for this system and will not be degraded by disabling any function or resource for use by another system. The total system resource will be designed to provide for peacetime and alert conditions necessitating reserve capability. Both the using command and ALMSA will monitor system performance for fine tuning and adjustments to assure the necessary reserve capability is retained. A limited amount of hard-copy output will be automatically generated and will continue to require personnel intervention of the same type as formerly required. The amount of hard-copy production is expected to be reduced to the

minimum required.

c. This reduction will be brought about through improved output product design and through the extensive use of terminals and printers in the functional user work area. From the functional user's point of view, the system is expected to be viewed as having large volume input and output stations for the collection and dissemination of the traditional user data. Additionally, however, there are to be interactive and remote tasking terminals and printers at designated work stations to be used for authorized system tasking and user data manipulation and input. The system is to be flexible enough to allow the system user groups to work with cards, tapes, and hard-copy reports but more effectively by using the interactive facility. The number and type of user terminal devices is to be determined later by the user Commands and ALMSA to provide for maximum system benefit for the investment in software and hardware. The initial requirements for user terminals, the system is to provide for a reserve capability equal to twice the number of terminals to facilitate rapid growth in the user work force. It is anticipated that within the next five years, the number of user interactive terminals will increase. All of this should be able to occur without degradation of system performance.

a. Development impacts will be sizeable and involve both the system * developer and the system users. Using the system prototype time frame as a baseline, a comparison of prototype activity for the current system can be made with this system. Upon completing of ALMSA testing and FCG recommendation for prototype and the LSRC approval, the system will be installed at a prototype site, possibly to run in parallel with the current system. This requires that all system hardware and software be in place prior to prototype operation. The system installation and test plans will be followed through each phase. Classroom instruction is also to be conducted prior to installation facilities hands-on system training, first for prototype site personnel and then for the other user Commands personnel. The first prototype procedure will be to load the system's data base using fielded conversion processes. Production installation is expected to be phased in at one user Command at a time as each command's personnel are trained and the system is certified as production-ready. The prototype command's requirements for computer resources and personnel may require augmentation during the prototype period which is also the system training period. ALMSA will provide an on-site representative at the prototype site and at each user Command during installation and system certification.

b. ALMC is charged with the responsibility for training and must develop* and publish a training plan concurrently with the design and programming activities at ALMSA. The training plan implementation will precede system prototype and extend through initial production installation at each user Command. User, operator, and developer manpower requirements will include liaison activities with ALMC during this extended period of time. The prototype period will be longer than the normal CCSS release prototype. A period of three to six months may be considered, due to the training requirements of each user Command. Actual production may, however, occur at the prototype site prior to the completion of systems training and, in fact, in less than three months as recommended by FCG

and approved by the LSRC. When the prototype testing and certification is complete and training is concluded, the prototype site resource requirements are expected to correspondingly return to pre-prototype conditions.

2.5 Assumption and Constraints.

It should be assumed that this system will not be free of system failures due to hardware, software, or application faults, but rather be prepared for them and build into the system the facility to minimize both the time and extent of the impact resulting from such failure.

2.5.1 Applicable Assumptions.

a. That hardware equipment will be available to accommodate all functional requirements.

b. The software programs will be available to perform the tasks of the functional requirements.

c. That this system will incorporate Distributive Functional Processing concepts and facilities as approved.

d. That system design will not be constrained by budgetary limitations.

e. That regulatory conflicts will not constrain the system development.

f. That resource will be available to design, develop, implement, and operate the system.

g. That mission requirements, as stated in AR 70-37, will not change.

h. That system design will address emergency and alert postures.

I. That regulations and standards will be reviewed to permit the full utilization of the-state-of-the-art capabilities of automation.

2.5.2 Applicable Constraints.

a. Each user activity has a different organizational structure/resources.

b. There are external requests to add new data elements to support newly identified requirements.

SECTION 3. DETAILED CHARACTERISTICS

3.1 Specific Performance Requirements.

The identification of the specific performance requirements deemed necessary are in the following subsections as well as in Section 5.2. As a synopsis of these requirements, the redesigned TD/CMS shall consist of; an on-line, interactive data base management system capable of processing multiple types of inputs; the ability to handle a large number of simultaneous users with no degradation to system; the capability to expand data fields and memory without file restructure; and an English language query capability which will allow functional users to utilize the system with no formal training in ADP procedures.

3.1.1 Accuracy and Validity.

The accuracy requirements for this program are exact. One hundred percent accuracy of calculations, transmittal, and storage of the data processed to the master file is the minimum expected of this system. All input data will be grouped by record identification and by the individual making the submission. Any reject data will be printed out as such while allowing the remaining groups of records to process.

3.1.2 Timing.

The following timing requirements shall reflect the desired times, when they can be identified, along with times which the system can live with.

3.1.2.1 Job Completion.

Throughout time of this system is defined as the average rate at which * jobs are completed by the system for the given interval of time. The rate at which this is accomplished is composed of five factors. Each is identified as follows, and all five are critical to the establishment of the system's time.

a. Capacity of the System - The maximum rate at which the system can * process the data for a given job class, with the job class based on the given factors of available memory and the processing devices which relate to the timing requirements of this system. Based on the amount of data which will be in the system, this capacity must be such that a given job shall not take any longer than five minutes to complete. While it is reasonable to assume that the load placed on the system will deteriorate this desired item, no more than minutes can be tolerated.

b. Time Interval - This interval is critical for the measurement of * throughput. If this interval is limited to short jobs with a high priority, a backlog of jobs will develop while the throughput time will remain within its constraints. This follows along with subparagraph a above as to developing a clearer understanding of this interval.

c. System Load - The amount of users on this particular program will also degraded the system to the extent that the throughout time shall increase to an interval which will not be acceptable. Since the intention of this system is to make the data available to all personnel who have a need to perform tasks in relation to this program, throughout will not deteriorate because of these additional users.

d. Scheduling and Priority Processes - The timing of this system will be * that the scheduling of processes will not interfere with the desired throughput. Also, time of day will have no impact on this. With this system, 24-hour-a-day usage will be required, and, again, no degradation of throughout time will be deemed acceptable.

e. Job Mixing - The overall mixing of different classes of jobs throughput each day should not hamper the throughput time of the system. Since the classes of jobs such as updates or report generation may vary within the system, the system should be designed to accept these conditions with no appreciable affect on throughput time.

3.1.2.2 Response Time - The response time to queries, updates to files, and the time of major function performance are all interconnected and will be treated as such. While they can be separated and addressed individually, the duplication of description and requirements are such as to generate more paper in an already voluminous report. The approach for estimating reasonable to desired time for a particular processing activity should be related to specific conditions and/or major functions. The major functions can be subdivided into the following headings, and each requires special considerations:

a. Update Activity - Updating of the major files can be accomplished * either through a batch processing mode for the large volumes of update transactions or an on-line terminal entry system for smaller volumes. Both input modes shall be considered for the optimization of throughput time. Error corrections to batch input should be accomplished without a resubmission of the entire batch. Input shall be considered to be in the form of terminal, magnetic tape, diskette, or EAM card format, in that order. The automated features of the batch processing mode, such as read and write functions, would provide for a reasonable throughput time of not more than ten minutes and a desired time of two minutes. As the volume of input data increases, through-put shall also increase but not in a direct proportion to the increased volume. On-line through-put time for updates shall be measured in seconds for each individual update entry; however, the length of time required for the keying of the data could place the system in a “waiting” configuration whereby the through-put time shall not change but turnaround time is increased. After the data is keyed, the system will have an instantaneous processing time to so that no time will be lost having the system process that data and then wait for more. Error corrections by the on-line terminal will be accomplished by having the input data processed into a temporary data storage for the correction mode and after that is complete, into the data storage areas so that no duplication of large entries has to be performed.

b. Report Generation - The extraction of selected master file data for subsequent report generation could cause a variance of throughput time directly related to the size of the

configuration end item. A technical data package with 20,000 supporting documents (parts would be expected to use not more than ten minutes throughput time, with fifteen minutes of throughput time to be considered maximum. Throughput time would not be significantly increased by larger data packages. It should be pointed out, however, that the number of end item requests submitted would increase wall-clock time. For example, five data packages of equal size cold take up to five hours, although the throughput time for each would be fifteen minutes.

c. Master File Queries - Any on-line query of the master files should be accomplished in the desired throughput time of not more than five seconds, with a maximum throughput time of not more than ten seconds. Basically, query capability documents (parts) for the selected item and the next higher application (where-used) for the selected item. Through-put time estimates are based on displaying master file data on a CRT screen and not the printing of the data.

3.2 Functional Area System Functions.

The major functional processing steps, which are the required input for this action, are found in Section 2.4, Proposed Methods and Procedures.

3.3 Inputs - Outputs.

a. The data elements will be entered into the system by card, tape, key to disk, or by any other suitable means. Upon entry, the data will be edited to verify that the proper input criteria have been observed. The data will first go into a "holding file" where it will be edited and/or held for security release. Next, the system will determine whether it is data relative to a new CI Baseline or data to be manipulated by the main file. From there, it will be directed to the proper file for storage and manipulation. The field should be set up so the DBMS can accurately transient the files to give an output. An exact description of each of the data elements can be found in Section 3.4, Data Characteristics. The characteristics include the definition of the data elements, the length of the field, the identification of the data characteristics (whether it is alpha of numeric), and the edit criteria to be done on that data element.

b. The standard outputs which are desired by the user Commands will be broken into two categories, hard-copy and terminal outputs. The hard-copy outputs will be limited to only those for which all Commands have a definite need. Also, these outputs will be limited in number so as to prevent an unwarranted amount of paper and maintenance to this system by ALMSA. The terminal outputs will be left to the functional users to determine their needs and what formats will be acceptable to fulfill them. The DBMS which will be used must be structured to include such characteristics as sort routines and simplicity of selecting the desired output format while minimizing any necessary training. The required DBMS must have inherent properties to allow the user to be able to place the predetermined output data elements in a selected format and have variable parameters in which to specifically identify the desired range of that output.

c. One of the output programs of this system is the queue for the automated assembly

of a Technical Data Package. Therefore, a discussion of the automated document storage and retrieval system must be included. Currently, documents are stored n 35mm aperture cards and automatically retrieval by queue from TD/CMS or they are manually stored and retrieved by human effort.

d. Presently, there is an ongoing effort to replace the antiquated AMSR system with the Digital Storage and Retrieval Engineering Data System (DSREDS). This system is presently planned for implementation in the last quarter of Fiscal Year 1985. A brief description of this system is necessary to understand the integration of DSREDS in the complete TD/CM program.

e. DSREDS is an optical disc storage system utilizing a laser for stage of all types of engineering documentation for instant retrieval and modification. The system is comprised of an aperture card scanner, document scanner, system controller, an optical disc subsystem, a graphics terminal, and alpha/numeric terminal, a high-resolution plotter and a graphics com. CAD/CAM terminals will be able to interact with this system to provide complete drawing preparation/modification without the necessity of draftsmen.

f. The following pages contain the standardized outputs which are needed in conjunction with the output identified, the outputs that are to be formatted by the local installation are identified with the data elements that can be included but not necessarily utilized for that particular input. In addition, the Data Element Dictionary (DED) is also contained in this section.

3.4 Data Characteristics.

The data elements identified in this section are the input records for this system. While the field are presently being identified, provisions will be made to allow for expansion of these files along with the addition of any other files as more requirements are identified and the system progresses through its life cycle. These files are to be structured so as to allow real-time Data Base Management System to process the queries from the users with as little item as possible for computation and scanning to obtain the output of the queries.

3.5 Failure Contingencies.

All failures contingencies are identified in Section 5.5 to comply with the specified requirements.

3.6 Security.

The type of data to be entered into the data base shall for all practical purposes, be considered to be unclassified with a few exceptions. The inputs and outputs of this system shall be unclassified but proper protection and confidentiality shall apply to ensure the integrity of the system. All data shall be data which is relevant to purchase requirements of the various commands. The handling, processing and distribution of classified documents is defined and

described in the appropriate DOD Standards and Specifications.

SECTION 4. DESIGN MANUALS

4.1 System Description.

The system to be designed will have the capability to provide the users with an on-line, DBMS which will retrieve the accurate configuration identification of a CI for every past or present application and will relieve the configuration manager and the CM functional activity of all routine processing and procedural tasks. This system will also have the capability to provide digital storage/retrieval methods of drawings/documents as resulting from change procedures. The long range plan for this system will allow commands to electronically monitor all documentation and changes pertinent to the TD/CM function while reducing the voluminous paperwork necessary to accomplish this role in the present day system. While some of these features are specified in this functional description for the redesign, capabilities must be incorporated to allow for future enhancements without a major restructuring of the data base.

4.2 System Functions.

The function of the TD/CMS Redesign effort is to provide current in-depth visibility over engineering actions in support of the engineering, configuration management, and procurement areas in an expedient fashion without being labor intensive. This will include those items which have been identified previously in paragraphs 2.2 and 2.4.1. The support which TD/CMS can offer to the above mentioned areas are as follows:

a. Provide current and correlated engineering data.

b. Identify current configurations of hardware items.

c. Provide a basis for monitoring all proposed and approved changes to hardware and/or engineering documentation.

d. Provide a listing of hardware and/or documents required to fabricate evaluate, test and inspect, redesign, or operationally support the user's particular needs.

e. Provide expedient and accurate reporting of engineering data.

f. Eliminate unnecessary manual clerical effort in the data control area.

g. Provide current data to facilitate visibility during configuration changes.

h. Provide configuration accountability.

I. Identify the current status of documentation constituting a Technical Data Package for a procurable item.

j. Reduce the time required to generate a complete Technical Data Package by providing a media which permits the automatic retrieval of documents to be included in bid packages for items.

k. Track and report status of all processing of individual change proposals through their implementation.

l. Improve the interface/operational capabilities between TD/CMS and the document storage media.

m. Provide a query capability to relate any two or more data elements across the data base for direct management information purposes.

4.2.1 Accuracy and Validity.

Requirements for this section can be found in Section 3.1.1 of the Functional Description.

4.2.2 Timing.

Requirements for this section can be found in Section 3.1.2 of the Functional Description.

4.3 Flexibility.

The capability of incorporation of procedures for adapting the system to changing requirements shall be included in all phases of the design. This is to be a major consideration in design because of the ever changing requirements of the function of Configuration Management.
Future enclosures of data elements, to be identified at a later date as tracking requirements are identified, are to be incorporated with no redesign of the system if it is to be a viable method of Configuration Management in the future.

4.4 System Data.

The data to be contained in this section is a duplication of the elements listed in previous sections of this document and in the Data Requirements Document. For the specific information on the system sta, reference the data element dictionary, Section 3.3 of the FD and Section 2 of the Data Requirements Document.

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SECTION 5. ENVIRONMENT

5.1 Equipment Environment

a. The identified general requirements are that a dedicated interactive * computer hardware system should be identified with the redesign of TD/CMS to facilitate the input, storage, computation, and output of data. Because of the size of the data bases and the required turnaround time which is necessary, a timesharing system is considered to be impractical.

b. The user Commands have evaluated their system requirements as to the * records on file and the anticipated increase to their workload and have a preliminary estimate as to the amount of hardware needed to support their functions. A general response to the equipment specifications dictate that a amain frame for each readiness Command will be a state-of-the-art piece of equipment operating an equally sophisticated software network compatible with it. To unable the CPU to operate efficiently, a minimum storage capacity of five megabytes with sufficient peripheral storage enabling the system is required. Capabilities to change this requirement for an increase will also be included here to allow for expansion with no degradation to the network itself as the requirement dictates.

c. The input/output channels should be incorporated to fully utilize a * minimum of one 7-track tape drive and a minimum of twelve 9-track tape drives, also with the capability to add on at a future date as deemed necessary by each user Command as requirements changes. To support the network at each Command, provisions for a card reader/punch machine are also to be considered as a part of the necessary equipment. The requirement of intelligent terminals is also deemed the necessary minimum input equipment to facilitate the input of data within each functional users area. Each user will have a different requirement for this type of equipment based on the amount of transactions that has to be accomplished in a day-to-day working environment. A separate dedicated on-line printer is also required as a minimum because of the number of requests that are generated by different elements within each Command. The provision for an off-line printed should also be included with the provision that it will produce output with no effort on the throughput of the system. Remote CRT terminals are required for an on-line query capability with selected terminals to have an associated printer for hard-copy output of a selected nature. The design of a communication net will include the choice of terminals, the number of terminals to be supported, the modems, communication control units, and common carrier facilities for each site to support the main frame. The specific requirements will vary at each Command according to its volume and other processing considerations. The line speed required to support this equipment also varies with each Command. The smaller users can be satisfied with a 300 baud while the larger user will utilize a 4800 baud to support its network.

d. As a preliminary estimate of requirements from this system, the following chart is included:

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5.2 Support Software Environment

a. Since this effort is a redesign of a system, it is to be assumed that * all software will have to be generated from scratch. While some routines may be adaptable to the new system, it will be left up to the discretion of the programmers to salvage any particular routines which they deem compatible to the new system. It should be mentioned that after the software package is completed, each Command's present data base will have to be converted to the new system. This will be done by ALMSA as part of the programming necessary for the Redesign Effort of TD/CMS.

b. As stated throughout this document, a DBMS will be incorporated into * this redesign effort. While there are many systems currently available on the open market, this group has decided to identify the requirements which it deems are critical to the redesign effort rather than identify a particular system. The system which satisfies these needs is the one which the redesign effort will support. Consideration is left to ALMSA to determine the correct system to satisfy the needs of the system. The DBMS selected will provide, as a minimum, the following capabilities.

(1) The software will be capable of storing and updating complex network * structures as opposed to a purely hierarchical file.

(2) The data structure will be flexible in that it will accommodate changes and expedite information retrieval.

(3) The data will be independent which will allow structural changes in * the data base without requiring modification of application programs.

(4) A user-friendly query language which facilitates the interactive use* of the data base by non-data processing personnel. In addition, the DBMS must provide for a batch access to the data base through a host data manipulation language (DML) such as COBOL in addition to the self-contained high level language.

(5) A complete range of data manipulation capabilities including sorts, * counts, and formatting options. Also, provides for immediate retrieval of statistics concerning key data elements contained in the system.

(6) Safeguards to the integrity of the data base which protect the data * base from hardware and software malfunctions by monitoring and reporting of problems while facilitating the restart process.

(7) A privacy capability to protect the data base from unauthorized access or modification. Also, a provision for applying these privacy constraints at the data element level.

(8) A provision to capture file updating information automatically to facilitate recovery.

(9) A comprehensive report generator/writer facility.

(10) The capability to support a large number of simultaneous users on the data base without degradation to the throughout time.

c. The selection of the DBMS will not be limited by the elements above, * but rather these will supply the base level from which the system can operate. Any other characteristics of the particular DBMS shall be in accordance with the specifications contained within the body of this description.

5.3 Interfaces

5.3.1 Data Interfaces:

At the present time, most specifications for interfacing with other * system/subsystems/programs are not available. Although the redesign of the TD/CMS is to be fully compatible with other system, the particular key data elements have been not yet been identified for standardization. There are certain data elements which can be identified as likely to be the common data elements; only when the other systems have passed through their design stage can they be identified.

5.3.2 System Interfaces:

Successful completion of the configuration status accounting management as* a part of the total configuration management should contain or have access to the logistic portion of engineering change and equipment modification data. This configuration data can be obtained readily through the various CCSS data bases such as PMR, SAMS, PRIMIR, and MODWORS. The manual extraction of this data is not feasible, therefore an automatic data interface and exchange capability must be incorporated in the redesign of TD/CMS. Since the conception of this redesign, all FCG members have stressed that a coordinated effort should be undertaken to assume compatibility of this system with all the other data bases in CCSS. However, due to financial and time constraints, a joint working group has not been finalized. It is the intention that a meeting will be held in the near future of all involved FCG's which will be affected in the interface process for this redesign. It is paramount that all involved groups specifically understand the interworkings of each system and how it will impact their data base. Minimum data elements required to satisfy the basic configuration change are:

a. ECP number
b. MWO number and its published date.
c. PIP number and its approval date.
d. The NSN or part number of the item before modification/conversion.
e. The NSN or part number of the item after modification/conversion.
f. Kit NSN.
g. Serial number of the end item or component.
h. WSC
I. Modification/conversion completed date.
j. PRON number.

5.4 Summary of Impacts

5.4.1 ADP Organizational Impacts

No foreseen changes are identifiable in this area except as identified in Section 2.4.2.2

5.4.2 ADP Operational Impacts

No foreseen changes are identifiable in this area except as identified in Section 2.4.2.2.

5.4.3 ADP Development Impacts

This section is in conflict with the present Life Cycle Management Concept as identified by ALMSA Regulation 18-15. According to this regulation, a determination of personnel and processing commitments cannot be determined by ALMSA until the LSRC approves the Functional Description, Data Requirements Document and Automated Economic Analysis. Besides, it is inappropriate for this group to try to determine the requirements of ALMSA and commit that activity to a schedule where no knowledge or understanding of ALMSA's workload is apparent.

5.5 Failure Contingencies

a. The problem associated with failures of hardware/software are essentially the loss of desired turnaround time, throughput time, and system downtime. The reasons for failures in hardware/software can range from natural disasters to sabotage; therefore, rather than address these problems here, recovery procedures from any failure will be considered in the overall system design.

b. Engineering technical data related to TD/CMS is generally considered a * non-sensitive, and the processing of that data is generally non-critical during peacetime. The necessity of a backup computer is limited by these factors and the cost consideration for maintaining two computer systems. Provisions should be incorporated in the system design and operational procedures in the event the system is in a downtime mode for more than one complete day. Contingency plans should be defined for any possible failure in either the hardware or software.

c. Backup techniques are essential for efficient system processing and * would include generation data sets, elimination of any temporary data files (as far as practical), identification and documentation of restart procedures, periodic backup for all master files (stored in a remote location for security purposes), and the establishment of semi-permanent job steps during processing. Backup techniques and fall back procedures are synonymous.

d. Restart capabilities generally cannot be accomplished if a failure occurs during the execution of a specific program. Recovery and restart would begin at the point where one job step concluded and the failure occurred. Restart procedures would be defined in a system

processing description manuals.

d. Restart capabilities generally cannot be accomplished if a failure occurs during the execution of a specific a program. Recovery and restart would begin at the point where on job step concluded and the failure occurred. Restart procedures would be defined in system processing description manuals.

5.6 Security

This response is directed toward system security and privacy rather than the processing of classified documents. Handling and processing of classified documents is defined and described in appropriate DOD standards and specifications whereas system security is dependent on the type of data that is to be processed and any other potential security hazards. In developing security measures for any system, several definite areas must be considered as follows:

a. Physical Security - Considerations for physical security include fire protection, water protection, power loss, natural disasters, explosions and other diseases. Each facility that has responsibility for maintaining a computer center must evaluate their own physical security requirements and plan accordingly.

b. Data Security - The foremost consideration in the data security area is to ensure file integrity. Maintenance of system monitors, use of higher level languages, validation of programs, checking and testing, total security during program testing, and the avoidance of printout that is of a restrictive nature.

c. Communication Security - Each installation should maintain reliable telephone security; control electromagnetic radiation; rigid control of passwords; changing code tables periodically; and avoid dedicated lines using multiplex transmissions as much as possible.

d. Personnel Security - This area of security ranges from continuous surveillance of the computer facility to the training of an alternate work force. Included in this range would be; controlled access system for all personnel removal of signs identifying the location of the facility or storage access, control use of files through a librarian, arrange for standby supply methods, establishing a security staff, developing security audit procedures, rotation of assignments and responsibilities among personnel, maintaining control logs, and reviewing operations periodically and spontaneously.

e. Software Security - Of equal importance software security and should include duplicate programs, duplicate master files, documentation, forms and supplies, organizational documentation, and system design descriptions and specifications.

f. Internal Security - In order to assure the integrity of the data base, it is essential that input data (both new and changed) to the data base be restricted to authorized individuals who have been previously identified to TD/CMS. This restriction must be multilevel, i.e., access to

a terminal for input, to a file, to a type of data element, to specific data elements, and to specific data.

Implementation of the above procedures will not provide a perfect security system; however, it will reduce significantly the probability of security violations.

SECTION 6. COST FACTORS

This section will contain a summary of cost factors which are amplified in the Automation Economic Analysis (AEA). This section will be completed at a later date.

SECTION 7 SYSTEM DEVELOPMENT PLAN

7.1 Management Approach.

The Technical Data/Configuration Management System Functional Coordinating Group is responsible for the formulation of the functional requirements of the system and the preparation of the Functional Description and the Data Requirements Document. Development of the system will be under the control of the Logistics System Review Committee (LSRC).
Decision briefings on the project will be made to the LSRC at milestone I through V (defined in AR 18-1). Army logistics Management Systems Activity has been designated as the organization responsible for the system design.

7.2 System Documentation. The following is the tentative schedule for the completion of the system documentation.

Document	Date
Mission Elements Needs Statement	29 May 81
Form 3000	29 May 81
Functional Description	May 82*
Data Requirements Document	March 83
Communications Plan	March 83
Automation Economic Analysis	March 83
System/Subsystem Specification	Jan 84
Program Specification	Aug 84
Data Base Specification	Jan 85
Users Manual	June 85
Operators Manual	June 85
Maintenance Manual	June 85
Test Plan	Aug 85

*Note: This date is the preliminary completion milestone of the Functional Description. Certain portions of the Functional Description will be amplified and/or modified as the Data Requirements Document is prepared.

7.3 System Implementation.

Based on the above schedule, system implementation (conversion from present TD/CMS to redesigned system) will begin January 1986.

APPENDIX A DATA FLOW CHARTS - CURRENT TD/CMS

A-1.1 Input Routing-Select. (AAQ)

This process accepts all input to this application. This includes command control cards, specific retrieval requests, and print option cards. This inputs are written to data sets that will be accepted by the particular using module. If the input is not recognizable, it is written to the data set which goes through the edit module.

A-1.2 Select Where-Used Report Records. (BCB)

This program selects records for where-used reports, consisting of the following types:

a. Specific drawing/part
b. Complete for all component drawings/parts
c. Specific specification/standard
d. Complete for all supporting specifications/standards

(Note: Processing involves a sequential configuration file search with the search arguments for the report requests being tabled within computer memory).

e. The two types of records placed on the selected output tape are:

(1) Heading records, containing requested document/drawing/part number, report request number, report request type, and request notes.

(2) Line entry records for each selected record, which are identified to report request number and type.

A-1.3. Configuration/Where-Used Report Process. (BEF)

This program uses the selected records for configuration and where-used reporting as the base for processing. The purpose of this program is to augment reporting data of the selected records by extracting information from the detail file and the outstanding changes tape. The selected report records are matched to the detail file and the outstanding changes tape by document or part number. The report records are then expanded, or new reporting records are created. The expanded report records are restructured by means of a sort control word which is used by the utility sort program to place the records in the desired reporting sequence.

A-1.4 Configuration and Where-Used Report Writer. (BGF)

This program arranges report heading and data records into report format on a print tape for the following:

a. Technical data package lists
b. Engineering data lists
c. Parts lists
d. Modification kit lists
e. Equipment list
f. Inspection equipment supply lists
g. Generation breakdown lists
h. Configuration item with specified type of documents lists
I. Where-used lists

(Note: The program also prepares a tape for document retrieval through the automated microfilm storage and retrieval (AMSR) system).

A-1.5 Configuration File Load Program. (BHB)

a. This program is used to load the configuration file from tape to disk for the purpose of random retrieval in selecting records. The load program transfers the configuration file to disk in similar format to the file with both the control part data and supporting segments in the same data record. Index records are generated which relate to each data record. Both the data record and the index records are stored on a full track basis, 7240 characters for each record.

b. The load program may be processed as a separate function, or as a function of the configuration file update program which loads the records onto disks as they are updated on tape.

A-1.6 Edit Process-Select. (BME)

This process edits the input to process blocks DBB, BCB, and BYF. Any unrecognizable input will be rejected and displayed on an error report.

A-1.7 Change/Release Status Report Record Selection. (BSF)

The purpose of this program is to select records from the change/release file(s) as applicable to reporting requests and structure the output format for sorting and report writer processing. Processing consists of selecting records and record segments, and structuring the sequence file (sort key) by the type of report and criteria of reporting as designated by the request.

The three reports produced are:

a. Register of supply contractor initiated engineering change proposal/request for deviation/request for waiver (ECP/RFD/RFW) referred to as the contractor changes report.

b. Current contract ECP register referred to as the current contract report.

c. Change/release status report referred to as the outstanding changes report.

A-1.8 Detail File Utility List Program. (BYF)

This program produces lists from the detail file with the majority of the data elements reflected on the lists. Requests for the lists designate the record categories for inclusion by the request type; specific document types, number range, or nomenclature within the category. Processing consists of:

a. Edit analysis and storage of lists requests with a limitation of 100 requests.

b. Testing the detail file records against the stored request tables for record selection requirements. Selected records are placed on a work tape which is stored to reporting sequences.

c. Producing a print tape from the sorted selected records for printing the detail file lists. Lists are produced in request number sequence and either document identification or title sequence within each request.

A-1.9 TDPL MAP/Baseline Comparison Program (B53)

This program processes report data extracted by program AF2BEF (PB BEF) against an empirical TDPL history file, on tape. If a report data line from AF2BEF matches a history record on the first 20 characters, then the last 30 characters of the history record are compared to the corresponding entries in the report data line. If no difference is sensed, then the next report data line is read in and processed. When a difference does occur, report lines are generated going either to hard copy or tape or both media dependent on the information coded in the AMSR pointer field, position 59-63 of the report request card. The TDPL history file is constructed by adding or deleting records, but not record is ever updated.

A-1.10 Verification List Program (CAB)

This program selects records from the configuration file, combines the selected data with information from the detail file, and produces the verification lists. The lists may be requested for a major item or for individual control drawing/part numbers, and are used to check the recorded TD/CMS data on file to the engineering documents used as the data source.

A-1.11 Report Tape Sort (CAB)

This program sorts the BGF report tape by report code and provides the sorted tape to the Output Products System (OPS).

A-1.12 Select Configuration Report Records (DBB)

The purpose of this program is to select part or document records for all reports which require the assembly generation breakdown (treeing method) of record selection from the configuration file. Selection of part or document records from the configuration file for a requested report is by the treeing method, starting with a search of the requested item identification for the matching control identification on file, which is treated as the top assembly number. Generation of the records for supporting parts and documents is by a search, using the supporting part/drawing number as the search arguments against control identification for lower tier item.

A-1.13 Change/Release File List Process (DTB)

This program lists the change/release master and/or history files in file sequence (change/release document number) and shows each data element on file, identified by an abbreviated data element title.

A-1.14 Change/Release Status Reports Writer (DUB)

This program processes the selected change/release report records into report formats and produces summary totals by control elements and/or report. The change/release reports are used for outstanding change analysis, statistical analysis purposes, and reference in the change and/or release area.

A-1.15 System/Model Index File List Process (DVB)

The purpose of this program is to produce the system/model index file listings in any or all of three sequences depending on the options selected. The options are;

a. List by model code
b. List by model identification
c. List by system/major item part number

A-1.16 Part List With Notes Extract Process (DVC)

The purpose of this process is to extract from the AF2BEF01 tape, all parts list type A3 (advanced revision symbol) and parts list type A4 (reprint) records. These records are then processed appending note numbers to applicable records. A parts list is then produced along with notes for those parts lists having notes.

A-1.17 Configuration File Utility List Program (DXB)

This program produces a listing of the control identification on the configuration file. There is no list request format for the listing--it is a matter of program processing with the proper authorization. Processing consists of extracting the control identifiers and producing a print tape which is in file sequence.

A-1.18 Change/Release File Purge Program (DZB)

The purpose of this program is to purge the change/release master file, to reduce the record volume by transferring records in a "closed-out' condition from the matter file to the change/release history file. The format of the history file is the same as the master file, except the purge data are inserted in the first segment of the purged record set for a change/release document. Records are transferred from the master file to the history file on the following conditions:

a. Change/release data transferred to another change/release document number.
b. Change has been canceled or withdrawn.
c. Initial release and the release date in the basic record segment is equal or prior to the purge date.
d. Change has been rejected, and the date OF Contracting Officer is equal or prior to the purge date.
e. Change is approved as an RFD or RFW, and the date to Contracting Officer is equal or prior to the purge date.
f. Complete release when the change is not against a current contract and the release date in the basic record segment is equal or prior to the purge date.
g. Complete release when the change is against a current contract, and both the date to Contracting Officer and supplemental agreement date are equal or prior to the purge date.

A-1.19 Input Routing Program (AAP)

This process accepts all input including command control cards and special option control cards and writes them to data sets that will be accepted by the particular using module. Nothing is rejected by this module. If it is not recognizable, it is written to the data set which goes through the edit module.

A-1.20 Edit Process-1 (BJF)

The primary function of this process is to edit and validate change/release activity. All other activity (configuration, detail, system/model, and report requests) is routed to edit-process-2. The command control card is a mandatory entry for this process.

All input is sorted on the first 64 positions of each record. Invalid transactions are posted to the input card edit report.

A-1.21 Change/Release File Update (BLB)

This process accepts change/release activity records and adds, changes or deletes record segments to update the change/release file. It should be noted that a delete action against a supporting segment will not remove a complete record from the file for a change/release document identification. Deletion of the basic segment (A7 card entry) accomplishes this action.
Engineering release actions submitted under the H7 and J7 card entries create configuration and detail file entries for edit/validations-2 process. A data set containing all current outstanding changing/release records will be produced from the process for use in the configuration/where-used report process.

A-1.22 Edit Process-2 (BMF)

The primary function of this process is to edit and validate updating activity for all major files except change/release. The command control card is a mandatory entry for this process and is not the same for edit/validation-1. This process produces an output containing updating activity for the major files within the system except change/release. This output contains four data sets, each having its own header and trailer labels.

A-1.23 Configuration File Update (BOB)

a. The primary function of this program is to process the activity input tape pages from the edit/validation-2 process. The data processed will either add records to, change records on, or delete records from the configuration file established after the previous file update. The load/no load control card is a mandatory entry for this entry for this process. The no load option should always be present when running program AF2BOB in application 559.

b. The configuration file consists of four types of record segments identified to the control part/document identification. The categories of record segments and the types of data contained within each category are as follows:

(1) A category consists of:

(a) Replacement part data from type of document 4R entry.

(b) Tabulated part to drawing number cross-reference from type 4T entry.

(c) Major item (CEI) and system/model usage data from type XX entry.

(2) D category is the supporting part/drawing segments consisting of:

(a) Component parts of an assembly.

(3) L category consists of associated documents and lists.

(4) S category consists of specifications and standards.

A-1.24 System/Model Index File Update (BWF)

This program also processes the activity input tape passed from the edit/validation-2 process to add, change, or delete records on the system/model index file from the previous update cycle. The list options control card is a mandatory entry for this process.

A-1.25 Replacement Specifications/Standards Update Program (CBB)

This program produces change entries to update the replacement specifications/standards segments of the detail file from the basic specifications/standards records. The purpose of this processing is to reflect update action for DODISS supplement changes, made to the specifications/standards records, in the replacement segments as applicable. Processing of this program should be subsequent to the detail file update process which incorporates the DODISS supplement changes.

A-1.26 Detail File Update (DRB)

a. This program also processes the activity input tape passed from the edit/validation-2 process to add, change, or delete records on the detail file from the previous update cycle.

b. The detail file consists of five types of records, maintained in sequence to the first 24 positions of the record. The primary sequence is document identification, in a left-justified mode. A record category letter is generated for each record type and used with a sequence code to identify the record. Identifying characteristics of the record types are:

(1) Part/drawing records are identified by record category D and sequence code 1. They are created and maintained by activity sequence codes (zero) and 1 entries.

(2) Document records are identified by record category L and sequence code 1. These records are created and maintained by activity sequence codes 2 and 3 entries.

(3) Replacement specification records are identified by record category S and sequence code 1, and the replaced specification number is the prime identification. The records are created and maintained by activity sequence codes 4 and 5 entries.

(4) Specification records are identified by record category S and sequence code 2. They are created and maintained by activity sequence codes 4, 6, and 7 entries.

(5) Multiple-sheet records are identified by record category D or L and sequence code 3.

These records are created and maintained by activity sequence code 9 entries.

A-1.27 Note table Edit/Update (DRC)

The primary function of this program is to update the note narrative master file and//or the note number master file. The program does an edit on the input transactions and rejects any which are invalid or which specify an update to a file which is an invalid update. Output consists of a report which lists each transaction inputted and whether it rejected or updated. This program can also be used to initially build either the note narrative file or the note number file.

APPENDIX B. TD/CMS OUTPUT PRODUCT REQUIREMENTS

Title of Report: Technical Data Package Listing

Report Options:

1. Product Drawings and Associated Lists
2. Packaging Drawings and Documents
3. Inspection Drawings and Documents
4. Specifications and Standards
5. Engineering Exception Documents
6. List of Value Engineering Royalties Outstanding for Document Number
7. Outstanding Configuration Control Documents for Document Number

Explanation/Notes:

1. The output format for above reports will be configured as the present output of TD/CMS.

2. The print sequence of the reports will be as configured in the present output of TD/CMS.

3. Each report will be able to print as a separate entity or complete.

Title of Report: Product Drawings and Associated Lists

DATA ELEMENTS TO BE INCLUDED ON REPORT:

1. Doc Type Code
2. Drawing Size/Document number
3. FSCM
4. Sheet/Number
5. Sheet/Of
6. Revision Symbol
7. Document Date
8. Security Classification
9. Document Title
10. Notes
11. Review Date
12. Complexity/Critically Code
13. Rights Code

EXPLANATION/NOTES:

1. The Doc Type Code is used to identify the type of Drawing/Document.

2. The Document Date is to identify the last date of which the document had been revised.

Title of Report: Packaging Drawings and Documents

DATA ELEMENTS TO BE INCLUDED ON REPORT:

1. Doc Type Code
2. Drawing Size/Document number
3. FSCM
4. Sheet/Number
5. Sheet/Of
6. Revision Symbol
7. Document Date
8. Security Classification
9. Document Title
10. Note
11. Review Date

12. Complexity/Critically Code
13. Rights Code

EXPLANATION/NOTES:

1. The Doc Type Code is used to identify the type of Drawing/Document.

2. The Document Date is to identify the last date of which the document had been reviewed.

Title of Report: Inspection Drawings and Documents

DATA ELEMENTS TO BE INCLUDED ON REPORT:

1. Doc type Code
2. Drawing Size/Document number
3. FSCM
4. Sheet/Number
5. Sheet/Of
6. Revision Symbol
7. Document Date
8. Security Classification
9. Document Title
10. Note
11. Review Date
12. Complexity/Criticality Code
13. Rights Code

EXPLANATION/NOTES:

1. The Doc Type Code is used to identify the type of Drawing/Document.

2. The Document Date is to identify the last date of which the document had been revised.

Title of Report: Specifications and Standards

DATES ELEMENTS TO BE INCLUDED ON REPORT:

1. Document Number
2. Revision Symbol
3. Amendment Number

4. Interim Change Number
5. Document Date
6. Document Title
7. Qualified Parts List
8. Doc Type Code

EXPLANATION/NOTES:

1. Output to be structured in same format as present system.

2. Notes shall be listed under the document as identified in system in use at MERADCOM.

3. Doc Type Code will identify the type of document.

Title of Report: Engineering Exception Documents

DATA ELEMENTS TO BE INCLUDED ON REPORT:

1. Doc Type Code
2. Drawing Site/Document number
3. FSCM
4. Sheet/Number
5. Sheet/Of
6. Revision Symbol
7. Document Date
8. Security Classification
9. Document Title
10. Note
11. Review Date
12. Complexity/Criticality Code
13. Rights Code

EXPLANATION/NOTES:

1. The Doc Type Code is used to identify the type of Drawing/Document.

2. The Document Date is to identify the last date of which the document had been revised.

Title of Report: List of Value Engineering Royalties Outstanding for Document Number

DATA ELEMENTS TO BE INCLUDED ON REPORT:

1. Doc Type Code
2. Document Number
3. FSCM
4. VECP Number
5. NOR ID
6. Royalty Expires
7. Items Included in V.E. Clause
8. Contractor Name
9. Contract Number

EXPLANATION/NOTES:

1. Doc Type Code Data Element identifies the type of document.

Title of Report: List of Outstanding Configuration Control Documents for Document Number

DATA ELEMENTS TO BE INCLUDED ON REPORT:

1. Doc Type Code
2. Document Number
3. FSCM
4. VECP/ECP/RFD/RFW Number
5. NOR Identification and SCN Identification Number
6. VECP/ECP/RFD/RFW Date
7. Priority Code
8. Category Change
9. Configuration Item Nomenclature
10. Change Submitted
11. Change Approved
12. Change Class
13. Change Approved Date

EXPLANATION/NOTES:

1. Item 4 listed above is the Unique Government Assigned Number.

2. Doc Type Code identifies the type of document.

Title of Report: Generation Breakdown Listing (GBL)

DATA ELEMENTS TO BE INCLUDED ON REPORT:

1. Level
2. Part/Document Number
3. FSCM
4. Revision
5. Quantity
6. Part/Document Nomenclature
7. Review Date
8. Tabulated Part Number
9. Outstanding Change Identification
10. Type Document Change Submitted
11. Type Document Change Approved

EXPLANATION/NOTES:

1. All supporting documents and parts.

2. Parts only, current GBL print.

3. Where Part Number is different than Drawing Number, print the Drawing Number to the right (current GBL print).

Title of Report: Engineering Data List

DATA ELEMENTS TO BE INCLUDED ON REPORT:

1. Product Drawings and Associated Lists
2. Packaging Drawings and Documents
3. Inspection Drawings and Documents
4. Specifications and Standards
5. Engineering Exception Documents
6. List of Value Engineering Royalties Outstanding for Document Number
7. Outstanding Configuration Control Documents for Document Number

EXPLANATION/NOTES:

1. The output format for above reports will be configured as the present output of TD/CMS.

2. The print sequence of the reports will be as configured in the present output of TD/CMS.

3. Each report will be able to print as a separate entity or complete.

Title of Report: Engineering Data List (EDL)

DATA ELEMENTS TO BE INCLUDED ON REPORT:

1. Doc Type Code
2. Document Number
3. FSCM
4. VECP/ECP/RFD/RFW Number
5. NOR Identification
6. ECP/RFD/RFW Date
7. Priority Code
8. Change Category
9. Configuration Item Nomenclature
10. Change Submitted
11. Change Approved
12. Change Class
13. Change Approved Date
14. Royalty Expires
15. Items Included in Value Engineering Clause
16. Contractor Name
17. Contract Number
18. Drawing Size
19. Sheet/Number
20. Sheet/Of
21. Revision Symbol
22. Document Date
23. Security Classification
24. Document Title
25. Notes
26. Review Date
27. Complexity/Criticality Code
28. Rights Code

EXPLANATION/NOTES:

1. Ability to breakout each section with documents pertinent to that section.

2. Doc Type Code identifies the type of document.

Title of Report: Parts List

DATA ELEMENTS TO BE INCLUDED ON REPORT:
1. Find Number
2. Quantity Required

3. Unit Measurement
4. FSCM
5. Part or Identifying Number
6. Drawing Size
7. Nomenclature or Document Title
8. Supplemental List
9. Note Number
10. Line Number
11. Note/Narrative
12. Document Number

EXPLANATION/NOTES:

1. Notes to follow on next line under nomenclature for each find number, if applicable.

2. If not applicable to part number, notes will follow at end of part list.

3. GFE/GFM will be flagged as a recommendation to procuring activity.

4. Summary Parts List at any level.

5. “As Is” Retrieval.

6. “Update” Retrieval.

Title of Report: Where Used

DATA ELEMENTS TO BE INCLUDED ON REPORT:

1. Part/Document Number
2. FSCM
3. Quantity/Next Higher Assembly
4. Next Higher Assembly
5. Next Higher Assembly FSCM
6. Major Item
7. Major Item FSCM
8. Systems/Model Code
9. Major Item Nomenclature
10. Configuration Manager of Lowest Item
11. System Configuration Manager

EXPLANATION/NOTES;

1. CRT generated.

Title of Report: Used With Listing

DATA ELEMENTS TO BE INCLUDED ON REPORT:

1. Configuration Item Identification Code of Interfacing Part
2. Configuration Manager Name
3. Configuration Manager Address
4. Identification of Interface Type
5. Interface Item Nomenclature

EXPLANATION/NOTES:

1. CRT generated.

Title of Report : Configuration Identification/Manager Cross-Reference

DATA ELEMENTS TO BE INCLUDED ON REPORT:

1. Configuration Item Identification
2. Configuration Item Name
3. Configuration Manager Name
4. Configuration Manager Address
5. Configuration Manager Phone Number

EXPLANATION/NOTES:

1. CRT generated

Title of Report: Configuration Identification/Manager Cross-Reference

DATA ELEMENTS TO BE INCLUDED ON REPORT:

1. Part Number
2. Document Number
3. FSCM
4. Mail Address
5. Electronic Address
6. Code, Configured Item Identification

7. Code, Configuration Identification
8. Baseline
9. Date, Baseline Document
10. Date, Configuration Identification
11. Date, ECP/VECP Correction
12. Date, ECP/VECP Modification
13. Date, SCN Decision
14. Decision, CCD
15. Decision, SCN
16. Identification
17. Name, CMO
18. Name, Configuration Manager
19. Number, Government CCD Control
20. Number, ECP/VECP Correction
21. Number, ECP/VECP Modification'
22. Number, ECP/VECP Revision
23. Number, NOR Approved
24. Number, SCN Approved
25. Number, Unit
26. Number, Serial
27. Number, Lot
28. Symbol, Revision
29. Type, Baseline Document
30. Type, CCD
31. Type Release

EXPLANATION/NOTES:

1. Item 6 is identified as either Proposed or Released.

2. Item 8 is either Allocated, Functional, Product..

3. Reports are to be generated as individual reports or as a complete set.

4. Reports will be generated with option of Hardcopy or CRT print.

Title of Report: Detailed Configuration Item Baseline

DATA ELEMENTS TO BE INCLUDED ON REPORT:
1. Part Number
2. Document Number
3. FSCM
4. Mail Address
5. Electronic Address
6. Code, Configured Item Identification

7. Code, Configuration Identification
8. Baseline
9. Date, Baseline Document
10. Date, Configuration Identification
11. Date, ECP/VECP Correction
12. Date, ECP/VECP Modification
13. Date, SCN Decision
14. Decision, CCD
15. Decision, SCN
16. Identification
17. Name, CMO
18. Name, Configuration Manager
19. Number, Government CCD Control
20. Number, ECP/VECP Correction
21. Number, ECP/VECP Modification
22. Number, ECP/VECP Revision
23. Number, NOR Approved
24. Number, SCN Approved
25. Number, Unit
26. Number, Serial
27. Number, Lot
28. Symbol, Revision
29. Type, Baseline Document
30. Type, CCD
31. Type, Release

EXPLANATION/NOTES:

1. Item 6 is identified as either Proposed or Released.
2. Item 8 is either Allocated, Functional, Product.
3. Reports are to be generated as individual reports or as a complete set.
4. Reports will be generated with option of Hardcopy or CRT print.

Title of Report: Individual Configuration Item Verification

DATA ELEMENTS TO BE INCLUDED ON REPORT:
1. Part Number
2. Document Number
3. FSCM
4. Mail Address
5. Electronic Address
6. Code, Configured Item Identification
7. Code, Configuration Identification
8. Baseline

9. Date, Baseline Document
10. Date, Configuration Identification
11. Date, ECP/VECP Correction
12. Date, ECP/VECP Modification
13. Date, SCN Decision
14. Decision, CCD
15. Decision, SCN
16. Identification
17. Name, CMO
18. Name, Configuration Manager
19. Number, Government CCD Control
20. Number, ECP/VECP Correction
21. Number, ECP/VECP Modification
22. Number, ECP/VECP Revision
23. Number, NOR Approved
24. Number, SCN Approved
25. Number, Unit
26. Number, Serial
27. Number, Lot
28. Symbol, Revision
29. Type, Baseline Document
30. Type, CCD
31. Type, Release

EXPLANATION/NOTES:

1. Item 6 is identified as either Proposed or Released.
2. Item 8 is either Allocated, Functional, Product.
3. Reports are to be generated as individual reports or as a complete set.
4. Reports will be generated with option of Hardcopy or CRT print.

Title of Report: Individual History of Configuration Item

DATA ELEMENTS TO BE INCLINED ON REPORT:

1. Part Number
2. Document Number
3. FSM
4. Mail Address
5. Electronic Address
6. Code, Configured Item Identification
7. Code, Configuration Identification
8. Baseline
9. Date, Baseline Document

10. Date, Configuration Identification
11. Date, ECP/VECP Correction
12. Date, ECP/VECP Modification
13. Date, SCN Decision
14. Decision, CCD
15. Decision, SCN
16. Identification
17. Name, OMO
18. Name, Configuration Manager
19. Number, Government CCD Control
20. Number, ECP/VECP Correction
21. Number ECP/VECP Modification
22. Number, ECP/VECP Revision
23. Number, NOR Approved
24. Number SCN Approved
25. Number, Unit
26. Number, Serial
27. Number, Lot
28. Symbol, Revision
29. Type, Baseline Document
30. Type, CCD
31. Type, Release

EXPLANATION/NOTES:

1. Item 6 is identified as either Proposed or Released.
2. Item 8 is either Allocated, Functional, Product.
3. Reports are to be generated as individual reports or as a complete set.
4. Reports will be generated with option of Hardcopy or CRT print.
5. Report will pertain to data stored as history.

Title of Report: Individual Active Configuration Item

DATA ELEMENTS TO BE INCLINED ON REPORT:

1. Part Number
2. Document Number
3. FSM
4. Mail Address
5. Electronic Address
6. Code, Configured Item Identification
7. Code, Configuration Identification
8. Baseline

9. Date, Baseline Document
10. Date, Configuration Identification
11. Date, ECP/VECP Correction
12. Date, ECP/VECP Modification
13. Date, SCN Decision
14. Decision, CCD
15. Decision, SCN
16. Identification
17. Name, OMO
18. Name, Configuration Manager
19. Number, Government CCD Control
20. Number, ECP/VECP Correction
21. Number ECP/VECP Modification
22. Number, ECP/VECP Revision
23. Number, NOR Approved
24. Number SCN Approved
25. Number, Unit
26. Number, Serial
27. Number, Lot
28. Symbol, Revision
29. Type, Baseline Document
30. Type, CCD
31. Type, Release

EXPLANATION/NOTES:

1. Item 6 is identified as either Proposed or Released.
2. Item 8 is either Allocated, Functional, Product.
3. Reports are to be generated as individual reports or as a complete set.
4. Reports will be generated with option of Hardcopy or CRT print.
5. Report will contain data currently utilized.

Title of Report: Configuration Item Comparison Report

DATA ELEMENTS TO BE INCLUDED ON REPORT:

1. Part Number
2. Document Number
3. FSCM
4. Mail Address
5. Electronic Address
6. Code, Configured Item Identification
7. Code, Configuration Identification

8. Baseline
9. Date, Baseline Document
10. Date, Configuration Identification
11. Date, ECP/VECP Correction
12. Date, ECP/VECP Modification
13. Date, SCN Decision
14. Decision, CCD
15. Decision, SCN
16. Identification
17. Name CMO
18. Name, Configuration Manager
19. Number, Government CCD Control
20. Number, ECP/VECP Correction
21. Number, ECP/VECP Modification
22. Number, ECP/VECP Revision
23. Number, NOR Approved
24. Number, SCN Approved
25. Number, Unit
26. Number, Serial
27. Number, Lot
28. Symbol, Revision
29. Type, Baseline Document
30. Type, CCD
31. Type, Release

EXPLANATION/NOTES:

1. Item 6 is identified as either Proposed or Released.
2. Item 8 is either Allocated, Functional, Product.
3. Reports are to be generated as individual reports or as a complete set.
4. Reports will be generated with option of Hardcopy or CRT print.
5. Provision to call date elements found in Technical Data Package section
6. Provision to query data from AMSR as comparison.

Title of Report: Data Base Status (File and Total)

DATA ELEMENTS TO BE INCLUDED ON REPORT:

1. Part Number
2. Document Number
3. FSCM
4. Mail Address
5. Electronic Address
6. Code, Configured Item Identification

7. Code, Configuration Identification
8. Baseline
9. Date, Baseline Document
10. Date, Configuration Identification
11. Date, ECP/VECP Correction
12. Date, ECP/VECP Modification
13. Date, SCN Decision
14. Decision, CCD
15. Decision, SCN
16. Identification
17. Name CMO
18. Name, Configuration Manager
19. Number, Government CCD Control
20. Number, ECP/VECP Correction
21. Number, ECP/VECP Modification
22. Number, ECP/VECP Revision
23. Number, NOR Approved
24. Number, SCN Approved
25. Number, Unit
26. Number, Serial
27. Number, Lot
28. Symbol, Revision
29. Type, Baseline Document
30. Type, CCD
31. Type, Release

EXPLANATION/NOTES:

1. Reports shall be tabulations of activity on data base.
2. All data elements per file should have capability to be tabulated.
3. Tabulation of additions to data base, accepted or rejected.
4. Tabulation of deletions to data base, accepted or rejected.
5. Tabulation of changes to data base, accepted or rejected.
6. Variable data fields to allow for daily, weekly, monthly tabulations.
7. Requires tabulation capability for single file or multiple.

Title of Report: Individual History of Configuration Item

DATA ELEMENTS TO BE INCLUDED ON REPORT:
1. Part Number
2. Document Number
3. FSCM
4. Mail Address
5. Electronic Address
6. Code, Configured Item Identification

7. Code, Configuration Identification
8. Baseline
9. Date, Baseline Document
10. Date, Configuration Identification
11. Date, ECP/VECP Correction
12. Date, ECP/VECP Modification
13. Date, SCN Decision
14. Decision, CCD
15. Decision, SCN
16. Identification
17. Name, CMO
18. Name, Configuration Manager
19. Number, Government CCD Control
20. Number, ECP/VECP Correction
21. Number, ECP/VECP Modification
22. Number, ECP/VECP Revision
23. Number, NOR Approved
24. Number, SCN Approved
25. Number, Unit
26. Number, Serial
27. Number, Lot
28. Symbol, Revision
29. Type, Baseline Document
30. Type, CCD
31. Type, Release

EXPLANATION/NOTES:

1. Item 6 is identified as either Proposed or Released.
2. Item 8 is either Allocated, Functional, Product.
3. Reports are to be generated as individual reports or as a complete set.
4. Reports will be generated with option of Hardcopy or CRT print.
5. Report will pertain to data stored as history.

Title of Report: CCD Coordination Planning Report

REPORT SECTIONS:

1. Where Used
    - 1.A. Single Document/Part Identified
        - 1.a.1. All Applications of Selected Document/Part
        - 1.a.2. Specific Application of Selected Document Part
    - 1.B. Multiple Documents/Parts Identified
        - 1.B.1. All Applications of Selected Documents/Parts

1.B.2. Specific Application of Selected Documents/Parts

1.C. Complete Listing of All Documents/Parts

2. Used With
3. PRON/Contract Affected
4. CCB Roster
5. Related Configuration Control Documents

EXPLANATION/NOTES:

1. Report 1.C. will output only hardcopy or microfiche.

Title of Report: Configuration Control Document Coordination/Evaluation/Response Request

DATA ELEMENTS TO BE USED ON REPORT:

1. CCB Member Name
2. CCB Member Address
3. CCB Member Phone
4. Suspense Type
5. Suspense Date
6. CCD Number
7. CCD Title
8. Configuration Item Identification
9. CCB Member Position
10. CCB Member Position Date
11. CCD Coordination/Evaluation/Response Number
12. CMO Name
13. CMO Address
14. CMO Phone
15. Configuration Control Point Name
16. Configuration Control Point Address
17. Configuration Control Point Phone
18. Comments/Narrative
19. Signature Block

EXPLANATION/NOTES:

1. Items 15, 16, 17 to have multiple listings.

Title of Reports: Alert Notices

REPORT SECTIONS:

1. Alert Notice on Implementation

2. Alert Notice on Processing
3. Other Alert/Notices

EXPLANATION/NOTES:

1. Reports to local option of CRT or hardcopy output.

2. Local Command Option to implement.

Title of Report: Alert Notice on Implementation

DATA ELEMENTS TO BE USED ON REPORT:

1. Action Office Name
2. Action Office Address
3. Action Office Phone
4. Action Officer Name
5. Action Officer Address
6. Action Officer Phone
7. Date Action Due
8. Type Action Due
9. Government Number of CCD
10. Data elements listed on CCBD input form

EXPLANATION/NOTES:

1. Items 4 to 8 are listed on CCBD.

2. Item 10 gives local option for more data to be included.

Title of Report: Alert Notice on CCD Processing

DATA ELEMENTS TO BE USED ON REPORT:

1. Action Office Name
2. Action Office Address
3. Action Office Phone
4. Action Officer Name
5. Action Officer Address
6. Action Officer Phone
7. Date Action Due
8. Type Action Due

9. Government Number of CCD
10. Date data elements used to generated CCD Coordination/Evaluation/Response Request.

EXPLANATION/NOTES:

1. Items 4 to 8 are listed on CCBD.

2. Item 10 gives local option for more data to be included.

Title of Report: Other Alert Notices

DATA ELEMENTS TO BE USED ON REPORT:

1. Suspense Type
2. Type Action
3. Action Office

EXPLANATION/NOTES:

1. Local option to include more data elements.