DTIC FILE COPY

(2)

AD-A217 921

COMPENDIUM OF OPERATIONS RESEARCH AND ECONOMIC ANALYSIS STUDIES

OPERATIONS RESEARCH AND ECONOMIC ANALYSIS OFFICE

September 1989

DTIC
ELECTE
FEB 07 1990
S D
D

DEPARTMENT OF DEFENSE

DEFENSE LOGISTICS AGENCY

CAMERON STATION,

ALEXANDRIA, VIRGINIA 22304-6100

DISTRIBUTION STATEMENT A
Approved for public release
Distribution Unlimited

90 02 06 011

DEFENSE LOGISTICS AGENCY
HEADQUARTERS
CAMERON STATION
ALEXANDRIA, VIRGINIA 22304-6100

DLA-LO

FOREWORD

This updated Compendium of Operations Research and Economic Analysis Studies consists of abstracts of studies completed by the Operations Research and Economic Analysis (OR/EA) Offices of the Defense Logistics Agency (DLA), Defense General Supply Center (DGSC), Defense Personnel Support Center (DPSC), and Defense Contract Administration Services Region Chicago (DCASR CHI). The findings obtained in these studies present objective results reached by the individual analysts, and do not necessarily reflect implementation decisions reached by management. We have included abstracts of studies completed within the past 10 years; however, we have listed titles of older studies. Abstracts of the older studies are contained in previous issues of the Compendium.

This Compendium is intended to serve as a reference document for others contemplating similar or related studies. The abstracts reflect the range of accessible studies, not all studies performed by the OR/EA Offices. For further information on a specific study, please contact the respective OR/EA Office at one of these telephone numbers:

HQ DLA	Autovon 284-7227	or Commercial (202) 274-7227
DGSC	Autovon 695-3564	or Commercial (804) 275-3564
DPSC	Autovon 444-4127	or Commercial (215) 952-4127
DCASR CHI	Autovon 930-6573	or Commercial (312) 694-6573

ROGER C. ROY
Assistant Director
Policy and Plans

Accesion For
NTIS CRA&I ☑
DTIC TAB ☐
Unannounced ☐
Justification
By
Distribution /
Availability Codes
Dist | Avail and / or Special
A-1

DTIC COPY INSPECTED

ABSTRACTS

DLA-89-P90088. Response Time Analysis for DWASP III Mobile Communication
Index No. 89-41 Devices (June 1989)

Increment III of the DLA Warehousing and Shipping Procedures (DWASP III) includes switching the depot functions of stock selection, stowage, inventory, stock surveillance, and transportation over to a paperless system. This will be accomplished by using Mobile Communication Devices (MCDs) to link warehouse workers with the depot mainframe computer. The volume of transactions between warehouse workers and the mainframe computers affects the mainframe response time. This study was performed to determine the maximum allowable mainframe response time and the minimum required number of MCDs that would allow Defense Depot Memphis Tennessee to process a worst case workload in one shift.

DLA-89-P90059. Cost/Benefit Analysis Support for DAAS Modernization
Index No. 89-40 (May 1989)

This analysis was conducted to assess the economics of the proposed Defense Automatic Addressing System ADPE Replacement and Modernization Program (DARP). The life-cycle incremental costs and benefits of the modular DARP concept were compared against those of three other alternatives: a static baseline (allowing for no workload increase); a modified baseline permitting normal workload increases; and a modernization concept featuring a singular architecture. The study showed dramatic net economic benefits for both modernization alternatives; the proposed modular DARP concept had the highest benefit-to-cost ratio.

DLA-89-P90056. FY 89 Stock Fund Reduction Analysis (March 1989)
Index No. 89-39

The Defense Logistics Agency's FY 89 stock fund budget was $360 million less than the dollar value of sales for FY 88. This study was performed to analyze alternative strategies within the supply system for accommodating this budget reduction. Changes in certain requirements computations and the appropriateness of current demand bases used in forecasting demand were the primary alternatives addressed. Constraining buys to a maximum of 12 months will realize a near term reduction of approximately $25 million. Achieving center goal reductions for shorter leadtimes could further reduce buy requirements up to $100 million. Other alternatives offering higher potential savings are not near term solutions. Reevaluation of both the enhanced safety level program and current system procedures for updating the quarterly forecasted demand (QFD) could involve stock fund savings of up to $500 million. The analysis was limited to those replenishment items forecasted to breach their reorder point within FY 89. However, the study highlights key areas affecting our stock fund requirements and those potential areas that could be used to improve the overall management of stock fund investments.

DLA-89-P81124. Industrial Preparedness Planning (IPP) Item Selection
Index No. 89-38 Indicator Model (January 1989) DPSC-LO Report

This project was initiated to develop an indicator applicable to the Medical Commodity to be used to assist in identifying and prioritizing items which should be planned under the Industrial Preparedness Program. The model is based on a method of ranking items called the Technique for Order Preference by Similarity to Ideal Solution, which was used to develop an IPP prioritization model for the hardware commodities (Index No. 88-08). The ratings are based on four attributes: risk level, production lead time, mobilization ratio, and D to P day. The output of the model is a listing of all items ranked according to their prioritization values. This model is expected to improve consistency in the IPP process, increase productivity by allowing IPP personnel to reduce the time required for selecting items and increase time spent on actual planning, and a general improvement of readiness in mobilization situations.

DLA-89-P81122. Contract Management Mobilization Staffing Planning Model
Index No. 89-37 (May 1989) DCASR-CHI-LO Report

The Defense Logistics Agency regularly plans for the staffing requirements it will need in case of mobilization. Consistently accurate planning has been difficult in the Defense Contract Administration Services area, particularly for the Contract Management function. An analytical model was developed in this project to help with contract management mobilization staffing planning. The model quantifies the resources needed to administer added procurement instruments, and those saved by doing only the essential functions. It consolidates data on Individual Mobilization Augmentees and DCAS personnel in the Reserves, as well as retirees that could return to work as rehired annuitants. The model redistributes personnel to other functional areas when necessary. It computes overtime after accounting for these changes to the work force. The number of people each region needs to hire in each contract management functional area is the final output of the model. The model will permit planners to do sensitivity analyses to test the impact of input variables on this outcome.

DLA-89-P81116. Modeling of MOCAS Phase II Batch Processing (December 1988)
Index No. 89-36

The Defense Logistics Agency (DLA) Office of Telecommunications and Information Systems, Automated Information Systems Development and Control Division is responsible for determining the computer resources necessary to support the Mechanization of Contract Administration Services System (MOCAS), which is used by DLA contract administration activities for daily management of over 392,000 contracts valued at $290 billion. The recent Phase II implementation of MOCAS operates in two principle modes -- a daily on-line cycle, and a night batch cycle. With impending installation of Phase II at the larger Defense Contract Administration Services Regions, there was uncertainty as to whether the existing and planned computer resources would be sufficient to handle the workload. The primary purpose of this study was to develop a model to predict batch cycle run times at the larger DCASRs under MOCAS Phase II, and to confirm that the CPU and input/output devices would provide adequate batch processing service levels.

DLA-89-P81109. Technical Analysis of Cost Proposal (TACP) Expert System
Index No. 89-35 Feasibility Study (September 1988) DCASR-CHI-LO Report

This examination of the TACP process found that using Expert Systems technology could improve effectiveness. Field interviews with many technical specialists, and other research into the TACP process, provided the supporting information. A screening methodology, employed for this project, tested the feasibility of potential Expert Systems. It identified three suitable applications. An Intelligent Computer Assisted Instruction tool would guide novice technical specialists through the analysis of a sample case. An Expert System preprocessor would help set up an existing parametric software costing model. An Expert System primarily for price analysts would help decide when a TACP is needed.

DLA-89-P81106. Cataloging-Tools-On-Line (CTOL) Automated Information System
Index No. 89-34 (AIS) Economic Analysis (December 1988)

Current Defense Logistics Agency cataloging operations use a manual information system to prepare new item requests and maintain existing cataloging transactions. This economic analysis assesses the economic feasibility of replacing the current manual operations with a CTOL AIS as part of the Standard Automated Materiel Management System modernization. This analysis is an update of the original economic analysis which was performed in August 1986. (Report No. 87-02)

DLA-89-P81096. Cost/Benefit Support to Immediate Improvement Initiative
Index No. 89-33 (December 1988)

The DLA Standard Automated Materiel Management System (SAMMS) Immediate Improvement Initiative (I^3) is a relational data-base concept which will permit incremental SAMMS enhancements in such areas as discrepancy processing, inventory accountability, recommended buy, and stock positioning. This cost/benefit analysis assessed and compared the incremental life-cycle costs and benefits of I^3 against a status quo baseline and two intermediate alternatives featuring differing degrees of Critical Baseline Enhancement implementation for DLA's automated information systems. The analysis concluded that the SAMMS-I^3 concept offers substantial net economic benefits.

DLA-89-P81092. Simulating Clothing and Textile Operations at the Defense
Index No. 89-32 Logistics Agency (April 1989)

This report is a description of the work performed by the Logistics Management Institute under the direction of the DLA Operations Research and Economic Analysis Office. The report provides a narrative description (Volume I) and PC SIMSCRIPT II.5 source code (Volume II) for a PC-based simulation of wholesale inventory management of clothing and textile (C&T) items as practiced at DLA. The C&T Simulation Model enables inventory managers and analysts to project and evaluate the potential effects of new inventory policies and operating methods. This interactive, menu driven model runs on personal computers and operates on C&T data extracted from standard DLA Supply Control Files. It provides estimates of how supply performance, inventory levels, and costs are affected by different operating policies and procedures, e.g., variable safety levels, matrix delivery schedules, procurement cycle controls.

DLA-89-R81080. Materiel Readiness Support System (MARS) Interface
Index No. 89-31 Prompting Guide (Revised as of December 1988)

The MARS System was developed as an analytical tool to evaluate DLA's support to materiel readiness. The Historical Supply Performance Program of the MARS system produces statistics that reflect DLA's historical, item-by-item supply performance to a weapon system and/or organizational unit. The Projected Supply Performance Model produces statistics that predict DLA's future support to selected item groupings under a variety of performance goals or budget allocations. The original documentation manual (Report No. 84-14, October 1984) was designed to serve as a user's guide which would enable system adaptation for decentralized users. The current manual incorporates recent enhancements to the MARS System and has been designed to serve as a reference guide of the system's analytical capabilities for both functional and technical personnel.

DLA-89-P81078. Decision Support System for Resource Allocation Model
Index No. 89-30 (April 1989)

In 1987, the Defense Logistics Agency (DLA) began investigating the benefits of incorporating Decision Support System (DSS) technology within the Agency. Efforts were begun to develop an operational prototype DSS to assist decision makers in allocating constrained resource dollars. Two optimization models were created: the Stock Fund Allocation Model, and the Commitment Dollar Allocation Model. The Commitment Dollar Allocation Model was used for integration into the prototype DSS as it was designed to answer the real time question of what items to buy and how much of each should be bought at this time. Testing results demonstrated that this optimization model provides supply availability projections equal to or greater than current operations when funding levels are below the stated Standard Automated Materiel Management System requirements levels. The primary benefit of this model within the DSS is that it gives the decision maker an idea of the effect that reduced or delayed buys will have on an item and throughout the system as a whole. This report documents the mathematical models developed.

DLA-89-P81077. Medical Acquisition Shelf-Life System (MASS) Decision Support
Index No. 89-29 Model Systems Documentation and User's Guide (May 1989)

The Medical Acquisition Shelf-Life (MASS) Model is a decision aid to assist procurement analysts in evaluating alternative bids for stocked medical shelf-life items. MASS attempts to identify the best value bid by balancing longer shelf-life against higher purchase price in order to identify the bid with the lowest life cycle costs. The Systems Documentation briefly reviews the model's features, documents the MASS programs, describes the MASS files, and explains the procedures for updating the MASS data. The accompanying User's Guide describes the model's features, instructs the user in how to operate MASS, and explains the rationale of the model to vendors.

DLA-89-P81067. Simulation of DDMT's Central Pack Area (March 1989)
Index No. 89-28

Defense Depot Memphis Tennessee (DDMT) has for a long period of time operated with packing areas in many parts of the depot. That concept has changed recently and they are consolidating operations as much as possible to take advantage of the associated economies. In addition, the requirement to

upgrade and add on equipment to support the introduction of the DLA Warehousing and Shipping Procedures presented the opportunity to effect the consolidation. This plan materialized in the form of the DDMT Central Pack design for less than truckload (LTL) packing and bin packing operations. The purpose of this study was to perform a computer simulation of the proposed design to determine if goal throughputs could be met and to make recommendations on system improvements and modifications. This report documents the results of the simulation effort. In the LTL packing area, the simulation found three areas of concern: the small freight offer mezzanine, the small freight divert, and the multi-pallet packing area. Similarly, in the area of bin packing operations, the model showed that workload for the two input orientation stations was imbalanced, and that the multi-line packing area was greatly underutilized. Based on the simulation, specific recommendations were to increase system capabilities and to improve operation productivity.

DLA-89-P81064. Receipt Processing Time Study (January 1989)
Index No. 89-27

This analysis provided summary information to DLA Depot Operations on depot receipt performance based on historical files received from the DLA Depots. Distributions for each of the components making up the entire receiving and returns were analyzed using days required for processing. No general trend in total processing time (receipt to storage) was apparent.

DLA-89-P81061. Forecasting Infrequent But Predictable Demands (July 1989)
Index No. 89-26

The Defense Logistics Agency manages some items that generally experience little or no demand. These demands are occasionally interrupted by larger demands. This study was performed to identify and categorize those items that have definite "lumpy" demand patterns, quantify the magnitude of the effect of these demands on the managing commodity's supply availability, and determine the feasibility of attempting to forecast future behavior of these items. "Lumpy" items were identified and analyzed as two distinct groups of seasonal and non-seasonal items. Approximately 6 percent of stocked items with demand can be classified as seasonal. Seasonal items tend to increase the commodity's overall supply availability and have a relatively low stock position both in terms of stock to demand ratios and stock investment. These items did not have any distinguishable stocked items; however, under the concept of Multiple Forecasting, they do lend themselves to relatively simple forecasting techniques. The analysis of Defense Industrial Supply Center items experiencing "lumpy" but non-seasonal demand resulted in an unmanageable number of distinct categories making any kind of pattern analysis impractical.

DLA-89-P81043. Origin Stop-Off and Commercial Rate Analysis of Containers
Index No. 89-25 Bound for Northern Europe (February 1989)

This analysis covered potential consolidation through origin stop-offs of seavan containers and an evaluation of commercial rate levels. The analysis covered 2 months of seavan container data obtained from the Military Traffic Management Command (MTMC). Additional data covering actual shipping points for selected shipments was obtained from the Transportation Division, Defense

Personnel Support Center (DPSC). It was determined that underutilization of seavan containers, whether it is based on weight or cube, is not a widespread problem for containers controlled by DPSC to northern Europe. In addition, it was determined that the current method of routing under the Military Sealift Command Shipping Agreement and Rate Guide offers substantial savings over commercial rate tariffs.

DLA-89-P81033. Optimal Weight Break for Minimum Freight Charges (April 1989)
Index No. 89-24

The purpose of this study was to the review the less-than-truckload (LTL) minimum freight category of the Guaranteed Traffic Program (GTP) to determine whether or not carriers' rates were skewed upwards; if this was found to be true it was requested that an optimal weight break point be determined. Two approaches were used to investigate the LTL minimum freight charges. The first method was to do charge comparison. Two comparisons were performed: one using the discounted Military Traffic Management Command (MTMC) Class 100 Standard Baseline Rates and the second using carriers' Government discounts on the commercial rates published by a nationwide carrier. The first comparison showed that the GTP charges were 33.04 percent lower than the discounted MTMC charges. The second comparison indicated that the GTP charges were 40.57 percent less than the discounted commercial charges. The second approach was an application of linear regression. The regression model, based on the average rate per hundredweight per mile of the other LTL weight categories, predicted a higher average rate per hundredweight per mile than was obtained from the actual shipment data. The conclusion of both approaches is that there is no evidence that rates for the LTL minimum freight category are skewed upwards. The determination of an optimal weight break point was found not feasible because of the dynamic nature of the GTP agreements, in which carriers can adjust their rates in response to changes in the conditions of those agreements.

DLA-89-P81031. Issue Priority Group (IPG) Three Shipment Consolidation
Index No. 89-23 Effectiveness Model (May 1989)

This report summarizes the work done and conclusions reached in a study of depot low priority shipment consolidation effectiveness. IPG III requisitions for compatible items and with the same destinations are consolidated to make maximum use of transportation and warehousing funds. This process is highly automated, but frequently the oldest requisition is removed from the shipment data bank before the routine drop date. The resulting consolidation is thus smaller than it would have been under ideal conditions. The model constructed for this study emulates the consolidation process. The optimization of the consolidation process assumes a perfect system, but can still be a useful tool in determining effectiveness trends at the Defense Logistics Agency supply depots. For a typical depot in a 45-day period, this model shows that under optimal conditions, small parcel shipments could be reduced in excess of 63 percent.

DLA-89-P81022. Prototype Expert System for Hazardous Material Identification
Index No. 89-22 and Classification (May 1989)

DLA is implementing a new hazardous material classification system, consisting of 55 Hazardous Characteristic Codes (HCCs), which will provide critical information needed to effectively manage, store, and ship hazardous materials. Under the new system, depot receiving personnel will be required to assign the HCC if it is missing from pertinent documents. Because the HCC must be assigned quickly and accurately, an expert system approach appeared to offer the best means of assisting depot personnel in performing this task. Accordingly, the purpose of this project was to determine if an expert system approach to assigning HCCs is feasible. A prototype expert system was developed which has the capability of assigning ten HCCs to a specific category of hazardous materials. Subject to the results of field testing at DLA depots, the prototype system demonstrated that it is feasible and advisable to develop an operational system for the assignment of hazard codes.

DLA-89-P81020. Meals, Ready-to-Eat (MRE) Decision Support Model
Index No. 89-21 (December 1988)

The MRE Decision Support Model is a set of software programs developed for a microcomputer with the overall objective of providing increased management visibility of DLA's MRE program. It consists of a set of user friendly software programs which use LOTUS 1-2-3. The programs will automatically convert basic MRE industrial preparedness planning (IPP) and procurement data to usable formats, assist the manager to perform the required analyses and present the results. The optimization portion of the package uses "What's Best!," a commercially available linear/integer programming (LP) package which utilizes LOTUS 1-2-3. The MRE Presentation Spreadsheet is the portion of the overall model that provides MRE program status and background information, allows "What If?" analyses and presents summary results of various optimization trials. The final documents consist of the User's Guide for the Presentation Spreadsheet and the Programmer's Guide which provides detailed documentation for all computer programs developed under this project.

DLA-89-P81014. Analysis of Recommended Buy Output Control System (REBOCS)
Index No. 89-20 Data (July 1989)

This report describes an analysis of recommended buys (RBs) generated by the DLA Standard Automated Materiel Management System (SAMMS) at four DLA supply centers. The purpose of the study was to gain a better understanding of the RB review process and to assess the actions taken by DLA inventory managers in approving, canceling, or modifying RBs. In addition, it was believed that the actions of inventory managers on certain groups of RBs might reveal statistical relationships which could be expressed as implicit rules applicable to the overall RB review process. Such rules could, therefore, be incorporated in a prototype Inventory Manager Assistant expert system which was being developed at that time. The study revealed that inconsistent review procedures among the inventory managers led to numerous and unnecessary repetitive RBs. Accordingly, no implicit rules for use in the expert system could be identified.

DLA-89-P81012. Administrative and Holding Costs Resulting from Processing
Index No. 89-19 Reports of Nonconforming Supplies (July 1989)

The Packard Commission recommended that the Government conduct its purchasing operations in a fashion similar to that of the private sector, by emphasizing quality and schedule in addition to price. The Defense Logistics Agency's Directorate of Contracting is examining the possibility of quantifying the costs associated with poor contractor performance and incorporating these costs into the bid evaluation process. In support of this effort, a project was initiated to evaluate the cost associated with nonconforming supplies that are attributable to contractor fault. This study examined two elements of the cost of nonconforming items, specifically, the administrative cost and the holding cost. The administrative cost arises from actions normally performed at various supply and staff levels (internal and external to DLA) when a nonconforming item is discovered and a Quality Deficiency Report (QDR) is initiated, processed, investigated and resolved. The holding cost results from the storage and handling of nonconforming items and from the lost opportunity of investment for money "tied up" in these discrepant supplies. The average administrative cost accumulated for a single QDR for a typical DLA item was found to be $501. The average holding cost per QDR was estimated as 3.55 percent of the average contract value for a typical DLA item. The administrative costs (in dollars) and holding costs (expressed as a proportion of the contract value) were derived for various levels of detail, that is, Federal Supply Class, Federal Supply Group and supply center.

DLA-89-P81011. Cost of Late Delivery (December 1988)
Index No. 89-18

A previous project (Index No. 87-26) developed a methodology for estimating the costs incurred by DLA as a result of a late delivery. This methodology was validated using DGSC as a test case. This current project extended the cost estimating methodology and developed cost estimates for each of the Federal Supply Classes at all DLA hardware centers. These costs are recommended for incorporation into the bid evaluation process in order to buy for best value.

DLA-89-P81010. Forecasting Contracting Workload (April 1989)
Index No. 89-17

This study explored the possibility of forecasting DLA contracting workload from indicators of Service activity. The premise of this analysis was that DLA's contracting workload is somehow related to Service activity -- an increase in Service activity will lead to a corresponding increase in DLA workload. In this effort we examined the use of regression analysis and mathematical modeling for forecasting DLA workload. It was determined that DLA's contracting workload could not be forecast directly from Service activity. We were able to forecast DLA's Supply Operations workload (expressed by item demand) from Service activity in some cases. We could then forecast some of DLA's stocked item contracting workload indirectly by using the forecasts of item demand. However, it was not possible to forecast any of DLA's non-stocked contracting workload.

DCAS-89-P90001 Disbursements Forecasting Model (June 1989)
Index No. 89-16 DCASR-CHI-LO Report

DLA now uses the unit cost method of resourcing DCASRs. The dollar value of disbursements is the cost driver. As a result, actual and forecasted disbursements are now a critical element in workyear planning. DLA's current method is an adjustment of the prior year disbursements for estimated inflation. This project, however, uses two techniques, linear regression and time series analysis, to predict disbursements. The regression model projects disbursements using the budgeted DoD procurement outlays which cause disbursements. Then, it averages the two results to arrive at a forecast. The study produced projections of disbursements for the next fiscal year for DLA and for each of the nine DCASRs.

DGSC-89-P90003. Defense General Supply Center Employee Motivation Study
Index No. 89-15 (Vol I), Defense Depot Richmond Virginia Motivation Study (Vol II) (September 1989) DGSC-LO Reports

The final results of a motivation/productivity study conducted at DGSC/DDRV are contained in these two reports which document the statistical analyses of a set of questionnaires administered to 447 DGSC/DDRV employees. The questionnaires were developed and administered by an ad hoc working group. The results of this study provided some realistic indicators of the employees' motivational climate at Defense General Supply Center and Depot in Richmond, VA, at the time of the survey.

DGSC-89-P90002. Economic Analysis of the Hazardous Material Building Complex
Index No. 89-14 (July 1989) DGSC-LO Report

Currently over 100 Federal Stock Classes of items, identified as hazardous materials, are stored at Defense Depot Richmond Virginia (DDRV). In addition, DDRV also stocks around 732,000 cubic feet of petroleum products in 55 gallon drums. Those drums are currently stored in the open posing a potential environmental hazard. For both efficiency and safety, a complex of handling and storage facilities has been proposed. This report documents, in detail, the engineering costs of the proposed facilities; the operational procedures or processes which would be affected; and the economic analyses performed.

DGSC-89-P90001. DGSC Operations Center Economic Analysis Supplement: DGSC
Index No. 89-13 Operations Center Commercial (December 1988) DGSC-LO Report

First proposed in 1986, the Operations Center is conceived of as a facility meeting an increasing Inventory Control Point workload in a modernized environment. In addition to its own staff, DGSC must accommodate several hundred DLA tenants currently located at the center. The report details the engineering concepts, operational benefits, and economic model, as well as the resulting actual cost/benefit calculations.

DGSC-89-P90007. Initial Analysis of the Producer Price Index for Bakery Items
Index No. 89-12 (September 1989) DGSC-LO Report

An initial analysis of Producer Price Index (PPI) data was performed to determine if the magnitude in raw material cost increases due to the recent drought have a significant effect on prices of bread. The analysis was

limited to the potential impact on the price of white bread as caused by increases in the price of wheat grain and wheat flour. Twenty months of PPI data, January 1987 through August 1988, for wheat grain, wheat flour, and white pan bread were analyzed to ascertain if there is a statistically significant relationship between the price of wheat, wheat flour, and white bread and if this relationship alone could be used as an economic price adjustment factor for white bread. From the analysis it was concluded that price changes in wheat grain, as caused by the recent drought, are neither a good nor sufficient reason to expect significant price changes in white bread. The drought and its subsequent impact on wheat prices is not sufficient justification to conclude that bread vendors require immediate relief from their contract responsibilities.

DPSC-89-P90006. Rice Demand and Production (March 1989) DPSC-LO Report Index No. 89-11

The Directorate of Subsistence has experienced significant increases in the demand for two NSNs for par-boiled rice while at the same time has had difficulty in procuring the NSNs. The Contracting and Production Division therefore requested an analysis of the situation and an outlook for 1989. Based on an analysis of demand, pricing and production data, it seems that the difficulty in procurement of the two NSNs was probably due to a variety of factors including: increasing and extremely variable demand; relatively low level of available stocks; substantial increase in price; and the relatively low level of non-U.S. stocks (due to decreased production) placing pressure on U.S. stocks. The study projected on outlook for 1989 better than what occurred during 1988. Though DPSC demands are expected to increase substantially based on operations research forecasts, U.S. production is expected to increase by 23% with stock levels increasing by 20%. Given that demands represent such a small percentage of U.S. utilization, it was concluded that there should be adequate supplies.

DPSC-89-P90005. Adaptive Robust Estimation (August 1988) DPSC-LO Report Index No. 89-10

The Quality Assurance Division of the Directorate of Subsistence is responsible for evaluating the reliability of contractor testing systems under the DPSC Subsistence Contract Optional Testing Clause. To ensure the reliability of these testing systems, contractor test data is analyzed against Government test data. The results produced by these analyses are used as measures of reliability. The statistical method utilized by the Quality Assurance personnel to test for this reliability is called Adaptive Robust Estimation. The technique has recently been improved by work done at the University of Iowa. The effort documented in this report involved the interpretation, design, and programming a new set of equations developed at Iowa. As a result of these updates, Quality Assurance personnel are able to provide quicker and statistically more reliable evaluations.

DPSC-89-P90001. Central Supply Point Distribution Model (November 1987) Index No. 89-09 DPSC-LO Report

The objective of this project was to determine the most economical method for distributing low demand items. The model was developed for end-users and is therefore self contained and menu-driven. A series of Lotus 123 worksheets containing menus, data, appropriate formulas and look-up tables, and report

generators comprise the system. Output is in the form of decision support tables which allow item managers to analyze the economic feasibility of two alternative methods of shipping a specific item to a specific customer. Data requirements include location of origin and destination , ints, appropriate transportation rates, and handling and storage costs. The model compares transportation, storage and handling costs for the two alternative distribution methods. One method is to ship a small quantity of an item directly to a customer; the other is to ship a large quantity of the item to a central distribution point where it is consolidated with other items and then shipped to the customer.

DPSC-89-P90003. Integer Programming Complex Bid Evaluation Model
Index No. 89-08 (December 1986) DPSC-LO Report

The purpose of this effort was to determine the low cost award solution for complex evaluations. A user friendly, menu driven PC model was developed to assist procurement personnel in performing complex bid evaluations. A series of Lotus 123 worksheets containing menus, data input screens, and report generators are interfaced with a mathematical programming package. The Lotus component allows users to input bid data and output award solutions. The math software generates optimal solutions based on bids and constraints. The evaluations are complex due to the restriction that a single line item quantity be totally awarded to a single vendor, yet each vendor has production capacity limits in terms of overall quantity. The evaluation is performed as a large zero-one integer programming problem with up to 900 variables and 60 constraints.

DPSC-89-C90009. Kaiserslautern Cold Store Simulation Model (May 1988)
Index No. 89-07 DPSC-LO Report

The Kaiserslautern Cold Storage Facility, one of two cold storage warehouses in the Federal Republic of Germany, stores and issues perishable subsistence products for Troop Issue and Commissary resale. In order to better understand facility management policies, and to determine the potential effects of future inventory management policy changes, the DPSC Operations Research and Economic Analysis Office was asked to develop a model of the Kaiserslautern operation. A Monte Carlo simulation model of over eight hundred perishable chill and freeze items was developed to emulate the Kaiserslautern operation. It analyzes the impact of various inventory management policies on supply availability and warehouse space. It provides management with an analytical tool that can be used to examine current inventory policies and the effects of van detention. It provides a baseline analysis for determining the cost/feasibility of increasing supply availability, and the warehouse space required to do so, as well as an analysis of how many vans per week will incur detention costs, and how increases in warehouse space will affect the number of vans charged detention. Using the model, one can determine the cost of increasing supply availability or obtaining more warehouse space.

DPSC-89-P90004. Product Quality Audit Program (January 1989) DPSC-LO Report
Index No. 89-06

One of the management tools utilized to implement the Quality Audit Program is the depot audit program. Results of the audits for FY 87 and 88 indicate that the percentage of nonconformances (failed depot quality audit inspections) for the commodities managed by the Defense Personnel Support Center are the

highest in DLA. A study was undertaken to ascertain the range of the nonconformance problem. The results show that the range of nonconformances expected versus those actually documented by the limited data available differed substantially. Therefore, additional testing was done utilizing revised Acceptable Quality Levels (AQLs). The results came closer to documented nonconformances, but indicate that further study should be conducted as more data becomes available. The study recommended that the AQLs currently being used be tested for statistical reliability; the quality process be reviewed to ensure that the Government is receiving the product that it is paying for; the reporting process be standardized; inspectors be assigned one commodity; and more communication take place between the various Government agencies involved in the quality process.

DLA-88-P88021. Cost of a Preaward Survey (June 1988)
Index No. 89-05

A preaward survey is one tool used by a contracting officer to determine contractor responsibility. The purpose of this study was to quantify the costs incurred by the Defense Logistics Agency in performing a preaward survey, in an attempt to incorporate this cost into the bid evaluation process when the apparent low bidder has a questionable performance history. The cost would more closely reflect the true cost of doing business with the apparent low bidder. This analysis was divided into two parts. The first part of the analysis examined the direct costs of a preaward survey. These costs were primarily the expenditure of labor to perform and track a preaward survey. The second part of this analysis involved quantification of the costs associated with the delay in awarding the contract due to the preaward survey. The costs were identified in the increased safety levels resulting from increased lead times. The costs of a preaward survey were found to be significantly different, depending on whether a formal or an informal preaward survey was accomplished.

DLA-88-P88014. Depot Resourcing Model, Users Manual and Tutorial (June 1989)
Index No. 89-04

The Depot Resourcing Model is a personal computer model designed to provide the manager at work center level or the Director of Distribution with the least cost personnel configuration required to accomplish projected workload. The model determines the optimum mix of permanent employees, temporary employees, part-time employees, intermittent employees and overtime hours using productivity rates established by the manager, wage rates, performance standards, and either minimum or maximum percentage restrictions placed on the labor types by the manager. The primary purpose for developing the model was to reduce unit cost. If a depot can get the workload accomplished with a large number of intermittent employees, the depot has the flexibility of not calling that employee to work if the workload does not materialize. There are also savings on fringe benefits for those intermittents that do work. The manual and tutorial provide instructions and examples for using the model.

DLA-88-P88008. IMC Candidate Items and Storage Aid Requirements
Index No. 89-03 (September 1988)

DLA is building an Integrated Material Complex at Defense Depot Mechanicsburg Pennsylvania to handle approximately 15,000 requisitions in an 8-hour shift. In 1986, this office performed an analysis of candiate items to aid in the

design process. This study was to provide an update to that analysis due to stockage policy changes in DLA. Two scenarios concerning the replenishment policy were considered. The first scenario allowed for no replenishment and up to four of the largest rack locations for item storage. The second scenario's goal was to maximize the throughput by use of a variable replenishment policy. Finally, we combined the storage location requirements for the active items with those of dead items to calculate the total location requirements.

DLA-88-P81048. Buyer's Assistant Expert System Prototype (September 1989)
Index No. 89-02

This project was undertaken in cooperation with the 7th Communications Group, Air Force Communications Command, as a technology demonstration of Artificial Intelligence applications in logistics. The Buyer's Assistant is an expert system which was developed at the Defense Fuels Supply Center (DFSC) to assist DFSC buyers in selecting the appropriate clauses for a contract solicitation. This expert system, which is currently in use at DFSC, will query the buyer for information about the "buy," and then use this information to select the required clauses for a given bulk fuel procurement. It will then automatically collate and print the appropriate clauses in a format suitable for inclusion in the completed solicitation.

DLA-88-P81013. Optimization of Defense Reutilization and Marketing Office
Index No. 89-01 Locations (September 1988)

The DLA Defense Reutilization and Marketing Offices (DRMOs) are responsible for the worldwide disposition, reutilization, and sale of excess/surplus Government property. This report describes the application of operations research techniques to determine the optimum number and location of DRMOs in order to minimize overall cost to the Department of Defense. The study identified 22 DRMOs or off-site branches as candidates for consolidation and/or closure. However, due to certain study assumptions and constraints, it was recommended that the study results be viewed as a "pointer" to those sites which should be considered for further study.

88-22. Analysis of Variable Quarterly Forecast (September 1988)

The Defense Industrial Supply Center (DISC) is the only Center that uses a Variable Quarterly Forecasted (VQF) Support by Supply Management Category Codes (SMCC) methodology as a tool to manage their resources. DISC experiences lower supply availability than the other DLA Supply Centers (DSCs). This analysis was initiated to determine what impact the VQF methodology has had on costs and performance at DISC. Based upon a comparative assessment between the SAMMS requirements determination process and the VQF methodology, the VQF requires lower investment costs to achieve the same overall system performance as SAMMS. Lower supply performance at DISC is not attributable to their use of VQF, but appears related to funding and operational constraints. Due to the DISC impact on overall DLA performance, increasing performance at DISC would improve the overall performance of DLA. Primary consideration should be given to reassessing and evaluating the constraints under which DISC is currently operating. (DLA-LO Project 8026)

88-21. Inventory Manager's Assistant, Expert System Prototype (July 1988)

The Inventory Manager's Assistant (IMA) is a tool to help the Inventory Managers make recommendations for the buys which are presented to them on a Standard Supply Control Study. The purpose of the program is to evaluate the information on the Control Study being investigated, updating information such as the Quarterly Forecasted Demand (QFD) and Recommended Buy Quantity. IMA will accomplish this by reading in the information from a Control Study in the form of a data file, processing the information required and making calculations for the new quantities to be used, and outputting the information to the user. The output to the user can be in the form of a data file or displayed to the computer screen for inspection and user interaction. The IMA documentation describes the installation, operation, and maintenance of the IMA program. The document has been written for the novice computer operator with little experience with operation of IMA and computers. The target computer for IMA is the DMINS machine, a UNIX based computer used by the Defense General Supply Center (DGSC). (DLA-LO Project 7049)

88-20. Simulation of Packing Area Throughputs Under DWASP (June 1988)

This report details the results of a simulation of the Defense Logistics Agency Standard Warehousing and Shipping Automated System (DWASP) Increment II for Defense Depot Ogden, Utah (DDOU). The system under study included the printing of the Issue/Release Receipt Document (IRRD), packing, and offering to transportation for bin operations. In addition to these functions, all associated hardware such as conveyors, automatic sealers, bar code readers, and printers were modeled as well. The analysis indicates that there were two major areas for concern--the multiline packing and the single line offer stations. In the packing area, there was an imbalance in the work among the packers. Specific recommendations in packing include alteration of the current scheme for assigning work to multiline packers and placing a cap on

the maximum size shipping unit. In the offer area the original configuration could not accomplish the required throughput. The addition of another diversion belt and splitting up the offer function into three components performed in different areas resolved the problem. (DLA-LO Project 6034)

88-19. Enhanced DLA Distribution System (EDDS) - "Pooling" (June 1988)

This study looked at the "pooling" concept as proposed under the EDDS. "Pooling" assumes movement of selected freight from a depot in truckload lots to an intermediate EDDS facility for consolidation with freight from other DLA depots. The resulting larger less-than-truckload shipments are then transported from the EDDS facility short distances to the ultimate consignee. The study compared current transportation methods and costs to the "pooling" alternative, and computed estimated savings. Savings under "pooling" in second destination transportation expenditures were estimated to be $16.9 million yearly. In addition, a depot weight/line analysis was conducted and initial traffic studies were developed for the proposed commercial EDDS facilities at New York, NY, and Los Angeles, CA. Several conclusions are discussed and a recommendation is made to implement the "pooling" phase of the EDDS program. (DLA-LO Project No. 7020)

88-18. Economic Feasibility of DLA Materiel Maintenance Mission (June 1988)

The purpose of this study was to determine the economic feasibility (profitability) of DLA's materiel maintenance mission. Specifically, this study examined the economic feasibility of stock maintenance operations. The study results showed DLA's maintenance operations to be generally economically sound. The yearly net economic value generated, compared with the value of the assets employed, represented a rate of return greater than 10 percent. It was estimated that the total economic benefits generated during Fiscal Year 1987 were $32 million, the total economic costs were $26 million and the value of the assets employed was $26 million. Because of the questionable validity of some of the data used for this analysis, it was recommended that, before any decision is made which would make major changes to the size or scope of the operations, an additional analysis should be made using more reliable historical data. The primary recommendation of the study was to modify the Job Order Tracking and Management System used by the stock maintenance operations to allow the generation of this valid historical cost data base. (DLA-LO Project No. 7033)

88-17. Assessing the Feasibility of Developing an Automated Method to Approximate Price Using Item Characteristic Information (June 1988)

The information currently most readily available to Defense Logistics Agency (DLA) buyers and price analysts to assist the pricing effort is based upon historical data, i.e., what has been paid in the past for the same item. This is valuable information but not adequate in all situations, such as during the procurement of new items or when conditions have drastically changed. Thus, this project was undertaken to investigate the feasibility of using item technical characteristic data to estimate prices. The approach taken was to attempt the development of a data base which would group items by specification technical characteristics. Unfortunately, it was found that the ranges in prices across most grouped items were too broad to be useful in the pricing function. The basic conclusion of this effort was that it is currently not feasible to use the existing data bases of item characteristic information to effectively assist in price reasonableness determinations. (DLA-LO Project No. 8006)

88-16. Modeling Energy Consumption in the Defense Logistics Agency (May 1988)

Goals for energy consumption at each of the Defense Logistics Agency managed facilities are affected by factors which are beyond the control of the organization and can vary from month to month, such as weather conditions and workload. This report presents the results of an analysis that mathematically modeled energy consumption and then attempted to use these models to assist in setting consumption goals for the agency. The DLA facilities identified the factors which they considered to be predictors of energy consumption. Three years of monthly data were submitted for each factor. The data were screened to identify possible problems and to determine which factors had some relationship with energy consumption. Regression models were developed to predict total consumption, electric consumption, and non-electric consumption at each location. These models showed a definite relationship between weather and workload factors and energy consumption. However, the models were not accurate enough to be used to set consumption goals in DLA due to the impact of extraneous factors that were not quantifiable. (DLA-LO Project No. 7009)

88-15. Analysis of Quality Assurance (QA) Effectiveness (April 1988)

The lack of meaningful measures of effectiveness for the Quality Assurance function within the Defense Contract Administrative Services (DCAS) has been a serious deficiency for many years. With the availability of new, automated data from the QA Management Information System, these masures are made possible through the QUality Effectiveness Sensing Technique (QUEST) model. QUEST evaluates both the government-driven Contract QA Program and the contractor-driven product conformance through a set of indicators using multi-attribute decision-making methods. These techniques combine quantitative statistical analysis with subjective factors provided by QA experts. The model provides a relative measure of program and product effectiveness by comparing scores for a particular facility (contractor) with its peers' scores. Facility peer groups are established in terms of commodity, QA provision and size. The model was successfully tested by comparing QUEST measures with supervisor's opinions throughout DCAS organizational elements. (DLA-LO Project No. 3071)

88-14. Depot Traffic Analysis FY 86 (April 1988)

This report documents an analysis of DLA Depot Traffic for FY 86. Summary statistics for FY 86 are compared with similar data for FY 84 and FY 85 to determine the effect that the Guaranteed Traffic Program has had on transportation cost reductions. The data are compared based on both current dollar value and FY 84 dollars. For the purpose of this study, FY 84 data were considered as the base line. Significant cost reductions from FY 84 to both FY 85 and FY 86 were noted. In terms of FY 84 dollars, there was an approximated $20 million cost reduction for FY 86. These savings are attributable to the lower rates negotiated under the Guaranteed Traffic Program and the associated increase in average weight per shipment and decrease in the total number of shipments. The study concludes that cost reductions achieved under the Guaranteed Traffic Program have significantly contributed to DLA's overall traffic management effectiveness. This program should be continued and expanded where possible. Efforts for greater consolidation should continue to be stressed. In addition, the study recommends that small air parcel rates be examined for possible additional cost reductions.

88-13. Evaluating the Sampling Procedures for Clothing and Textile Items (March 1988)

This report evaluates the current acceptance sampling procedures for selected clothing and textile items. A simulation analysis was undertaken to examine the current sampling procedures and acceptance criteria, as specified in MIL-STD-1490D, to determine if they contributed to the problem of men's dress coats being accepted at the manufacturer's location and subsequently found to fail the same acceptance standards at the depot. The study concludes that the current sampling procedures and acceptance criteria are not the cause of the acceptance of poor quality coats. The study recommends that some minor adjustments to the sampling process be further examined. (DLA-LO Project No. 7005)

88-12. Accountable Property Study (March 1988)

This study attempted to determine the appropriate dollar value of equipment that should be recorded on property books for control. Costs to record and maintain an item on the property book and to perform periodic inventories were determined. It was not feasible to determine quantitative benefits. Therefore, the analysis provided a table of values based on probability of loss that would allow determination of an item dollar value for break-even between costs and benefits given a selected probability of loss for the item or class of items at hand. (DLA-LO Project No. 7041).

88-11. Improving Navy Supply Availability (March 1988)

When comparing DLA supply support to the Services, Navy Supply Availability (SA), as computed by DLA, was lower than the other Services'. The tasking was to determine why this was the case. Our research found that Navy supply points past requisitions to DLA that could not be filled. These were past as A4s. Normary, A4 requisitions succeeded the A0 requisitions for replenishment. When the SA for the item was computed, A4s are included. The number of units requisitioned per A4 is much lower than for an A0. SA is computed as the total number of requisitions filled over the total received, regardless of quantity requested or supplied. Consequently, A4s tend to lower the computed SA, but the actual support, if A4s were excluded from the computed SA, would match if not exceed the other Services'. (DLA-LO Project No. 7045)

88-10. Artificial Intelligence/Expert Systems (AI/ES) Technology Insertion at the Defense Logistics Agency (January 1988)

This report was prepared by the Battelle Memorial Institute, Inc., documenting their effort to identify Expert System applications that can be implemented in DLA in the near term. Battelle identified five potential applications, ranging in size from a lap-top microcomputer system for field use by contract administration personnel to a supermicrocomputer/minicomputer application in supply operations. Batelle began with interviews in HQ DLA, and then performed multiple interviews with DCSC, DDCO, DDRV, DDTC, DCASR-CLE, and DCASMA-Dayton personnel. Thirty-six potential applications were screened in increasing levels of detail, ultimately culling out all but the five recommended development efforts. Some of those systems screened out should be be revisited as additional information becomes available in their respective subject areas. The reason for screening out candidates was to ensure that Expert System technology was suitable and necessary, as opposed to more conventional programming or manual techniques. Recommended applications were:

Contractor Purchasing System Review (Contract Administration)
Quality Assurance Pre-Award Survey (Contract Administration)
Pre-Award Monitor Desk Survey (Contract Administration)
Packaging Design (Transportation)
Standard Supply Control Study (Supply Operations)

88-09. Analysis of DISMS Increment IV (January 1988)

This report brings together in one document the findings of a series of three studies concerned with Increment IV of the Defense Integrated Subsistence Management System (DISMS). This evaluation of Increment IV spanned more than 15 months and progressed from a general overview to more in-depth examinations of the two major Increment IV processes. Each analysis, in turn, has provided a different perspective on DISMS and revealed new, more detailed, information. In some cases, changes to previous study findings have resulted. Although two of these studies have been reported on previously (87-14 - DLA-LO Project No. 6039, DISMS Workload Capacity Study (Apr 87) and 88-05 - DLA-LO Project No. 7007, DISMS Bid Response Evaluation Anaysis (Oct 87)) it is believed that this report provides the best assessment now available relative to the impact of Increment IV on Defense Personnel Support Center computer and personnel resources. Accordingly, this report replaces previous reports on DISMS Increment IV prepared by the DLA Operations Research and Economic Analysis Office. (DLA-LO Project No. 7026)

88-08. DLA Industrial Preparedness Program (IPP) Item Selection Indicator (December 1987)

The purpose of this effort was to formulate a management indicator that provides visibility of the ability of the production base to meet surge and mobilization production needs. This report documents an effort to develop a prototype indicator which may be used to aid in the selection of items for planning as part of the Industrial Preparedness Program (IPP). The prototype planning indicator is based on the criticality of an item to its application and the uncertainty of availability for an item. Results from a test using the prototype indicator to evaluate the Construction, Electronics, General and Industrial commodities are presented. The prototype indicator shows much promise for identifying items which should be planned to ensure their availability during mobilization. The study recommends that development of the planning indicator be continued, to provide the Defense Logistics Agency's Supply Centers with a better methodology for the selection of items for participation in the IPP planning process, and to provide visibility of the responsiveness of the industrial base to meet emergency demands. (DLA-LO Project No. 6008)

88-07. Optimal Weight Limit for Less Volume Traffic (October 1987)

This report documents an analysis of the optimal weight break point for less than truckload and truckload traffic. The analysis examined the cost and transit times for shipments originating at DLA defense depots and destined to points in the Continental United States. Data were obtained from the Freight Information System file for FY 85. Comparisons were made of total cost and total transit time for four different workload weight policies. These comparisons determined the trade-offs between cost and transit time associated with these policies, the relationship between cost and transit time, and the relative ranking of the policies. Finally, the policies were evaluated and

ranked based on the trade-off relationships between cost and transit time. These relationships were identified and a recommendation made that the findings be validated by the Guaranteed Traffic Program bidding process. (DLA-LO Project No. 6013)

88-06. Analysis of Shelf-Life Stockage Policies (October 1987)

Effective management of shelf-life inventories requires a balance among procurement, receipt, holding, and disposal costs while maintaining high supply availability. Current DLA stockage policies maintain high supply availability, but often generate excessive inventories and a corresponding expiration of the shelf-life. The purpose of this study was to determine if current shelf-life stockage policies could be modified to reduce total operating costs while maintaining or improving current levels of supply availability. A validated stochastic simulation was used to model the current and alternative stockage policies for DLA shelf-life items. The results indicate that for hazardous items, the direct delivery with a cap on the reorder point is the best alternative for both cost and supply effectiveness. When direct delivery is not possible, the next best alternative is to establish a minimum buy quantity with a more conservative stockage objective and limits on economic order quantity and returns. For nonhazardous items, the direct delivery with a minimum buy quantity and a cap on the economic order quantity is the best alternative. When direct delivery is not possible, establishing a minimum buy quantity with a more conservative stockage objective, a reduced economic order quantity considering disposal costs and limits on safety levels and returns is the next best alternative. (DLA-LO Project No. 6011)

88-05. DISMS Bid Response Evaluation Analysis (October 1987)

Increment IV of the Defense Integrated Subsistence Management System (DISMS) was the subject of a previous study by the DLA Operations Research and Economic Analysis Office (see 87-14 - DLA-LO Project No. 6039, DISMS Workload Capacity Study (Apr 87). That study indicated that a large bid response transaction volume could create unacceptably high and concentrated demands on the DISMS computer. The purpose of this study was to perform a more detailed study of the DISMS bid response process. The major finding of this follow-on analysis is that the previous study overestimated the transaction volume for the bid response process. However, the study also concludes that a large portion of this workload will be concentrated in a much shorter time period than was previously assumed. As a result, user acceptance problems may result due to the additional time and effort that will be required to record vendor offers into DISMS. (DLA-LO Project No. 7007)

88-04. Forecasting DCAS Workload Indicators (October 1987)

The purpose of this study was to determine if indicators of future levels of contract workload can be forecasted using quantitative techniques. Current forecasts involve, in most cases, "Professional" estimates employing the qualitative judgments of experts. Two types of quantitative forecasting techniques were used in this study: time-series analysis which uses historical data to predict future patterns and regression analysis which attempts to quantify the relationship between variables thought to be logically linked. DCAS workload indicators were divided into three groups: "Traditional" indicators (Contract Receipts and Contracts On-hand), "Contractor Driven" indicators (Contractor Purchasing System Reviews, Contractor Employee Compensation Reviews, Overhead and Cost Monitoring Reviews, and Spare Parts Pricing Cases), and "Support Function" indicators

(Preaward Surveys, Pricing Cases, Property Control System Surveys, and Technical Analysis of Cost Proposals). Based on this analysis, it was found that forecasts of Contract Receipts can be derived from regression analysis using DoD Procurement Outlays and Military Personnel Endstrengths. Forecasts for Contracts On-hand can be based on a time-series technique known as Winter's Method. "Support function" indicators are forecasted using a time-series technique known as Autoregressive Integrated Moving Average (ARIMA). "Contractor driven" indicators could not be forecasted because of insufficient historic data. (DLA-LO Project No. 7004)

88-03. Capability to Ship Direct to Overseas Customers (October 1987)

The purpose of this study was to analyze DLA's demand patterns for European customers and determine if enough traffic existed to warrant developing the capability to build container loads for direct shipment overseas. The analysis was limited to evaluating IPG II and IPG III requisitions for consolidation into direct shipments of material from DLA depots at Mechanicsburg, PA (DDMP), and Memphis, TN (DDMT), to customers in Europe. The study concluded that: (1) the demand patterns for DDMP were not sufficient enough to support a container consolidation operation, (2) DDMT has sufficient demand to support at least two customers (Mainz Army Depot and Central Receiving Activity, Pirmasens, Germany), and (3) development of a DLA container consolidation operation at DDMT would not adversely effect the operation of the Army's Container Consolidation Point at New Cumberland, PA. (DLA-LO Project No. 6017)

88-02. An Economic Analysis of Tape Cartridge Subsystems (September 1987)

This study report documents the results of a cost benefit analysis of new data storage and retrieval technology. The study includes economic data from Headquarters Defense Logistics Agency as well as from data processing installations within DLA. Three acquisition alternatives were considered in addition to the status quo. The results showed that one of the three alternatives would generate significant operating-cost savings to DLA; however, the new technology is far too expensive at this point and no working models of two of the three alternatives has been field tested. The study concludes that acquisition of new cartridge management technology should not be made at this time. The technology acquisition should be deferred until a track record is established and a corresponding price decrease occurs. (DLA-LO Project No. 7034)

88-01. Depot Effectiveness IPG III Processing (July 1987)

The purpose of this study was to analyze the effectiveness of IPG III MRO processing by measuring days and lines for four time periods: depot workload bank, days in depot processing, days in transportation hold, and days in transit. The analysis found that a very small percentage of lines remain in all four areas for the authorized standard time. It was recommended that (1) all DLA depots adhere to the standards as much as possible, (2) that the depots maximize consolidation of MROs in the bank, (3) that the depots identify items which have no potential to achieve consolidation cost effectiveness and pull these out of the bank early for shipment, and (4) that the depots allow large items to reach maximum maturity in the bank for maximum consolidation. (DLA-LO Project 6037)

87-26. Analysis of the Cost of Late Contractor Delivery (September 1987)

This study examined the costs of late vendor delivery for items managed at the Defense General Supply Center (DGSC). The study addresses the direct costs of late delivery which includes the labor and material expended in the attempt to resolve the situation, and the indirect costs which include the maintenance of increased safety levels of material because of increased lead times. The cost of a typical late delivery to DGSC has been quantified by this analysis to be approximately $11 in labor and materials used to expedite delivery, and $314 in increased safety levels and maintenance costs. These costs of late delivery represent approximately six percent of the typical replenishment contract cost. The report suggests two possible applications of these cost factors - one during the bid evaluation process and the other to assess liquidated damages. (DLA-LO Project No. 7003)

87-25. Asset Search Pattern for DRMS MILSTRIP Requisitioning System (July 1987)

The objective of this project was to determine the transportation cost savings that could be achieved by changing the search algorithm presently used in the Defense Reutilization and Marketing Service (DRMS) mechanized MILSTRIP requisitioning system. The current system chooses the best assets to fill a requisition, whereas the proposed system selects the closest acceptable assets. Transportation costs were calculated for each routine by using actual requisitions from the first four months of the system's use. A transportation cost savings of appproximately two percent would have been achieved for the requisitions used in the analysis with the proposed search algorithm. The quality of the assets being shipped would decrease only slightly with the proposed routine. The study recommends that this new routine be implemented if the expected cost savings is great enough to offset the cost of recoding the computer program. (DLA-LO Project No. 7006)

87-24. Provisioning Policy Study (July 1987)

This project examined a number of alternative policies for buying and supporting provisioning items. Actual (historical) data was used in conjunction with a model of the inventory and provisioning systems. A statistical comparison of outcome measures, such as the total dollar of commitments and the number of backorders generated, was used to assess the alternative provisioning policies. The results of the study identified several policies which significantly reduced the dollar value of inventory, and others which significantly reduced the number of backorders. In general, the provisioning policies evaluated demonstrated an inverse relationship between commitments and assets on the one hand and backorders on the other hand. Two particular policies were identified which slightly increased the dollar value of commitments and assets, but significantly reduced the number and dollar value of backorders. (DLA-LO Project No. 5017)

87-23. Cost of Quality - Source Inspections (July 1987)

The purpose of this study was to estimate the additional cost to the government resulting from the use of mandatory source inspections in lieu of destination inspections for contractors who have a history of submitting quality deficient material. This report provides this estimate and documents the analytical process used. For the contracts of interest to this study, it is estimated that an average, 5.7 hours of source inspection time and 1.1 hours of contract administration time would be required. If the contract has been inspected at the source, approximately .2 hours of depot inspection are avoided. The average net cost to the government is approximately $150 per contract. Factors which can influence the average cost in order of decreasing importance are commodity (FSC), dollar value of the contract, and DCAS Region. (DLA-LO Project No. 7027)

87-22. Binnable Stockage Locations (June 1987)

This study involved the development of a model to evaluate alternative stockage policies for binnable items. The purpose was to determine if transporation cost savings could be realize. by stocking binnable items at fewer DLA depots. The analysis looked at six single depot stockage alternatives and fifteen dual depot alternatives. These stockage location alternatives were compared to the actual system based on the respective costs associated with receiving and shipping these items as well as the incurred transportation costs. The major factor in the total cost model was found to be the depot operating cost. The effects of consolidating the receipts and shipments at one or two depots appear to provide substantial cost savings over the current system, ranging from $9.7 million to $13 million per year. (DLA-LO Project No. 6033)

87-21. Impact of Competition on Contract Delinquencies (June 1987)

The purpose of this study was to analyze the impact of recent legislative policy changes in the procurement process on DLA's contract delinquencies. This report documents and summarizes the efforts and conclusions reached in the resultant study. The overall results of the delinquency statistics indicate that competition does not appear to be driver of delinquency. Competitive large purchases generally had a higher delinquency rate and a longer delinquency duration than sole source large purchases. However, items which were broken out from sole source to competition had mixed results for delinquency rates and shorter delinquency duration after a breakout. This mixed pattern of behavior can be partially explained by the fact that competitive contracts had more restrictive delivery schedules than sole source contracts. Findings also showed a downward trend in the average delinquency duration for both large and small purchases since 1984. (DLA-LO Project No. 6030)

87-20. DLA Enhanced Distribution System Follow-up Analysis (May 1987)

The objective of this study was to locate the best sites for potential consolidation points under the Enhanced DLA Distribution System concept and to determine the best number of points to ensure adequate coverage at the highest possible dollar savings. A site selection algorithm was developed using a

heuristic approach known to produce near optimal solutions. Use of the heuristic method enabled us to use a finite-set approach which selected the best sites from a set of pre-selected possibilities. Site selection was based on minimizing the transporation distance, weighted by demand quantities, from the vendor origins to the potential sites. Three scenarios were tested: (1) the best site scenario based on the unrestricted configuration of the site selection model; (2) a modified site scenario constructed manually by using the results of the best site scenario and checking the sensitivity of moving the Philadelphia, PA, site to Mechanicsburg, PA, and the Birmingham, AL, site to Memphis, TN, and (3) a depot site scenario locking the six DLA depot sites into the solution. Results indicated that the best solution was scenario (1) with an annual savings of $14.6 million. Scenario (3) generated the lowest return at $13.6 million.

87-19. DLA Warehousing and Storage Automated System (DWASP) Economic Analysis (May 1987)

This report documents an economic analysis of DWASP. The objective was to quantify and compare life cycle DWASP costs and benefits. The analysis time horizon was 11 years (FY 1988-98). Since the decision has already been made to implement certain DWASP increments, this analysis focused on DWASP Increments II through V. The analysis provides total (undiscounted) life cycle costs for the remainder of DWASP, total (undiscounted) life cycle benefits, and total present value (discounted) life cycle costs and benefits. In addition, a savings to investment ratio and a discounted payback period are determined. The economic justification for DWASP is insensitive to major cost escalations and benefit reductions. (DLA-LO Project 6028)

87-18. Variable Safety Level Analysis for C and T (May 1987)

This analysis examined four alternative methods to compute safety levels for the Clothing and Textile (C&T) commodity. The study analyzed the effect on costs and system performance of changing from a fixed to a variable safety level computation for all C&T items. Based on the analysis, immediate use of a variable safety level for all C&T items was recommended in that it would significantly reduce safety level dollar while maintaining virtually no deterioration in supply availability. (DLA-LO Project No. 7011)

87-17. Economic Analysis Support for Automated Information System Control Board (AISCB) Working Group, Part II, Procedural Guidelines for Performing AIS EAs (May 1987)

These procedural guidelines were developed to provide a standard approach to performing economic analyses for Automated Information Systems (AISs). The purpose was to assist the AISCB in the Integrated Priority List decision process. The procedural guidelines provide guidance in the performance of an economic analysis for a proposed modification to an existing AIS, or for the development of a new AIS. Also, the guidance contains procedures for both preliminary type economic analyses and more detailed analyses. It defines elements of project life criteria, cost requirements, discounting costs, life-cycle costing, sensitivity analysis, and identifying benefits. (DLA-LO Project No. 6024)

87-16. Analysis of DLA's GFM/CFM Policy for the Clothing and Textile Commodity (May 1987)

This analysis contributed to an overall review of DLA's Government Furnished Material (GFM)/Contractor Furnished Material (CFM) policy for the Clothing and Textile commodity by evaluating the impacts on prices and leadtimes from the use of GFM. Several thousand buys where the same approximately 700 items were procured both with and without GFM were examined in this analysis. The expectation that the use of GFM would always result in a lower overall cost to the Government was disapproved by this analysis as in more than half the buys, the cost was actually greater using GFM than CFM. GFM buys tended to have longer administrative leadtimes, but had much shorter production leadtimes resulting in shorter overall leadtimes as would be expected. The overall conclusion was that from the standpoint of prices and leadtimes, the use of GFM should be determined on a contract-by-contract basis.

87-15. Secure Telephone Requirements Analysis (April 1987)

This study consisted of the collection, compilation, and analysis of STU-III telephone requirements. The use of STU-III telephones had been previously proposed in order to protect against the interception of sensitive but unclassified information through nonsecure telephone conversations. The survey provided information on the volume of telephone calls currently made on unsecure telephones involving identified sensitive or vulnerable topics. STU-III requirements were estimated based on degrees of coverage and numbers of calls by directorate, by subject area. A range of options were provided based on the number of sensitive calls per phone per day and the percent of sensitive calls covered. (DLA-LO Project No. 7025)

87-14. DISMS Workload Capacity Study (April 1987)

The DLA Integrated Subsistence Management System (DISMS) provides on-line computer support to Defense Personnel Support Center (DPSC) subsistence management activities. Phase IV, now in design, will provide on-line support to contractor bid evaluation. The purpose of this study was to assess the transaction workload associated with this increment in order to determine appropriate computer sizing. Specifically, the study identified the types and frequencies of online transactions expected with implementation of DISMS Increment IV. Transaction data developed during this study provide a reasonable estimate of the workload resulting from Increment IV. This data indicates that the workload may exceed that presently posed by Increments I-III, combined. The Defense Systems Automation Center (DSAC) will use this data to determine the appropriate computer size to address the workload. (DLA-LO Project No. 6039)

87-13. Motor Carrier Cost Per Mile Analysis (April 1987)

This report documents an analysis of the cost per mile for motor carriers. The analysis examined the cost per hundred weight per mile for shipments originating at DLA depots and destined to points in the Continental United States. Data were obtained from the Freight Information System file for FY 85. Comparisons were made of the mean cost per hundred weight per

mile with mileage groups and weight brackets taken into consideration across all DLA depots. These comparisons determined the relative ranking of each depot, the effects of minimum charges associated with the Guaranteed Traffic Program, and the relative effectiveness of various Guaranteed Traffic Programs for the depots. (DLA-LO Project No. 7024)

87-12. Enchanced DLA Distribution System (EDDS) Analysis (April 1987)

The objective of this analysis was to determine the cost savings generated by the use of each alternative city under consideration for the EDDS and to determine the optimal combination of locations. The DLA EDDS concept involves the collection of small vendor shipments destined to DLA depots at a designated point within CONUS for consolidation and shipment, in truckload lots, to the consignee depots. The study looked at the EDDS concept using a computer model which emulated the flow of vendor traffic from vendor locations to receiving depots. Annual savings of approximately $14 million were identified under the EDDS concept. Several recommendations were made for additional study. (DLA-LO Project No. 7002)

87-11. IMC Equipment Design (April 1987)

The objective of this project was to develop a simulation model of the materials handling enhancements to the Integrated Material Complex (IMC) design developed for Defense Depot Mechanicsburg, PA. In the receiving area, in-check, inspection, 3P&M, and stow module load processes are modeled. In the packing/consolidation area, packing induction, shipping unit consolidation, packing, shipping and shipping sortation processes are modeled. All associated hardware such as rotary racks, robots, conveyor belts, etc. are modeled as well. Simulation results indicate that the IMC design for receiving and packing is feasible from a system hardware standpoint but may require some fine tuning in the area of system operating procedures. Potential problems and bottlenecks stem more from inefficient material flow than inadequate work station or hardware capacity. Specific recommendations include an alternative strategy for matching material release orders, addition of capacity in the receiving in-check area, addition of capacity or reevaluation of time standards in the receiving inspection areas, and methods to keep receiving induction supplied with empty totes. (DLA-LO Project No. 6018)

87-10. Position Management Application Programs (PMAP) User's Instructions (February 1987)

This user's manual describes and provides instructions for using the PMAP microcomputer program. PMAP uses Automated Pay, Cost, and Personnel System (APCAPS) data and provides management information on the structure and manning of DLA offices at all levels of interest. The system also allows for analysis of proposed changes to the structure in order to provide decision support to the manager. (DLA-LO Project No. 6014)

87-09. NMCSs Cost Analysis (December 1986)

The primary objective of this study was to determine the cost difference between using United Parcel Service (UPS) international air service and the United States Postal Service (USPS) for Non Mission Capable Supply (NMCS)

shipments between 1-70 pounds. This objective was generated due to frequent customer complaints regarding the timeliness and lack of traceability of overseas postal (air mail) NMCS shipments sent by USPS. Secondary objectives were to determine the total number of NMCS shipments from all DLA depots and the number of NMCS shipments shipped through New Cumberland Army Depot, PA, and Sharp Army Depot, CA. The study approach consisted of selecting appropriate shipping records from the Mechanization of Warehousing and Shipment Processing Material Release Order History file for a one year period, 1 Jul 85 through 30 Jun 86, and then determining the cost of these shipments under both methods. The use of UPS international air services which provides two to three day service to most European cities and traceability would cost approximately $400,000 per year, while the current USPS cost is approximately $265,000. The UPS approach would cost an additional $135,000.

87-08. Direct Commissary Support System (DICOMSS) Design Simulation (December 1986)

The objective of this project was to develop a computer simulation model that would be used to validate the automated system design being proposed for the Defense Depot Mechanicsburg Pennsylvania (DDMP) DICOMSS warehousing operation. The approach consisted of obtaining the proposed design, writing the simulation model in SLAM, and using workload data to validate the model. A simulation analysis was then performed on the proposed design. A pick-to-belt system coupled with a bar code sortation system were the main enhancements to the picking and palletizing area. An automated guided vehicle (AGV) system is to be employed to carry pallets from receiving to storage. Several significant recommendations were made concerning the design. The AGV system was not found to be cost effective. A second sortation belt is needed to alleviate congestion and to provide redundancy. In addition, numbers of specific resources (e.g., number of forklifts, turret trucks) to procure were also provided. (DLA-LO Project No. 6004)

87-07. Automated Bid Evaluation Program User's Guide (PC Version) (November 1986)

The DLA Supply Center Contracting Directorates are responsibile for selecting the lowest cost combination of bids on competitive solicitations. These bid evaluations can sometimes be very complex due to multiple line items and additional constraints imposed on offers such as minimum acceptable quantities, all or none conditions, acceptance of line items dependent upon award of other line items, etc. The Automated Bid Evaluation Program (ABEP) was developed to assist DLA contract specialists in handling these complex bids and determine, more quickly and accurately, the lowest cost combination of bidder responses to solicitations. The program is useable on a personal computer. (DLA-LO Project No. 5021)

87-06. The Impact of Contracting Initiatives On Leadtimes (November 1986)

This study investigated the effect of recent contracting initiatives on administrative and production leadtimes for items procured by the four DLA hardware Centers. After collecting and analyzing empirical data on administrative/production leadtimes, results indicate that while administrative leadtimes

continue to increase (in part because of competition initiatives), the leadtimes for competitively awarded large purchases were generally less than the leadtimes for similar sole source contracts. Items which were broken out from sole source to competition experienced reduced lead-times (approximately 30 days reduction in both administrative and production leadtimes) subsequent to the break out. (DLA-LO Project No. 2022)

87-05. Impact of Cycle Changes on DICOMSS (October 1986)

The object of this project was to evaluate the impact on workload at Defense Depot Mechanicsburg, Pennsylvania, resulting from the new 75 day order and ship time (OST) for the support of commissaries in Europe. A previous study (Analysis of Direct Commissary Support System (DICOMSS) Receipt and Issue Workload, see F-86-20) provided receiving and shipping workload data and analysis under previous 55-day OST using data from 10 Sep 85 - 25 Feb 86. These data were compared to data from 10 May 86 - 25 Sep 86 which reflected the new 75-day OST. It was concluded that the impact of the OST cycle change may slightly reduce DICOMSS operational requirements due to the slight decrease in MRO workload, smoothing of workload, and slight decrease in storage requirements.

87-04. A Review and Analysis of the DoD Materiel Returns Program (October 1986)

This report documents a study of the DoD Material Returns Program. The study discusses the current DoD materiel returns policies as contained in DoD Directive 4100.37, Retention and Transfer of Materiel Assets, as well as how the Military Services and DLA have implemented these policies. The major objectives of the study were to: (1) review and document current policies and procedures, (2) identify relevant economic and non-economic decision variables, (3) design a decision algorithm to assist the item manager in making the materiel returns decision, and (4) evaluate the potential costs and benefits which could be achieved by implementation. Actual returns transaction data from the Military Services and DLA for FY 1986 were used in the analysis. Cost estimates of the tasks and activities related to processing the return are also developed. The major finding from the analysis indicates that a significant increase in the volume of returns would be experienced by full implementation of the proposed criteria. The primary reason for this increase can be attributed to using an unconstrained policy for return of weapon system related items. A new decision algorithm for evaluating returns is proposed. The design attempts to minimize the risk of rejecting items that have a high possibility of reutilization while identifying to the item manager the reason for accepting the return. (DLA-LO Project No. 4028)

87-03. DLA Economic Retention/Returns Limits Study (September 1986)

The Defense Logistics Agency is required by DoDD 4100.37, Retention and Transfer of Materiel Assets, to develop economic retention limits that specify the amount of stock to be retained for economic reasons to meet future peacetime demand. This analysis used a breakeven equation to determine the maximum amount of stock that should be retained for economic reasons. The equation balances the two alternatives available: (1) to incur the cost to hold the stock until it is used or (2) to dispose of the stock and take the chance

that it may have to be reprocured to meet a future demand. In the same manner, the economic returns limit was also investigated. The same breakeven equationwas used, except that the expected cost to hold was increased by the cost to return the item to the wholesale depot. The results of the study support setting various economic retention/returns levels based upon the unit cost of an item and the expected remaining life of the item. The study recommends: (1) lower retention limits for those items with higher unit prices, and (2) extended limits for those items with lower unit prices. For less expensive items the returns limit is lower than the retention limit due to the inclusion of the cost of returning an item in the holding cost calculation. (DLA-LO Project No. 4029)

87-02. Economic Analysis Support For Automated Information System Control Board (AISCB) Working Group, Part I, Cataloging-Tools-On-Line (CTOL) Automated Information System Economic Analysis (August 1986)

Current DLA cataloging operations use a manual information system to prepare new item requests and maintain existing cataloging transactions. This economic analysis assessed the economic feasibility of replacing the current manual operations with a CTOL Automated Information System (AIS). Comparison analyses of costs and benefits were made between the current method of operation and the CTOL AIS proposal. Sensitivity analyses were performed on significant costs of the AIS proposal in order to address uncertainty in future cost estimates and to determine what effect any variation in these costs will have on the payback period. (DLA-LO Project No. 6024)

87-01. Depot Transportation "Efficiency Index" Performance Indicator (February 1986)

The objective of this project was to evaluate various transportation factors for inclusion in a composite index which will be meaningful to management in determining a depot's transportation efficiency. The efficiency index is composed of several factors. These factors include: ratio of bin shipping units sent by freight versus bin shipping units sent by mail; average number of shipping units for Government Bill of Lading (GBL); average GBL weight, ratio of shipping units sent by mail versus the number of GBLs. These factors are the terms of a linear combination. They were normalized and weighted and their sum represents the efficiency index. This report describes the process used to build an "efficiency index" to measure depot consolidation of Issue Priority Group III materiel release orders. Specifically, it details the selection of the factors used to construct the index, examines the behavior of each factor, describes the process used to develop a weighting scheme, and gives detailed instructions for computation of the actual index. (DLA-LO Project No. 6010)

86-27. Analysis of Annual Buys (August 1986)

This study evaluated the effects of implementing a minimum annual buy policy at DLA hardware supply centers. A computer model was developed to analyze changes in onhand inventory, contracting workload, storage requirements, safety levels, and funds utilization due to increased procurement cycles. Additionally, savings from increased order quantity price breaks are projected. The study shows that the main benefit of an annual buy policy is savings from price breaks rather than savings in contracting workload as previously expected. The

major costs of the policy appear to be not only increased inventory but also significantly increased storage requirements. The data also demonstrate that not all candidate items show a payback when procurement cycles are changed. (DLA-LO Project No. 5012)

86-26. Surface versus Premium Parcel Post Shipment Cost (July 1986)

The purpose of this study was to determine the transporation cost savings which could be realized by diverting Issue Priority Group (IPG) II shipments moving by premium air parcel to surface parcel post. Cost comparisons of actual costs using premium parcel shipments against estimated costs of the same shipments using surface parcel models were broken down by shipment origin (DLA depot), shipment destination (export versus domestic), and by parcel post zones. The results showed that the benefits of employing surface parcel post for IPG II shipments would be approximately 3.6 million dollars for all depots over a 1-year period. Savings were related to premium air parcel model, shipment weight, and shipment parcel post zone. In general, greater savings are available in express mail and first class mail shipments, in higher weight classes, and in higher parcel post zones. (DLA-LO Project No 6011)

86-25. Measuring and Controlling Price Trends in DLA Spare Parts and DPSC Commodities (June 1986)

This study was undertaken to develop improved methods to measure aggregate price trends in DLA Supply Center (DSCs) contracts. The major objectives of the study were (1) to develop a prototype cost-tracking computer program to measure and explain price trends, (2) to quantify the effect on prices from changes in buy terms (award quantities, degree of competition, acquisition method, and FOB terms), and (3) to develop the means of identifying contractors with unexplained price increases and decreases. The study recommends the incorporation of quantity discount factors into the standard economic order quantity model. The study also recommends the exportation of the prototype cost-tracking computer program to the DSCs for the purpose of measuring price trends on a recurring basis. A by-product of the study was the development of a personal computer program for use by buyers and price analysts to validate unit prices of individual awards. (DLA-LO Project Nos. 5005 and 5023)

86-24. Transportation Rate Tables User's Manual (June 1986)

This manual presents three cost estimating methodologies that can be used for estimating both first and second destination transporation costs. The three methods of estimating transporation costs provide different levels of accuracy. The three methods are: (1) state-based rates, (2) cluster-based rates, (3) mileage-based rates. The actual application of rates is left to the user. The rate structures lend themselves to FORTRAN and COBOL applications and could be modified for use in SPSS and SAS applications.

86-23. Economic Analysis Railway Operations at the Defense Construction Supply Center (DCSC) (June 1986)

The objective of this analysis was to determine if there are alternative means of accomplishing depot railway operations at DCSC at a lower cost. The study found that contract operations of intraplant rail service is not a viable

alternative. The railways contacted have little interest in providing this service. Although it might be profitable for a commercial concern to provide railway service in combination with other depot functions, such service is not large enough in scope to interest commercial activities. Since there is no legitimate alternative, the study recommends that the present system of in-house rail operations be retained.

86-22 Stock Fund Augmentation Study (May 1986)

This report presents an analysis of stocked new provisioning items. The objective of the study was to provide historical statistics on items for which DLA assumed management in FY 1978 through FY 1982. The statistical analysis includes the evaluation of historical demand and support control statistics and a comparison of demand dollars to historical provisioning obligation dollars. Findings indicated that between 8 percent and 19 percent of new items had a demand in their first year, while 17 percent of the new items did not have a single demand during the period observed (1978 to present). Demand increased over time, and the demand dollar figure reached the provisioning dollar figure on an average of 2-1/2 years after establishment of the new item. Findings also indicated that procurement cycle time increased significantly over the life of the new items. (DLA-LO Project No. 4025)

86-21. Economic Analysis of Automating the Meaningful Measures of Merit (M3) System (April 1986)

The economic analysis of automating the M3 system addresses the costs and benefits of M3 providing an alternative to the existing management information system, as used by the Defense Contract Administration Services Regions. The alternatives examined include: maintaining the status quo of presenting management information via the Management Information Report (MIR); automating the M3 and continuing the MIR; automating the M3 and deleting the MIR; implementing the M3 as a nonautomated system; and enhancing the status quo. (DLA-LO Project No. 6006)

86-20. Analysis of Direct Commissary Support System (DICOMSS) Receipt and Issue Workload (April 1986)

The purpose of this study was to assist the Defense Logistics Agency Mechanization Support Office in the design of modernized DICOMSS warehousing facilities at the Defense Depot Mechanicsburg Pennsylvania by providing them with receiving and shipping workload data and analysis. The approach used was to track receiving and shipping workload patterns for 12 14-day cycles. The results showed that item receipt patterns were stable. The majority of items were received and shipped in less than the minimum size lots. Storage location requirements were reasonably processed primarily by the case rather than the current procedure of building pallets from case lots.

86-19. Other Regulated Materiel - Consumer Commodity (ORM-D) Shipment Analysis (April 1986)

Air Force Regulation 71-4 is not consistent with the Code of Regulations, Title 49 with regard to having a proper shipping name of "Consumer Commodities" for ORM-D shipments. Accordingly, ORM-D shipped by military air are more costly

for DLA because of Air Force packaging and labelling requirements that are more stringent than for commercial air. The purpose of this analysis was to examine the inconsistency of the shipping nomenclature applied to ORM-D items and determine what impact these inconsistencies have on transportation charges for DLA shippers. The results of the study showed only minimal impact due to the very small quantity of DLA materiel shipped by military air.

86-18. Provisioning Analysis (March 1986)

This analysis quantitatively evaluated on an item-by-item basis the degree to which the Military Services are overforecasting/underforecasting their requirements for DLA-managed provisioned items. It involved an analysis of Supply Support Request (SSR) provisioning forecasts. The study approach was to create a provisioning/demand file, comparing actual demand to the forecasted SSR requirements; measure the extent of overforecasting or underforecasting; and determine how much of the demand received was from the Service that submitted the initial SSR. The major conclusion of the study was that quantities forecast on the SSR significantly overestimate the true Service Requirement. The results showed that during the first year, more that 90 percent of the items for which SSRs were submitted did not receive a demand. When demand for the second year was considered, the percentage of items without demand decreased to 69 percent.

86-17. Preliminary First Destination Guaranteed Traffic Cost Analysis (March 1986)

This report documents an analysis of transportation costs for vendor source shipments. The analysis examined the charges to move supplies throughout the Continental United States using surface freight modes of transportation. Comparisons were made of the actual first destination transporation costs and the transportation costs that might be realized using carrier rates associated with the Guaranteed Traffic Program (GTP). These comparisons determined the primary savings achieved by DLA using this program, the average savings based upon alternate carrier rates, and the savings using this program for various shipment weight categories. This study identifies the potential primary dollar savings made possible by the GTP. The analysis also determined regional cost trends and possible rate modifications for future carrier solicitations for the GTP. (DLA-LO Project No. 5018)

86-16. Contractor Shipment Distribution Patterns (February 1986)

This study used historical information to identify traffic shipping patterns from supply vendors to first destination depots or customers. The purpose was to identify those geographical areas where carrier performance improvements and cost reductions can be achieved by negotiating for transportation services under guaranteed traffic agreements. The results showed consistent shipping patterns among five of the eight transportation movement categories studied: Truckload/Trailer-On-Flat Car, Flat Bed Trailers, Drop-Frame Trailers, Box Cars, and Less-Than-Truckload categories. These five movement categories showed substantially high shipment frequencies and comparably large shipment tonnages over a period of 1 year. As a result of the study, it was recommended that transportation services and costs be negotiated for those five movement categories. Because of the limited number of shipping patterns for Heavy Duty

Flat Cars and Flat Cars, transportation services should be designated for those areas where traffic is most recurring. Traffic using Tank Trucks/Tank Cars are infrequent and shipping tonnages are low, and thus it does not appear to be advantageous to consider guaranteed traffic for bulk liquid shipments in any conveyances. (DLA-LO Project No. 4011)

86-15. A Study of Demand Forecasting in the Defense Logistics Agency (February 1986)

The goal of this study was to identify alternative methods which would increase the accuracy of DLA's demand forecasts. The study compared 18 different forecasting methods to determine if improvements over the current DLA forecasting method could be obtained. The methods were compared using both forecast error and impacts on inventory system variables as criteria for judging improvement. The results showed that a weighted average of the forecasts of single exponential smoothing and the four-quarter moving average produced the best results. The preferred method produced a 3.9 percent decrease in the average forecast error over the current system. Positive impacts on safety level dollars and other inventory variables would also be realized.

86-14. Audit of DLA Automated Data Processing/Telecommunications Contracting Office Cost Evaluation Model for ADP Systems (February 1986)

The purpose of this project was to evaluate and analyze the Cost Evaluation Model for ADP Systems used by the DLA Automated Data Processing/Telecommunications Contracting Office. The model was found to be valid and accurate, with no structural program flaws. The formula used to compute present value precisely reflected to 10 percent discount values mandated by DoD. Experimental runs of test data proved the computational logic to be accurate. A tendency of the model, however, to accept erroneous data could significantly distort evaluations and make results meaningless. There was also found to be a lack of both internal and external documentation which underscores a potential problem facing successive administrators tasked with maintaining the model. (DLA-LO Project No. 5025)

86-13. Management by Objectives (MBO) Accounting Program User's Manual (January 1986)

This user's guide describes the MBO Accounting System Program used for automated storage of all DLA MBOs. The MBO Accounting System Program is interactive in that it allows the user to input, update, and retrieve information about MBOs through user responses to a series of menus. The program is custom built in the dBASE III programming language to require a minimum of user familiarity with programming or data base concepts. The user of this program needs only a casual understanding of microcomputers to begin using it. A step-by-step description of the use of the program is contained in the user's manual. Technical information about the data structures and a program listing is also provided. (DLA-LO Project No. 5015)

86-12. Estimate of the Impact of TRAMS on Personnel Requirements (January 1986)

The purpose of this study was to arrive at a "best estimate" of the number of personnel required to perform the DCAS transportation management functions once the Transportation Management Systems (TRAMS) is implemented in the DCASRs. The study examined the impact of both centralization and automation due to TRAMS on personnel resources. To project the centralization impact, the study used organizational theory and span-of-control theory. To assess the automation impact, the study looked at the tasks and associated time covered by Special Purpose Data (SPD) and the time and associated tasks that are unmeasured on an individual basis. (DLA-LO Project No. 6007)

86-11. DCASR Data Input Workload Capacity Study (January 1986)

A recent enhancement of the Mechanization of Contract Administration Services (MOCAS) system is the development of an online capability for data input, which is replacing a batch method of data input. The purpose of this study was to develop standards or threshold values for system response times for the online input of contractual documents. Such standards would be the maximum allowable response times which would permit the backlog of documents awaiting input to be kept within an acceptable range. A related aim of the study was to measure the data input productivity improvement associated with the new online system. It was recommended that screen-to-screen response time should not exceed 6 seconds, and summary edit response times should not exceed 68 seconds. Within these times, the backlog of documents awaiting data input will be within acceptable limits. The results also showed that the number of documents per day that an input clerk can process on-line will increase by roughly 15 percent over the batch input method. (DLA-LO Project No. 4024)

86-10. Uniform SAMMS Inventory Management Simulation (USIMS) User's Guide (January 1986)

Inventory management within DLA is accomplished with the aid of the DLA Standard Automated Materiel Management System (SAMMS). USIMS is an operations research tool which permits evaluation of alternative inventory policies or environmental impacts on the performance of the DLA Supply Centers. USIMS uses a small sample of items in conjuction with a Monte Carlo simulation of various key SAMMS events to produce a wide range of inventory statistics on a proposed set of inventory policies. This USIMS User's Guide provides a complete description of the model and information on how to execute it. (DLA-LO Project No. 5002)

86-09. Physical Inventory Record Accuracy Indicator (January 1986)

DLA currently uses four primary measures to evaluate the physical inventory record accuracy of DLA Supply Centers (DSCs), Defense depots, and Military Service depots storing DLA materiel, but these indicators may conflict. This report describes the results of a study designed to develop a new, single measure of physical inventory record accuracy that can be used to evaluate the relative performance of DSCs and depots. The study examined the measures currently used to indicate physical inventory record accuracy and documents the results of a series of interviews with subject matter experts to determine the

components to be included in the new indicator. An automated decision support system was used to help selected experts assign numerical weights to each component to reflect its relative importance. The results include three new physical inventory record accuracy indicators, one each for DSCs, DLA depots, and non-DLA depots. Each of these indicators will permit an unambiguous ranking of the performance of its respective activities, showing where management attention is most needed. (DLA-LO Project No. 5011)

86-08. Effect of Changing Depot On-Time Standards (December 1985)

This study evaluated the potential consequences of changing the DLA "on-time" standard for depot handling and Continental United Status (CONUS) delivery of supplies for routine requisitions (Issue Priority Group Three) from military customers. For the purpose of improving the cost effectiveness of DLA depots, it was proposed to extend the standard from the current 15 days. The analysis consisted of estimating several measures of comparison for the baseline (15-day) and alternative (12-, 18-, 21-, and 24-day) time standards. The primary measures were transportation charges, numbers of shipments according to type, numbers of shipping units, and on-time performance. The findings showed that changing the time standard to 21 days would save approximately 5 million dollars annually in transportation charges alone, without significantly impairing the mission of responding to military customers. (DLA-LO Project No. 5001)

86-07. Cost Benefit Analysis of Publishing DLAM 4140.2 on Microfiche (October 1985)

This analysis was conductd to determine the cost effectiveness of converting DLAM 4140.2, Supply Operations Manual, from paper to microfiche and distributing it thereafter in microfiche form. A questionnaire was sent to the actual users of the manual to aid in the evaluation of the proposal. Three alternatives of status quo and microfiche combinations for meeting the requirements of the proposal were identified and treated in the analysis. Extensive effort was made to obtain cost estimates reflecting current costs. Present value analysis was used to evaluate the comparative cost of investment alternatives. The results showed that coversion to microfiche from magnetic tape is the least costly alternative. However, since the Distributed Minicomputer System project currently underway is expected to provide direct access to most major publications, the conversion of DLAM 4140.2 to microfiche as an interim process is not recommended.

86-06. Cost Benefit Study on the Use of Aluminum versus Wooden Skids in Transporting Industrial Plant Equipment (October 1986)

This study was performed to find a cost effective alternative to the present practice of shipping DoD-owned industrial plant equipment on aluminum and wooden skids. The analysis established that it may be more economical for the Government to switch to an all-wood operation. Considerable savings could be realized even under current operating practices by returning to storage for reutilization those wooden skids presently discarded after one use. (DLA-LO Project No. 4027)

86-05. Evaluation of Demand Forecasting Techniques for the Subsistence Commodity - Volumes I and II (October 1985)

This study involved the evaluation of quantitative techniques to improve subsistence forecasting. The forecasting techniques analyzed included autoregressions; autoregressions with seasonal terms; simple moving averages, single, double, adaptive, and combined exponential smoothing; naive; and the current DLA methods. Findings showed that about 20 percent more variability in leadtime demand and 14 percent more variability in procurement cycle demand was experienced during the 1980-1983 time period than could have been achieved by a group of five methods identified in this study. The report recommends different groups of techniques for different categories of subsistence items. A prototype subsistence demand forecasting system is described based on the recommended group of models in this study. This study serves as the analytical basis for the development of the Forecasting Module of the Defense Integrated Subsistence Management System. (DLA-LO Project No. 3039)

86-04. The Conceptual Design of an Automated Mobilization Management Information System (September 1985)

This report defines a logical and potentially achievable set of models and automation systems which will calculate the mission status and capacity of the DLA materiel acquisition, storage, and distribution processes under moderate to severe contingency and mobilization scenarios. The report also identifies the specific actions and resources required to develop the set of models and systems. (DLA-LO Project No. 4017)

86-03. Analysis of a Demand Recording Anomaly (September 1985)

This study analyzed a Standard Automated Materiel Management System (SAMMS) inconsistency between the distribution and requirement subsystems. The purpose of this analysis was to determine the urgency of implementing a SAMMS system change request to correct a current deficiency which may lead to malpositioned stock and increased transportation costs. The results showed that the percentage of stock misrecorded is small and the amount that could be malpositioned would not be located at a depot that is much further from the customer than the optimal storage depot would be. (DLA-LO Project No. 5014)

86-02. DLA Materiel Readiness Support (MARS) System Interface with Service Readiness Models (September 1985)

This project investigated the potential for interfacing the DLA MARS System with the "sparing-to-availability" models of the Military Services. Although DLA is the DoD wholesale manager of millions of consumable items, it lacks a means for determining how it impacts on the materiel readiness of the Services. This shortfall could be filled by interfacing the MARS System with the models of the Services. The report reviews the capabilities of the MARS System and then considers three popular Service models. The study concludes that an aggregate analytic model approach could be used to relate consumable stock fund investment to weapon system availability by further development of the MARS System. A detailed line item, multi-echelon model approach is ruled out due to lack of application data and the commonality of parts. (DLA-LO Project No. 3087)

86-01. Review of SAMMS Requirements Computations (August 1985)

This review was peformed in order to ascertain the effectiveness and efficiency of each of the Standard Automated Materiel Management System (SAMMS) requirements levels pertinent to inventory control in DLA. Each identified requirements level is documented and analyzed to identify potential problems in methodology and implementation. Topics covered include stockage criteria, economic order quantity, leadtime demand quantity, safety level, program-oriented items, life-of-type buys, government furnished materiel, nondemand based levels, control levels, retention limits, credit levels, maximum release quantity, and other war reserve materiel requirements. The findings and conclusions address identified problem areas, potential solutions, and recommended efforts for the development of new methodologies. (DLA-LO Project No. 3040)

85-09. Cost Benefit Assessment and Tracking System (COBATS) User's Guide (August 1985)

This guide provides the information and instructions necessary to operate the automated Cost Benefit Assessment and Tracking System (COBATS). COBATS is a decision support system (DSS) designed to aid personnel in monitoring and tracking costs, benefits and savings for automated information systems, and in performing economic analyses quicker and more accurately. COBATS computes life-cycle costs, compares and ranks alternatives, graphically displays the results of economic analyses, and places the data in a number of possible output options. In addition, COBATS is able to record required data from DLA Form 558-B on Automated Information System (AIS) System Change Requests (SCRs), conduct cost dominance rankings, sort SCRs by priority or payback period, compare SCRs, and generate reports. (DLA-LO Project No. 4007)

85-08. Development of DCAS Cost to Order for DoDI 4140.39 (August 1985)

This report provides estimates of the Defense Contract Administration Services (DCAS) variable cost to order on a per-item basis by procurement instrument. The data base used to develop these cost estimates was obtained from DLA management information systems, a sample of DCAS closed contracts, and a sample of DCAS active contracts. This study also developed a proposed cost to order model that determines the total variable cost to order for an Inventory Control Point. After an in-depth investigation of the collected data, it was concluded that (1) the DCAS variable cost to order elements depicted in DoDI 4140.39 are no longer current cost elements; and (2) the duplication of certain functions, such as preaward surveys and contract administration, by different organizations has resulted in confusion and unnecessary inaccuracies in developing the variable cost to order for an "average" item. (DLA-LO Project No. 4001)

85-07. Long Supply Study (August 1985)

In 1984, the Revolving Fund Budget Division of DLA's Comptroller requested a study of long supply inventories, specifically materiel returns without credit, to examine how these assets contributed to inventory growth. An item is defined as being in long supply status if its asset position exceeds its normal requisitioning objective. A data analysis was conducted on long supply assets

to determine the extent to which those assets remain in long supply, what portion of these assets are processed to disposal, and what portion is used as operating stock in subsequent years. Due to the nonavailability of data, materiel returns without credit could not be identified in the analysis. (DLA-LO Project No. 3084)

85-06. Update of Workload Factors in the DLA Mobilization Plan (July 1985)

The objective of this project is to derive updated Inventory Control Point (ICP) and depot workload factors (such as lines and tons shipped, number and dollar value of buys generated) to be used in estimating any resource shortfalls for the DLA Mobilization Plan. This project used selected Time Phased Force Deployment Data (TPFDD) to derive demand quantity and frequency factors that would apply to a full scale mobilization. The Uniform SAMMS Inventory Management Simulation (USIMS) Model was used to simulate the mobilization workload and performance at ICPS. Mobilization planning factors for the first three months of a mobilization were developed for DLA depots, hardware Centers, and the medical commodity. (DLA-LO Project No. 5007)

85-05. DLA Operations Research Analysis Network (DORAN) Economic Analysis (July 1985)

The DORAN was established to implement a comprehensive automated operations research data base and computational facility. The purpose of the economic analysis was to determine the most cost effective means of providing future processing and telecommunications requirements for the DORAN. Alternatives were developed to meet projected DORAN processing and telecommunications requirements through an eight year system life cycle. Configurations based on the alternatives were costed and analyzed across their projected life cycles. Costs were based on historical rate and usage information, actual contract prices for selected equipment, and maintenance and service contracts currently in use by DLA. Standard economic analysis techniques were applied to determine the discounted cumulative net present values for each alternative. This report summarizes the analysis performed and findings produced and recommends a course of action to be implemented by DLA. (DLA-LO Project No. 4015)

85-04. High Priority Small Package Analysis (June 1985)

This analysis was undertaken to determine cost impacts of diverting shipments to alternate modes of transportation. Comparisons were made of expenditures under the Guaranteed Air Traffic Program, the United Parcel Service (UPS), and/or U.S. Postal Service. A suggestion to use the UPS second service was made in lieu of the use of rates and services agreed upon and covered by the negotiated Guaranteed Traffic Program. The results of this analysis concluded a 14 percent cost savings could be achieved by use of the alternate mode. The greatest potential for savings is attributed to diversion of Non-Mission Capable Supply (NMCS) next day service to the slower service by the United Parcel Service. (DLA-LO Project No. 5009)

85-03. Comparison of Forecasted Provisioning Requirements versus Experienced Demand (April 1985)

This study compared the actual demands for new provisioning items to forecasted requirements on supply support requests (SSRs) which are being submitted by the Military Services. The objectives of this study were to determine (1) the validity of initial SSR submissions and (2) the impact of using requirements from follow-on SSRs. It was found that the total requirements estimate using initial SSR quantities, in terms of acquisition value, to be 349 percent greater than the actual demand. The inclusion of follow-on or reprovisioning SSRs increased that percentage to 409 percent. (DLA-LO Project No. 3033)

85-02. Analysis of the Program Oriented Item System for Forecasting Clothing Items (January 1985)

This study examined the extent and cause of forecast error in the Program Oriented Item (POI) system. The report compares the forecasted demand for POI items to actual demand for those items and summarizes the degree of forecast error. Other areas which might contribute to forecast inaccuracy, including the effect of item seasonality on demand and the accuracy of the Services' troop strength projections, were examined. The report presents the results of data analyses and provides conclusions and recommendations in each of the above areas. (DLA-LO Project No. 3036)

85-01. Improving the Forecasting of DLA Production Leadtimes: A Feasibility Study (January 1985)

In April 1984, the Defense Logistics Agency (DLA) requested the Institute for Defense Analyses (IDA) to undertake a six-month feasibility study to ascertain the likelihood that economic analytical techniques could improve its production leadtime (PLT) forecasting accuracy. The study concluded that (1) a significant cyclical component exists in DLA PLT data that is not captured by existing projection techniques; (2) leadtime economic indicators can capture this cyclical component successfully; (3) multiple linear regressor such as projections with a leading indicator regressor can result in significant reduction in forecast error dispersion; and (4) that such models can also eliminate or reduce an upward bias in DLA forecasts that may exist under current practice. (DLA-LO Project No. 3030)

84-22. Transit Time Analysis (December 1984)

This analysis computed the transit time for shipments from DLA depots to points within the continental United States. Various sources were used to establish baseline transit times for use in DLA Guaranteed Traffic solicitations and to provide a basis for grouping destination areas by transit time for use by DLA depots in workload planning. Statistics were developed from Freight Information System (FINS) and Military Standard Transportation and Evaluation Procedure (MILSTEP) data tapes. These statistics indicated that the mean and median shiptime of TK4 and FIN data differed in most cases by less than half a day. (DLA-LO Project No. 3045)

84-21. Hazardous Materials Storage Projection (October 1984)

As a result of the DLA stock positioning policy for hazardous items, three depots were assigned as primary hazardous materials stockage depots. These three depots experienced significant increases in the workload and storage space required to handle these items. Through data collection, identification, and analysis, it was determined that the isolation of hazardous materials to the three designated depots is far from complete. In 1983, large quantities of hazardous materials were shipped from depots other than Richmond, Memphis, or Ogden. The large discrepancies between performance and actual DLA experience in 1983 suggests that there were significant exceptions to the policy of isolating hazardous materials to three depots. (DLA-LO Project No. 3062)

84-20. Data Base Management System (DBMS) Environmental Response Time Study (December 1984)

This report documents the development of standards and/or threshold values for DBMS response times for the on-line input of contractual and delivery documents into the Mechanization of Contract Administration Services (MOCAS) system. Two cases were considered in developing threshold values for acceptable response times. The first case corresponded to a normal level of workload which is experienced for most of the year; the second case corresponded to surge level in workload which is experienced near the end of the fiscal year. Through the use of a model simulating the data input process, threshold values were obtained for case one. But, due to the high level of workload, it was not possible to establish threshold values for response times because accomplishment of document backlog goals could not be achieved without overtime. (DLA-LO Project No. 4019)

84-19. Validation of Weights and Cubes of Army War Reserve (December 1984)

The Army requested DLA's assistance in verifying weight and cube data for Army war reserve items. A sample of items was weighed and cubed in the depot, and these weights and cubes were compared to those in the Army Master Data File. It was discovered that a considerable amount of error existed in the Army Master Data File weights and cubes. About 85 percent of the items had weight errors. The error was greatest for larger items in the medical commodity. (DLA-LO Project No. 3061)

84-18. Single versus Multiple Shipment Impacts (October 1984)

The purpose of this project was to determine the implications, in terms of transportation costs, transit times, and potential for fraud on small Government bills of lading, of alternative consolidation and delivery scenarios for shipments to Air Force installations. The scenarios compared included central receiving only, separate deliveries to multiple consignees, and delivery by stop-offs or split shipments to multiple activities. The analysis was based on historical materiel release order records reflecting shipments from all six DLA depots to all CONUS Air Force bases during the months of April 1984 through June 1984. (DLA-LO Project No. 4026)

84-17. Unit Price Comparison between FY 83 and FY 84 (September 1984)

This report documents the results of an in-depth validation of a computer program which compared the unit prices of items purchased in FY 84 with the unit prices of the same items purchased in FY 83. The purpose of this validation was to assess the validity of the apparent price reductions and to determine the reason or reasons for the reductions. The test results showed that while the program accomplished its basic intent, problems with input data and file completeness made the results less than reliable. (DLA-LO Project No. 4018)

84-16. Binface Action Feasibility Study: Automated Warehousing and Retrieval System (September 1984)

This report describes the application of computer simulation in the Automated Warehousing and Retrieval System (AWARES) at the Defense General Supply Center. The purpose of this study was to determine the feasibility of combining the picking and stowing functions in the AWARES. The results, obtained through a simulation model, showed that it is feasible and practical to accomplish the normal picking and stowing workload in AWARES on one shift. (DLA-LO Project No. 4005)

84-15. Materiel Readiness Decision Support System Interface Prompting Guide (July 1984)

The DLA Materiel Readiness Support (MARS) System provides a method for a user to obtain statistics about DLA's supply performance. The full capabilities of MARS allows for analysis of historical support to a weapon system(s) and/or organizational unit(s), predictions of future support to a weapon system, nonweapon system, and/or a Service, and analysis of item data. The prompting program described in this report is concerned with historical or future support and attempts to bridge a gap between the end user and the computer by providing a semi-automated means to generate the necessary computer commands to execute the required parts and functions with MARS. (DLA-LO Project Nos. 3031 and 3086)

84-14. Materiel Readiness Decision Support System (October 1984)

The Materiel Readiness Support (MARS) System was developed as an analytical tool to evaluate DLA's support to weapons system materiel readiness. This report is a user's guide for the MARS System. The guide documents the various system components: The Historical Supply Performance Program, The Projected Supply Performance Model, and the Item Statistical Package. The mathematical development of the model, the program structure, the analytical use of the various components, and the MARS System database are included in this documentation. (DLA-LO Project Nos. 3031 and 3086)

84-13. Certification of DFSC Bid Evaluation Model (September 1984)

This study reported an independent certification of the Defense Fuel Supply Center (DFSC) Bid Evaluation Model (BEM). The BEM is used to determine the least cost combination of fuel vendors and transportation modes for each fuel procurement cycle. The BEM uses the DATAFORM (linear programming matrix

generator) language and other related software. This certification effort consisted of (1) a top-level review of each component of the matrix generator, and (2) running several simple and hypothetical test cases. The test cases, run on a personal computer using a network algorithm, were compared to the BEM output. Based on the results of the test cases and the review of the model code, it is concluded that the BEM performs as intended, and that any awards determined by the model are correct and defensible. (DLA-LO Project No. 3073)

84-12. Project Management System (PMS) User's Manual (September 1984)

As workload with the DLA Operations Research and Economic Analysis Office continued to expand, it became necessary to develop a uniform, easy-to-use system for reporting and managing the office's multitude of projects. The PMS is intended to provide all the necessary management information, while at the same time keeping the administrative workload of project reporting to a minimum. The objective of this User's Guide is to provide users with instructions necessary to effectively use the PMS. The User's Guide covers five PMS modules: Weekly Activity Reporting; Monthly Status Reporting; Management Reporting; New Activity Entry/Assignment; and Completed Project Reporting. (DLA-LO Project No. 3060) [OBSOLETE]

84-11. Movement of Stocks from Attrition Sites (September 1984)

This study was generated by DoDI 4140.49, Movement of Stock from Attrition Sites, which requires that the movement (or nonmovement) of stocks at attrition sites be evaluated using a break-even cost formula prescribed in the Instruction. Variables used in the formula were quantified and a break-even point determined for moving stock to other stocking depots. (DLA-LO Project No. 3042)

84-10. Economic Analysis for the SAMMS Modernization (July 1984)

Final report prepared by Advanced Technology.

This report represents a preliminary economic analysis for DLA's modernization of the Standard Automated Materiel Management System (SAMMS). The analysis examines four alternatives to the current baseline, each with three different levels of automation. The economic analysis revealed that sufficient savings and benefits were present in each of the proposed alternatives to the baseline to justify continued development of the SAMMS modernization effort. (DLA-LO Project No. 3058)

84-09. Plan Relating End Item Readiness to Supply Management (June 1984)

This plan was prepared in response to a tasking from the Office of the Assistant Secretary of Defense (Materiel, Installations and Logistics) concerning consideration of end item readiness in inventory management. This plan presents an approach for developing requirements models with weapon system availability goals and for developing analytic models for projecting programming and budget requirements for weapon system inventories. The plan addresses automated systems impacts, resource requirements, policy/procedures impacts, organizational impediments, and time-phased action plans. (DLA-LO Project No. 4013)

84-08. Freight Shipments Under 70 Pounds (June 1984)

All surface Government Bills of Lading (GBL) shipments under 70 pounds made by DLA depots in FY 83 were reviewed. Each shipment was rated by U.S. Postal Service (USPS) and United Parcel Service (UPS) rate tables, and estimated costs and savings were calculated. It is estimated that DLA could save approximately $1.5 million annually by increasing parcel post eligibility from 50 to 70 pounds, and by establishing small parcel post eligible shipments. (DLA-LO Project No. 4009)

84-07. Emergency Planning and Assessment Model (EPAM) (June 1984)

The EPAM was designed to assist DLA emergency planners in the realignment of resources, determination of additional requirements, and estimating potential costs in the event of a natural catastrophe occurring at an Inventory Control Point (ICP) or depot facility. Both the ICP and depot problems are formulated in a linear programming format. Each model consists of a cost objective function which is minimized subject to constraints relating to personnel, materiel, facilities, and equipment. (DLA-LO Project No. 3054)

84-06. Cost to Order Study (June 1984)

The costs to order which DLA uses in the computation of economic order quantities (EOQs) for its items were developed about 1972. This study examined the impacts of (1) using updated costs to order; and (2) changing the constraints which DLA applies against EOQs. The examination was conducted by simulating the use of updated costs and changed constraints on DLA's inventory management simulation. The major finding was that the use of updated costs would produce an increase in the number of procurement requests without improving performance. The study concludes with recommendations for minimizing the negative impacts of using updated costs. (DLA-LO Project No. 3043)

84-05. Procurement Workload and Manpower Correlation Analysis Study (June 1984)

This report documents a linear regression analysis which was used to develop predictive equations for a set of procurement manpower and workload indicators. This analysis will aid in (1) determining the most reliable predictors of workload and manpower and (2) evaluating the mission program performance of the DLA Supply Centers (DSCs). The analysis conducted to develop the linear regression models was based on data from four DSCs and their totals. First, with the Statistical Package for the Social Sciences (SPSS), correlation matrices were developed to determine the relationships between indicators; and then multiple linear regression analysis with stepwise inclusion to compute the statistics for developing the many alternative regression equations. Various statistical criteria of judging the "best" equations were applied to the alternative equations, and 74 optimal equations were selected. The results of this study indicate that the DSC-Total data base provides better predictive equations than the individual DSC data bases, and that number of manpower and workload indicators are good predictors. (DLA-LO Project No. 3056)

84-04. Economic Analysis System (EASY) (June 1984)

EASY is an interactive system designed to support anyone performing an economic analysis. EASY consists of five FORTRAN programs; namely, EASYT, EASYI, EASYD, EASYE, and EASYR. EASYT is the tutorial that describes the individual modules within EASY. EASYI is the input program through which the user creates a data base for his economic analysis. EASYD is the display program which allows the user to display his data base. EASYE is the edit program through which the user can make changes to his data base. EASYR is the report program which uses the data base to perform the analyses and prepare the report associated with an economic analysis. (DLA-LO Project No. 3052)

84-03. Carousel Loading Study (May 1984)

The need for productivity improvements in depot operations has led to the acquisition of high density storage systems such as carousels. A model has been developed to load these systems with items so as to optimize their operation in terms of both productivity and throughput. The model is based upon the concept of maximizing the pick density of items stored within the system, and in doing so, selecting the proper items to stock and at what level. The model has been used to load carousel systems at DLA depots with good results. (DLA-LO Project No. 3047)

84-02. Analysis of Air Force European Requirements Through Container Consolidation Points (CCP) (April 1984)

This report summarizes shipping trends of Air Force European requirements which flow through Warner Robins AFB CCP for Defense Depot Mechanicsburg CCP. The report depicts stockage objectives and traffic flow of eligible items subject to the consolidation point criteria. The results suggest change in the stock positioning policy to reduce pipeline transit times and transportation cost. (DLA-LO Project No. 4003)

84-01. Inventory Frequency Analysis (February 1984)

The purpose of this study was to develop a program that scheduled inventories as an item neared procurement. Other variables included in the program to give the candidate items a weighted importance scheme were: weapon systems codes, annual dollar demand, annual demand frequency and time since last inventory. The model prioritizes NSNs stocked at a depot for inventory on a cyclic basis. The major constraint of the model was that the number of inventories performed had to be less than or equal to the number of inventories currently being performed at that depot. (DLA-LO Project No. 3037)

83-08. Automated Warehousing and Retrieval System (AWARES) Support (December 1983)

The Defense General Supply Center (DGSC) has implemented an AWARES to manage warehousing functions by computer control. This system was in direct competition with four carousels storing relatively fast moving stock and which were still being managed by the old paper document method. A study was initiated to determine whether to (1) leave the two systems as they were; (2) somehow integrate the two systems; or (3) discontinue use of the carousels. An

in-depth, cost-benefit analysis was performed on these three alternatives using historical data, time and motion studies, and computer simulation. The final recommendation was to discontinue use of the carousels with a total estimated savings of $1 million. (DLA-LO Project No. 3059)

83-07. Clothing and Textile Distribution Study (December 1983)

This study examined demand patterns in clothing and textiles (C&T). Using FY 82 data, a series of analyses were carried out which examined number of materiel release orders (MROs), dollar value shipped, weight and cube shipped, and total transportation cost. These measures were then examined for various customer characteristics, e.g., initial issue (Recruit Induction Centers) versus replenishment (Military Clothing Sales Stores), male versus female, service overseas theater, C&T geographical region, and customer cluster. Also included were freight and parcel post costs from depots to high demand customers. (DLA-LO Project No. 4021)

83-06. Economic Analysis of Alternative Shipping Methods to Provide Accountability of Small Parcels (August 1983)

This analysis depicts the costs for shipping small parcels via alternative methods which provide for the accountability and traceability (tender receipts) of parcels. The study was limited to one quarter of requisition history data to determine the mode and dollar value of the shipment. A comparison of freight, United Parcel Service, and the U. S. Postal Service costs was made considering insurance fees when applicable. The results suggested the shipment of all small parcels via the United Parcel Service with the exception of overseas shipments routed via the APO or FPO system. (DLA-LO Project No. 3025)

83-05. Final Report on the Review of Single Source Justification (August 1983)

This report was prepared by the Competition Lab-Group of the Acquisition Improvement Steering Committee. Specifically, the tasking was to develop and execute a statistically valid sampling plan in order to determine the proportion of DoD noncompetitive contracts dollars that were attributable to the various justifications for single source procurements. (DLA-LO Project No. 3020)

83-04. Cost Analysis for the Automation of Primary Level Field Activity (PLFA) Libraries (June 1983)

This study concerned the proposal for automation of the PLFA libraries. A cost analysis for providing specific services to the PLFA libraries was conducted. Fifteen libraries were identified as candidates for automation receiving some or all of the seven selected on-line data services. (DLA-LO Project No. 3019)

83-03. Depot Workload Forecasting (March 1983)

DLA Supply Centers had been using a moving average forecasting model to estimate tons shipped and tons received for each depot where their commodity is stored. The current model had been performing poorly in recent forecasts. A study was initiated to determine if double exponential smoothing or the

Box-Jenkins technique would perform better than the current model. The conclusion was that double exponential smoothing would provide significant improvements in forecast accuracy.

83-02. Cost Comparison of a COPAD Type Operation to Support Items Currently Stocked (March 1983)

This cost comparison was conducted to delineate the costs associated with a Contractor Operated Parts Depot (COPAD) type operation for selected NSNs versus the costs to manage these NSNs for stock. (DLA-LO Project No. 3021)

83-01. Variable Safety Level (VSL) Constraint Study (February 1983)

This paper examines the performance and cost impacts of relaxing or removing the current leadtime demand constraints on DLA's variable safety level. It documents the approach, references, mathematical derivation, and supporting DLA data used in examining the impacts.

82-04. Variable Safety Level for Nonperishable Subsistence (November 1981)

This paper documents the mathematical development of a time-weighted, essentiality-weighted, requisitions short variable safety level model for nonperishable subsistence items. It also includes guidance for implementing the model in the Defense Integrated Subsistence Management System (DISMS).

82-03. System Change Request Study (November 1982)

This study investigated the need for a simplistic cost/benefit evaluation format for System Change Requests (SCRs) and, if needed, to develop such a format. The feasibility of auditing the claimed savings of SCRs after they are implemented was considered, as well as the level of difficulty involved in filling out forms and passing SCR-related documentation through the respective channels.

82-02. Item Reduction Quantitative Value Review (June 1982)

This study identified the elements of cost/savings associated with eliminating items from the Federal Supply System, and quantified the benefits in terms of dollars.

82-01. Economic Analysis of Administrative Space for DCASMA Inglewood (February 1982)

This economic analysis investigated the costs of two alternatives whose function would be to provide building space for the Defense Contract Administration Services Management Area (DCASMA) located in Inglewood, California. One alternative involves the continued leasing of commercial space which the DCASMA currently occupies. The other alternative involves moving the DCASMA into a nearby Government-owned building which is currently unoccupied. Present-value analysis was used to identify which alternative was the more economical over a 28-year period.

81-06. Economic Analysis for the Consolidation of Packaged Petroleum Products Function at Either Defense Fuel Supply Center (DFSC) or Defense General Supply Center (DGSC) (November 1981, Revised January 1982)

This economic analysis was conducted to determine the costs associated with consolidating the packaged petroleum products inventory control point (ICP) functions that are currently split between DFSC in Alexandria, VA, and DGSC in Richmond, VA.

81-05. Report on Backorder Review (October 1981)

This review was aimed at identifying the causes of backorders and possible approaches to reducing their number. The leading causes of backorders were found to be unforecasted demand, delinquent deliveries, extended leadtimes, contracting difficulties, inventory loss, and logistics transfer. In seeking ways to reduce backorders, the study looked at forecasting techniques, use of program data, demand variance, item grouping, customer research, administration and production leadtimes, delinquent deliveries, safety levels, budget restrictions, market research, automated materiel management, etc.

81-04. Analysis of a Proposal to Reduce Out-of-Area Shipments in the DLA Medical Commodity (October 1981)

This report describes the analysis of a proposal to reduce out-of-area shipments in the DLA medical commodity. The computer simulation model used to test the proposal is documented and results and conclusions are provided. This analysis was performed in response to the 25 June 1980 GAO Report, "Better Controls and Data Needed to Distribute Medical Supplies," (LCD-80-77) (OSD Case #5408).

81-03. Economic Analysis of Administrative Space for DCASMA Denver (April 1981)

This economic analysis was conducted to investigate alternative methods for providing administrative space for the Defense Contract Administration Services Management Area (DCASMA) located in Denver, Colorado. Three feasible alternatives of construction and lease combinations for meeting this requirement were identified and treated in this analysis. Extensive effort was made to obtain cost estimates reflecting current costs. Present value analyses were used to evaluate the comparative cost of investment alternatives. The summary analysis shows leasing to be the least costly alternative.

81-02. Program Evaluation of Functions for Packaged Petroleum Products (March 1981)

This study was conducted to determine if the split in functional responsibilities for packaged petroleum products between DGSC and DFSC, where DFSC had procurement responsibility and DGSC had technical and supply management functions, was the dominant contributor to the current supply availability deficiencies; and, if so, how best to modify current operations, along with cost assessments in order to enhance supply availability.

81-01. A Review of the GSA Economic Study to Relocate DCASMA Pittsburgh (January 1981)

This study determined the most cost-effective space accommodations for Defense Contract Administration Services Management Area (DCASMA) located in Pittsburgh, the National Labor Relations Board Regional (Pittsburgh) Office, and the Defense Contract Audit Agency Office also located in Pittsburgh.

80-03. Contractor Operated Parts Depot (COPAD) Benefits (December 1980)

This study identified three benefits to DLA customers of reduced order and shipping time: (1) reduced inventory for stocked items; (2) reduced pipeline for nonstocked items; and (c) reduced manpower. It was concluded that COPAD improved vehicular readiness by $14.4 million based on a fleet size of $1.2 billion and improved the number of vehicles down for parts by 1.2 percent. Manpower savings were estimated at $2.5 million annually.

80-02. Development of Economic Models for the Retention of Idle Plant Equipment in the General Reserve (May 1980)

This paper describes the development of economic decision models for the retention of idle plant equipment by the Department of Defense (DoD). Separate models were developed to accommodate the three different occasions when the Defense Industrial Plant Equipment Center (DIPEC) must decide to hold or not hold a piece of idle plant equipment in the DoD General Reserve. They are the add model (for when the decision is to add or not add to the Reserve a piece of equipment declared idle); the retain model (for when the decision is to retain or not retain an idle piece of equipment in the Reserve); and the exchange model (for when the decision is to exchange or not exchange a piece of equipment declared idle for an idle piece already in the Reserve). Each model represents a total system cost approach to making the respective decision. Principle elements of each are one-time costs, recurring costs, demand probabilities, technical value, response time to customer, level of activity anticipated in mobilization situations, and methods of disposal.

80-01. Analysis of a Proposal to Reduce Out-of-Area Shipments (January 1980)

This report describes the analysis of a proposal to reduce out-of-area shipments in DLA by changing the backorder release policy. The computer simulation model used to test the proposal is documented and results and conclusions are provided.

TITLES OF ARCHIVED STUDIES

79-04. A Report on Defense Logistics Agency Cost to Manage Items in the Commercial Item Support Program (CISP) - Volumes I and II (December 1979)

79-03. DLA Manpower Planning Model Aanlysis and Applications (May 1979)

79-02. Economic Analysis of the Phase-Out of the Navy Men's Service Dress Blue Coat

79-01. Economic Analysis of the Realignment of Clothing Stockage and Distribution at the Recruit Induction Centers (January 1979); Addendum (January 1979)

78-08. Defense Intransit Item Visibility System (DIIVS) Functional System Concept (October 1978)

78-07. Analysis of Alternative Effective Date of Supply for the New Man's Army Black Raincoat With Liner (AB-385) (April 1978), Supplement May 1978

78-06. An Improved Readiness Reporting System (May 1978)

78-05. Economic Retention/Returns Limits Study (April 1978)

78-04. An Analysis of Consolidating the Distribution of DESC-Managed Items at Dayton, Ohio (March 1978)

78-03. Split Shipment Costs of the Electronics Commodity (March 1978)

78-02. DLAM 7041.1, Economic Analysis Manual (March 1978)

78-01. DLA Manpower Planning Model (January 1978)

77-07. An Analysis of the Electronic Distribution Depot Mission at Dayton, Ohio (August 1977), (Revised: December 1977)

77-06. Economic Analysis for the Standard Automated Portion of the Technical Information Storage and Control System (TISCS) (November 1977)

77-05. BOSS/RIMSTOP Stockage Policy Simulation Comparison Analysis (August 1977)

77-04. Economic Retention/Returns Limits Working Memorandum (August 1977)

77-03. Provisioning Item Demand Study (March 1977)

77-02. DLA Resources vs. Supply Availability (March 1977)

77-01. Economic Analysis of the Relocation of DFSC to DGSC (February 1977)

76-11. Economic Analysis of Administrative Space for Defense Documentation Center (DDC) and Defense Fuel Supply Center (DFSC) (November 1976), (Revised: January 1977)

76-10. Pre-Test Economic Analysis of the Defense Intransit Item Visibility System (DIIVS) (December 1976)

76-09. Contract Compliance Automated Management Information System (AMIS) (November 1976)

76-08. Cost Analysis of DoD Standard Warehousing and Shipping Automated System (DADS) (September 1976)

76-07. Effects of Changes in IPG II Response Time on DoD Logistics Costs (September 1976)

76-06. Program Evaluation of the Storage and Transportation Quality Control Program (September 1976)

76-05. Five/Six Day Depot Workweek (August 1976)

76-04. A Generalized Budget Model for Inventory Management (June 1976)

76-03. Economic Analysis of Administrative Space for HQ DSA, DDC, and DFSC (February 1976); Addendum (June 1976)

76-02. Procurement Workload Leveling Study (March 1976)

76-01. Economic Analysis of MOCAS/DBMS (February 1976)

75-14. Economic Analysis of Centralized Forms Storage Facility (October 1975)

75-13. An Economic Decision Model for Item Stockage (September 1975)

75-12. Loss of Shipment Consolidation Due to UMMIPS Time Standards (September 1975)

75-11. DICOMSS Mechanization at Defense Depot Mechanicsburg, Pennsylvania (DDMP) (August 1975)

75-10. Economic Analysis of the Expansion of Standard Automated Materiel Management System Teleprocessing (SAMMSTEL) (August 1975)

75-09. Determination of Resource Savings If Stock Availability Goals Are Lowered (August 1975)

75-08. NSC San Diego Transportation Study (August 1975)

75-07. Accounting for Inflation in DoD Economic Analyses (June 1975)

75-06. Economic Analysis of the Defense Fuel Automated Management System II (DFAMS II) (June 1975) (Revised February 1979)

75-05. Determination of DSA Resource Savings If Stock Availability Goals Are Lowered For Defense Electronics Supply Center (DESC) (April 1975)

75-04. Economic Analysis of Alternative Locations for DCRL and DCASD-LA (March 1975)

75-03. Economic Analysis of PURA/MARCE (March 1975)

75-02. Economic Analysis Of Uninterruptible Power Supply (UPS) for Automatic Data Processing (ADP) (February 1975)

75-01. Uniform SAMMS Inventory Management Simulation (February 1975)

74-16. A Simulation Study of the Supply System Cost and Effectiveness Impacts of Anticipated Changes in Production Leadtimes (December 1974)

74-15. Study Report on Bulk Movement of Materiel from Attrition Sites (December 1974) (Revised May 1975)

74-14. Economic Analysis of a Standard DoD Payroll System (November 1974)

74-13. Quantification of MILCON Project Evaluation, A Recommended Approach (October 1974)

74-12. Lease vs. Purchase Analysis for the Bermuda Fuel Support Point (September 1974)

74-11. Economic Analysis of Proposed Mechanization of DDMP DICOMSS (September 1974)

74-10. Economic Analysis of Item Stockage in Loose Issue Warehouses (September 1974)

74-09. An Evaluation of Alternative Maximum Release Quantity (MRQ) Policy (Draft: July 1974) (Draft not finalized)

74-08. Economic Analysis of the Automated Pay, Cost and Personnel System (APCAPS) (July 1974)

74-07. Economic Analysis of Standard DoD Warehousing and Shipping Automated System (June 1974)

74-06. Procurement Administrative Leadtime Study (May 1974)

74-05. Economic Returns Formula for Unserviceable Reparable Items in the Defense Supply Agency (April 1974)

74-04. Study of Alternative Depot Receipt Confirmation Procedures (April 1974)

74-03. Project "P.O.L.": Optimizing Procurement of Aviation Fuels for Defense Supply Agency Network Generating Algorithm (January 1974)

74-02. Project "P.O.L.": Optimizing Procurement of Aviation Fuels for Defense Supply Agency (January 1974)

74-01. Bases for Project Evaluation (January 1974)

73-10. MOCAS: Lessons Learned (July 1973)

73-09. Standard Automated Materiel Management System (SAMMS): System Development and Implementation Problems (July 1973)

73-08. MOMASP: Lessons Learned (July 1973)

73-07. Study of Systems Development/Implementation Problems and Lessons Learned: Automated Pay, Cost and Personnel System (July 1973)

73-06. Lessons Learned: Defense Integrated Data System (July 1973)

73-05. System Development Survey: Defense Automatic Addressing System (July 1973)

73-04. ADP Management in the Defense Supply Agency (July 1973)

73-03. Economic Analysis of Tailored Management Data Lists (MDLs) and Consolidated Catalog Management Data Notifications (CMDNs) vs. Consolidated Catalog Management Data Notifications (CMDNs) (July 1973)

73-02. Report of Simulation Analysis of Alternative Variance of Demand Estimators (February 1973)

73-01. Economic Analysis of APCAPS, Segment I, Phase 2 (January 1973)

72-13. Cost Comparison of Alternate Facilities for Defense Fuel Supply Center (DFSC) (October 1972)

72-12. Analysis of Alternative Control Levels for Materiel Management Systems (October 1972)

72-11. Evaluation of a Proposed Information Reporting Requirement (PIRR) Within the DSA Management Information System (MIS): A Suggested Approach (October 1972)

72-10. A Comparison of Alternate Computations for Mean Absolute Deviations of Forecast Errors (DRAFT: August 1972) (Draft not finalized)

72-09. Derivation of Operating, Supplies and Materials, and Overhead Cost Factors (August 1972)

72-08. Economic Analysis of Telecommunications Support for the DAAS (July 1972)

72-07. Economic Analysis of MODISCO (July 1972)

72-06. HQ DSA Guidance for Implementation of Time-Weighted Essentiality-Weighted Requisitions Short Variable Safety Level (July 1972)

72-05. Economic Analysis of Defense Integrated Data System (DIDS) (June 1972)

72-04. Storage Medium Problems in Operations Research Office (June 1972)

72-03. Economic Analysis of MOWASP II (May 1972)

72-02. Forecasting Sales of the Defense Supply Agency (April 1972)

72-01. Determination of the Most Economical Meeting Site (MEMS) (March 1972)

71-07. Economic Analysis of DDOU Post Restaurant Operations (1971)

71-06. Report of HQ DSA Simulation of Alternative Safety Level Formulations for SAMMS (December 1971)

71-05. Cost/Benefit Analysis of Potentials for Real-time High Priority Requisition Processing in DSA's SAMMS II (December 1971)

71-04. Economic Analysis of SAMMS II (August 1971)

71-03. Economic Retention/Returns Limits Study (July 1971)

71-02. Requisition/Materiel Release Order (MRO) Processing Schedules Study (June 1971)

71-01. Economic Analysis of APCAPS, Segment II (January 1971)

70-13. Effect of Benefit/Cost Ratio of Secular Delay in Project Implementation (1970)

70-12. Cost/Benefit Analysis of the Economic Analysis Office (1970)

70-11. Inventory Simulation of the Defense General Supply Center (December 1970)

70-10. Economic Analysis of Exporting SAMMS to DGSC (December 1970)

70-09. Economic Analysis of MOCAS II (December 1970)

70-08. Economic Analysis of APCAPS, Segement I, Phase 1 (December 1970)

70-07. Determination of Sample Size and Confidence Level for Purchase Order Sampling (October 1970)

70-06. Material Testing Laboratory Consolidation (September 1970)

70-05. Economic Analysis of the Plus Criterion (June 1970); Addendum (August 1970)

70-04. Economic Analysis of Canned Ham Procurement (July 1970)

70-03. Economic Analysis of Criteria for Reporting Declared Excess Property for Central Screening (June 1970)

70-02. Report on Simulation Requirements in the Defense Supply Agency (DSA) (March 1970)

70-01. Item Stockage for a Loose Issue Warehouse (March 1970)

69-09. Economic Analysis of Proposed DESC Administrative/Warehouse Space Conversion (1969)

69-08. Cost Comparison Analysis on Automated Budgets Processing Equipment (1969)

69-07. Summary of Benefits of the Low Demand Item Logic Filter on DCSC Items (1969)

69-06. Economic Analysis of Alternate Sites for the DLSC (November 1969)

69-05. The Use of Discounting Analysis in Evaluating Federal Government Investment Projects (September 1969)

69-04. Economic Analysis of Proposed Modernization of the DPSC Manufacturing Facility (August 1969)

69-03. Inventory Simulation of the Defense Construction Supply Center (June 1969)

69-02. Inventory Simulation of the Defense Personnel Support Center - Medical (April 1969)

69-01. General Guidance for Selection of Weighting Constants of DSA Exponential Smoothing Forecasts (March 1969)

68-05. Development and Application of Defense Supply Agency (DSA) War and Emergency Planning Factors (December 1968)

68-04. Economic Analysis of Alternative Modes of Shipping Small Issue Items - Consolidated Freight vs. Parcel Post (November 1968)

68-03. Generalized Linear Programming for Bulk Supply Planning (September 1968) (FOUO, Proprietary)

68-02. Implication of Terminal Value Policy in Economic Analysis of Proposed ADPE Investments (September 1968)

68-01. Report of Simulation of Various Demand Forecasting Techniques (June 1968)

67-01. Inventory Simulation of the Defense Electronics Supply Center (April 1967)

66-01. Nonperishable Subsistence Study Report (1966)

INDEX

Accountable Property: 88-12

Administrative Costs: 87-26, 89-05, 89-18, 89-19

Administrative Leadtime (ALT): 74-06, 87-06, 87-16

Administrative Space: 69-06, 69-09, 75-04, 76-03, 76-11, 77-01, 81-03, 82-01, 89-13

Artificial Intelligence: 88-10, 88-21, 89-02, 89-20, 89-22, 89-35

Attrition Sites: 74-15, 84-02, 84-13

Automated Data Processing (ADP): 71-02, 72-01, 85-05

Automated Data Processing Equipment (ADPE): 68-02, 69-08, 72-03, 72-07, 72-08, 75-02, 75-10, 76-10, 84-10, 85-05, 86-04, 88-02, 89-33, 89-36, 89-40

Automated Data Processing Management: 73-04, 84-23, 85-05, 85-09, 86-11

Automated Data Processing Systems/Models: 70-08, 70-09, 70-10, 71-01, 71-04, 71-05, 72-01, 72-05, 73-01, 73-04, 73-05, 73-06, 73-07, 73-08, 73-09, 73-10, 74-07, 74-08, 76-01, 76-09, 77-06, 83-04, 84-04, 84-07, 84-17, 84-23, 85-05, 85-09, 86-04, 86-13, 86-14, 86-21, 86-25, 87-02, 87-07, 87-14, 88-05, 88-09, 88-15, 89-20, 89-31

Automated Information Systems: 72-11, 86-11, 87-02, 87-17, 89-33, 89-34, 89-36, 89-40

Automated Pay, Cost, and Personnel System (APCAPS): 70-08, 71-01, 73-01, 73-07, 73-07, 73-08, 87-10

Automated Warehousing and Retrieval System (AWARES): 83-08, 84-18

Backorders: 72-12, 74-04, 76-04, 81-05, 87-04, 87-24, 88-11

Base Operating Supply System (BOSS): 77-05

Benefit/Cost Ratios: 70-13

Bid Evaluations: 74-02, 74-03, 84-15, 86-14, 87-07, 87-14, 87-26, 88-05, 89-05, 89-08, 89-18, 89-19, 89-29

Binnable Items: 87-22, 88-20

Budgetary Constraints: 75-05, 75-09, 89-30, 89-39

Budget Models: 68-08, 76-04, 07-04, 84-09, 86-22, 89-16, 89-30

Carousels: 84-03

Cataloging: 87-02, 89-34

Cataloging-Tools-On-Line (CTOL): 87-02, 89-34

Clothing and Textiles (C&T): 78-07, 79-01, 79-02, 83-07, 85-02, 86-25, 87-16, 87-18, 88-13, 89-32

Commercial Item Support Program (CISP): 79-04

Commissary Support: 74-11, 75-11, 86-20, 87-05, 87-08, 89-07

Communication Devices: 87-15, 89-41

Competition: 86-25, 87-06, 87-21

Computer Sizing: 87-14, 88-05, 88-09, 89-36, 89-41

Consolidated Freight: 68-04, 75-12, 84-02, 84-20, 87-01, 87-12, 87-22, 88-01, 88-19, 89-23, 89-25

Container Consolidation: 84-02, 88-03, 89-25

Contingency Planning: 68-05, 84-07, 85-06, 86-04, 89-37

Contract Administration: 85-08, 86-11, 88-04, 88-10

Contract Delinquencies: 87-21, 87-26

Contract Payments: 89-16

Contractor Furnished Material (CFM): 87-16

Contractor Operated Parts Depot (COPAD): 80-03, 83-02

Control Levels: 72-12, 86-01

Cost Analysis: 69-08, 72-09, 73-03, 75-08, 76-08, 77-07, 78-07, 83-02, 83-04, 84-07, 86-08, 86-14, 86-16, 86-17, 86-19, 86-23, 86-24, 86-26, 87-03, 87-09, 87-22, 87-23, 87-25, 87-26, 88-18, 89-05, 89-18, 89-19, 89-33, 89-40

Cost Benefit Models: 85-09

Cost to Order: 84-06, 85-08, 86-27

Cost Tracking: 85-09, 86-25, 88-18

Credit Levels: 86-01

Customers: 72-02, 78-03, 86-08, 88-03, 89-09

Decision Support Models: 83-03, 84-04, 84-07, 84-14, 84-15, 85-09, 86-10, 87-07, 87-10, 88-08, 88-15, 89-04, 89-08, 89-09, 89-20, 89-21, 89-29, 89-30, 89-32, 89-37

Defense Automatic Addressing System (DAAS): 72-08, 73-05, 76-10, 89-40

Defense Construction Supply Center (DCSC): 69-03, 69-07, 75-09, 86-23

Defense Contract Administration Services (DCAS): 70-07, 70-09, 72-07, 73-10, 76-01, 76-09, 85-08, 87-23, 88-04, 88-15, 89-16, 89-37

Defense Contract Administration Services Management Area (DCASMA): 75-04, 81-01, 81-03, 82-02

Defense Contract Administration Services Region (DCASR): 75-04, 84-24, 86-11, 86-12, 86-21, 89-16

Defense Depot Mechanicsburg (DDMP): 74-11, 75-11, 84-02, 86-20, 87-05, 87-08, 88-03, 89-03

Defense Depot Memphis (DDMT): 88-03, 89-28, 89-41

Defense Depot Ogden (DDOU): 71-07, 88-20

Defense Depot Richmond: 89-14, 89-15

Defense Depot Tracy (DDTC): 72-08

Defense Electronics Supply Center (DESC): 67-01, 68-01, 69-09, 75-05, 77-07, 78-03, 78-04

Defense Fuels Automated Management System (DFAMS): 75-06

Defense Fuel Supply Center (DFSC): 72-13, 74-12, 75-06, 76-03, 76-11, 77-01, 81-02, 81-06, 84-15, 89-02

Defense General Supply Center (DGSC): 70-10, 70-11, 72-13, 75-09, 77-01, 81-02, 81-06, 83-08, 87-26, 89-13, 89-15

Defense Industrial Plant Equipment Center (DIPEC): 80-02, 86-06

Defense Industrial Security Office (DISCO): 72-07

Defense Industrial Supply Center (DISC): 74-09, 75-09, 88-22

Defense Integrated Data System (DIDS): 72-05, 73-03, 73-06

Defense Integrated Subsistence Management System (DISMS): 86-05, 87-14, 88-05, 88-09

Defense Intransit Item Visibility System (DIIVS): 76-10, 78-08

Defense Logistics Services Center (DLSC): 69-06, 70-03, 70-05, 72-05

Defense Personnel Support Center (DPSC): 66-01, 69-02, 69-04, 70-06, 87-14, 88-05, 88-09, 89-06, 89-10

Defense Systems Automation Center (DSAC): 87-14

Defense Reutilization and Marketing Offices (DRMOs): 89-01

Defense Reutilization and Marketing Service (DRMS): 87-25, 89-01

Defense Technical Information Center (DTIC): 76-03, 76-11

Depot Management: 69-07, 70-01, 70-04, 74-07, 74-10, 75-11, 76-05, 76-08, 80-03, 83-03, 83-08, 84-07, 84-12, 84-18, 84-23, 84-24, 85-06, 86-09, 86-20, 86-23, 87-01, 87-08, 87-11, 87-19, 87-22, 87-22, 88-10, 88-20, 89-03, 89-04, 89-07, 89-22, 89-23, 89-27, 89-41

Direct Commissary Support System (DICOMSS): 74-11, 75-11, 86-20, 87-05, 87-08

Direct Vendor Delivery: 88-06

Discount Rates: 68-02, 69-05, 86-14

Distribution: 66-01, 68-04, 71-02, 71-05, 72-03, 74-09, 75-03, 75-08, 75-12, 76-06, 76-08, 76-10, 77-07, 78-03, 78-04, 78-08, 79-01, 80-01, 81-04, 83-07, 84-12, 84-16, 84-19, 84-22, 84-25, 84-06, 86-03, 86-08, 86-16, 86-17, 86-19, 86-20, 86-24, 86-26, 88-01, 89-07, 89-09

DLA Operations Research Analysis Network (DORAN): 85-05

DLA Warehousing and Shipping Procedures (DWASP): 87-19, 88-20, 89-28, 89-41

Economic Analysis (EA): 68-02, 68-04, 69-04, 69-06, 69-08, 69-09, 70-03, 70-04, 70-05, 70-08, 70-09, 70-10, 70-12, 71-01, 71-04, 71-05, 71-07, 72-03, 72-04, 72-05, 72-07, 72-08, 72-11, 72-13, 73-01, 73-04, 73-05, 73-06, 73-07, 73-08, 73-09, 73-10, 74-07, 74-08, 74-10, 74-11, 74-12, 74-14, 75-02, 75-03, 75-04, 75-06, 75-10, 75-11, 75-14, 76-01, 76-03, 76-05, 76-09, 76-10, 76-11, 77-01, 77-06, 78-04, 79-01, 79-02, 81-06, 82-01, 83-06, 83-08, 84-10, 85-05, 86-06, 86-07, 82-21, 86-23, 87-02, 87-17, 87-19, 88-02, 88-18, 89-13, 89-14, 89-33, 89-35, 89-40

Economic Analysis Procedures: 68-02, 69-05, 70-13, 74-01, 74-05, 74-15, 75-07, 78-02, 80-02, 82-03, 84-04, 85-09, 87-17

Economic Indicators: 85-01, 89-12

Economic Order Quantity (EOQ): 86-01, 86-27, 88-06

Energy: 88-16

Engineering Drawings: 77-06, 89-34

Enhanced DLA Distribution System (EDDS): 87-12, 87-20, 88-19

Excess Property: 70-03, 71-03, 75-03, 85-07, 87-03, 87-04, 87-25

Expert Systems: 88-10, 88-21, 89-02, 89-20, 89-22, 89-35

Facilities, Consolidation: 70-06, 77-07, 78-04, 89-01

Facilities, Management: 69-09, 74-12, 74-13, 88-16

Facilities, Modernization: 69-04, 71-07, 74-11, 75-11, 76-03, 86-20, 87-08, 89-03, 89-13, 89-14, 89-28

Facility Locations: 69-06, 70-06, 72-13, 75-04, 76-03, 76-11, 77-01, 79-01, 81-01, 82-01, 87-12, 87-20, 89-01

Forecast Errors: 72-10, 85-01, 86-15

Forecasting, Demand: 68-01, 69-01, 72-10, 73-02, 77-03, 81-05, 85-02, 85-03, 86-05, 86-15, 86-18, 88-22, 89-11, 89-26

Forecasting, Disbursements: 89-16

Forecasting, Price: 70-04, 84-19, 86-25

Forecasting, Workload: 83-03, 84-23, 85-06, 86-20, 87-14, 87-15, 88-04, 88-05, 88-09, 89-17

Forms: 75-14

Fuels: 68-03, 74-02, 74-03, 74-12, 75-06, 81-02, 81-04

Government Furnished Materiel (GFM): 86-01, 87-16

Guaranteed Traffic Program: 88-14, 89-24

Hazardous Materials: 84-23, 88-06, 89-14, 89-22

Holding Cost: 71-03, 75-13, 87-03, 88-06, 89-19

Industrial Equipment: 80-02, 86-06

Industrial Preparedness Program: 88-08, 89-21, 89-38

Industrial Security: 72-07

Inflation: 75-07, 86-25, 89-16

Information Storage Retrieval: 72-04, 77-06, 88-02

Integrated Material Complex: 87-11, 89-03

Inventory Control Point (ICP): 84-07, 85-06, 86-09, 88-21, 89-20

Issue Priority Group (IPG): 72-12, 76-07, 86-26, 87-01, 89-23

Item Characteristics: 88-17

Item Deletions/Reductions: 69-07, 82-02

Item Demand: 69-07, 73-02, 77-03, 81-05, 85-03, 86-01, 86-03, 86-15, 86-22, 87-04, 88-22, 89-09, 89-11, 89-26, 89-39

Item Stockage: 69-07, 70-01, 74-10, 75-13, 75-14, 77-05, 79-04, 84-02, 84-12, 84-23, 86-01, 86-03, 87-08, 87-22, 87-24, 88-06, 89-03, 89-17, 89-26

Item Visibility: 76-10, 78-08

Late Deliveries: 87-21, 87-26, 89-18

Lease Decisions: 74-12, 81-03, 82-01

Libraries: 83-04

Life-of-Type (LOT) Buys: 86-01

Long Supply: 70-05, 85-07

Low Demand: 69-07, 86-01, 89-09, 89-26

Lumpy Demand: 89-26

Maintenance: 88-18

Management By Objectives (MBO): 86-13

Management Data Lists: 73-03

Management Indicators: 86-09, 87-01, 88-08, 88-15, 89-16

Management Information Systems (MISs): 72-11, 76-09, 86-13

Manpower Planning: 78-01, 79-03, 84-05, 86-12, 87-10, 89-04, 89-37

Marketing Surveys: 89-11, 89-12

Materiel Handling Equipment: 75-11, 84-19, 87-08, 87-11, 88-20, 89-28

Materiel Readiness Support (MARS) System: 84-16, 84-17, 86-02, 89-31

Materiel Release Orders (MROs): 71-02, 84-11, 87-05, 87-09, 88-01

Materiel Release Quantity (MRQ): 74-09, 86-01

Meaningful Measures of Merit (M3): 86-21

Mechanization of Contract Administration Services (MOCAS): 70-09, 73-10, 76-01, 84-22, 86-11, 89-36

Mechanization of Warehousing and Shipping Procedures (MOWASP): 72-03, 73-08, 87-09, 89-28

Medical Supplies: 81-04, 86-25, 89-29

Military Construction (MILCON): 74-12, 74-13, 89-13, 89-14

Mobilization Planning: 85-06, 86-04, 88-08, 89-37, 89-38

Naval Supply Center, San Diego: 75-08

Nonconforming Material: 88-13, 89-06, 89-19

Nondemand-Based Levels: 86-01

Non Mission Capable Supply (NMC): 87-09

Order and Ship Time: 80-03, 85-04, 87-05

Organizational Studies: 70-06, 70-12, 73-04

Out-of-Area Shipments: 80-01, 81-04, 84-12, 86-03

Packaged Petroleum: 81-02, 81-06

Packing/Packaging: 88-10, 88-20, 89-28

Parcel Post: 68-04, 83-06, 85-04, 86-26, 87-09

Payroll Systems: 70-08, 73-01, 74-08, 74-14, 87-10

Personnel: 71-01, 79-03, 86-11, 87-10, 89-04, 89-15

Physical Inventory: 84-01, 86-09, 88-12

Position Management: 87-10

Position Management Application Program: 87-10

Pre-award Surveys: 88-10, 89-05

Price Reasonableness/Analysis: 86-25, 88-17, 89-35

Price Trends: 84-19, 86-25, 89-11, 89-12

Processing Schedules: 71-02

Procurement: 70-04, 70-07, 74-02, 74-03, 74-06, 76-02, 76-09, 79-04, 81-05, 83-05, 84-05, 84-06, 84-12, 84-19, 86-25, 86-27, 87-06, 87-07, 87-16, 87-21, 87-26, 88-17, 89-02, 89-05, 89-08, 89-11, 89-17, 89-18, 89-19, 89-21, 89-29

Procurement Administrative Leadtime (PALT): 74-06, 84-12, 86-01, 87-06

Procurement Cycles: 86-01, 86-22, 86-25, 86-27

Production Base: 88-08, 89-11, 89-12, 89-21

Production Leadtime (PLT): 74-06, 74-16, 85-01, 87-06, 87-16

Program Oriented Items (POIs): 85-02, 86-01

Project Evaluation: 74-01, 74-13, 84-14

Project Management System (PMS): 84-14

Property Management: 88-12

Provisioning: 77-03, 85-03, 86-01, 86-18, 86-22, 87-24

Publishing: 73-03, 86-07

Purchase Decisions: 74-12, 86-06, 88-10, 89-20, 89-30

Quality Assurance/Control: 76-06, 87-23, 88-13, 88-15, 89-06, 89-10

Quality Deficiency Reports (QDRs): 89-19

Quality Inspections: 87-23, 88-13, 89-06, 89-10

Quantity Price Breaks: 86-25, 86-27

Railway: 86-23

Readiness: 78-06, 84-09, 84-16, 86-02, 89-30, 89-31

Real-Time Processing: 71-05, 84-11, 86-04

Receipt Confirmation: 74-04

Receiving: 86-20, 87-11, 88-20, 89-22, 89-27

Recommended Buys: 89-20, 89-30

Redistribution: 75-03, 87-04, 87-25

Reorder Point (ROP): 76-02, 86-01, 86-27

Reparables: 74-05

Replenishment Policy: 89-03, 89-20

Requisitions: 71-02, 71-05, 72-12, 87-25, 88-11

Response Time: 76-07, 84-11, 84-16, 84-24, 85-04, 86-08, 86-11

Retail Inventory Management: 77-05

Retention/Returns: 70-03, 70-05, 71-03, 74-05, 77-04, 78-05, 85-07, 86-01, 87-03, 87-04, 88-06

Safety Level: 71-06, 72-06, 76-04, 83-01, 86-01, 86-15, 87-18, 88-22, 89-32, 89-39

Sales: 72-02, 86-22

Sampling Plans/Procedures: 70-08, 76-06, 88-13, 89-10

Seasonality: 70-04, 86-05, 89-26

Shelf-Life: 88-06, 89-29

Shipping Procedures: 68-04, 74-07, 74-15, 75-12, 76-07, 76-08, 78-03, 78-04, 79-01, 80-01, 80-03, 81-04, 83-06, 83-07, 84-07, 84-11, 84-12, 84-20, 85-04, 86-08, 86-16, 86-17, 86-19, 86-20, 86-24, 86-26, 87-09, 87-13, 88-01, 88-03, 88-07, 88-19, 89-09, 89-23, 89-24, 89-25

Simulation, Depot: 84-18, 87-08, 87-11, 88-20, 89-07, 89-28

Simulation, Inventory: 66-01, 67-01, 69-02, 69-03, 69-07, 70-11, 71-06, 75-01, 77-12, 84-23, 86-10, 87-24, 88-06, 89-32

Simulation, Personnel: 78-01, 79-03

Simulation, Requirements: 70-02, 89-32

Skids: 86-06

Standard Automated Materiel Management System (SAMMS): 66-01, 70-10, 71-04, 71-05, 71-06, 72-10, 73-09, 74-09, 75-10, 84-10, 86-01, 86-03, 86-10, 88-22, 89-33

Standard Automated Materiel Management System Teleprocessing (SAMMSTEL): 75-10

Standard DoD Warehousing and Shipping System: 74-07, 76-08

Stockage Levels: 88-06

Stock Fund: 86-02, 86-22, 89-30, 89-39

Storage Procedures: 70-01, 76-06, 79-01, 83-08, 84-03, 84-18, 86-06, 87-08, 87-11, 89-03, 89-27

Subsistence: 66-01, 70-04, 86-05, 86-20, 87-14, 88-05, 88-09, 89-07, 89-10, 89-11, 89-12, 89-21

Supply Availability/Performance: 75-05, 75-09, 77-02, 81-02, 81-05, 83-01, 84-09, 84-16, 86-02, 86-08, 87-18, 88-06, 88-11, 88-22, 89-07, 89-26, 89-30, 89-31, 89-39

Supply Control Study: 88-10, 88-21, 89-20

Supply Planning/Management: 68-03, 84-09, 84-23, 88-08, 88-10, 88-22, 89-20, 89-30, 89-32, 89-39

Supply Support Requests (SSRs): 86-03, 86-18

System Change Requests (SCRs): 82-03

Tape Cartridges: 88-02

Technical Analysis of Cost Proposal (TACP): 89-35

Technical Information Storage and Control System (TISCS): 77-06

Telecommunications: 72-08, 87-15, 89-41

Telephones: 87-15

Teleprocessing: 75-10

Terminal Value: 68-02

Transaction Volumes: 87-14

Transit Time: 84-11, 84-20, 84-24, 86-08, 88-01, 88-07

Transportation: 68-04, 74-03, 75-08, 75-12, 76-06, 76-07, 76-08, 76-10, 77-07, 78-03, 78-08, 84-02, 84-11, 84-20, 84-23, 85-04, 85-23, 86-08, 86-12, 86-16, 86-17, 86-19, 86-23, 86-24, 86-26, 87-01, 87-12, 87-13, 87-20, 87-22, 87-25, 88-01, 88-14, 88-19, 89-24, 89-25

Transportation Management System (TRAMS): 86-12

Transportation Rates: 86-24, 87-13, 89-24, 89-25

Uniform SAMMS Inventory Management Simulation (USIMS): 75-01, 75-05, 75-09, 85-06, 86-10

Unit Prices: 84-17, 86-25, 86-27, 88-17

Variance Indicators: 72-10, 73-02, 84-22, 88-15

Variable Safety Level: 89-32

Visibility of Items: 76-10, 78-08

War and Emergency Planning: 68-05, 84-07, 85-06, 86-04, 88-08

War Reserve: 84-21, 86-01

Warehousing: 70-01, 74-07, 74-10, 76-06, 76-08, 79-01, 83-08, 84-18, 84-22, 87-08, 87-11, 89-03, 89-41

Warner Robins Air Force Base: 84-02

Weight and Cubes: 84-21

Workload Leveling: 76-02, 84-05, 84-23, 86-11, 86-12, 87-05, 89-04

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	September 1989	Finnl

4. TITLE AND SUBTITLE
Compendium of Operations Research and Economic Analysis Studies

5. FUNDING NUMBERS

6. AUTHOR(S)

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
HQ Defense Logistics Agency
Operations Research and Economic Analysis Office (DLA-LO)
Cameron Station
Alexandria, VA 22304-6100

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Defense Logistics Agency
Cameron Station
Alexandria, VA 22304-6100

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT
Public Release; Unlimited Distribution

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)

The objective of this Compendium is to serve as a reference document for other offices and agencies contemplating similar or related studies. Abstracts of completed study and analysis efforts have been compiled through September 1989. On a yearly basis, the Operations Research and Economic Analysis Office compiles abstracts of published studies. This reference document may be used by other offices and agencies who may be contemplating similar efforts. Keywords:

14. SUBJECT TERMS
(U) Operations Research; (U) Economic Analysis; (U) Studies; (U) Analyses, (SDI)

15. NUMBER OF PAGES
64

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	