NASA SP-7500 (11)

MANAGEMENT

A CONTINUING LITERATURE SURVEY

– With Indexes –

MARCH 1977

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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NASA SP-7500 (11)

MANAGEMENT

A CONTINUING LITERATURE SURVEY

– With Indexes –

A selection of annotated references to unclassfied reports and journal articles that were introduced into the NASA Scientific and Technical Information System during 1976.

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MARCH 1977
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INTRODUCTION

COVERAGE

Management is a compilation of references to selected reports, journal articles, and other documents on the subject of management. This publication lists 346 documents originally announced in the 1976 issues of *Scientific and Technical Aerospace Reports (STAR)* or *International Aerospace Abstracts (IAA)*.

SCOPE

This publication series includes references on the management of: research and development, contracts, production, logistics, personnel, safety, reliability and quality control. It also includes references on: program, project and systems management; management policy, philosophy, tools, and techniques; decisionmaking processes for managers; technology assessment; management of urban problems; and information for managers on Federal resources, expenditures, financing, and budgeting.

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Each entry in this bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two sections: *IAA Entries* and *STAR Entries*, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* and *STAR*, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

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GENERAL AVAILABILITY

All publications abstracted in this literature survey are available to the public through the sources as indicated in the *STAR* Entries or *IAA* Entries. It is suggested that the literature survey user contact his own library or other local libraries prior to ordering any publications inasmuch as many of the documents have been widely distributed by the issuing agencies, especially NASA. A listing of public collections of NASA documents is included on the inside back cover.

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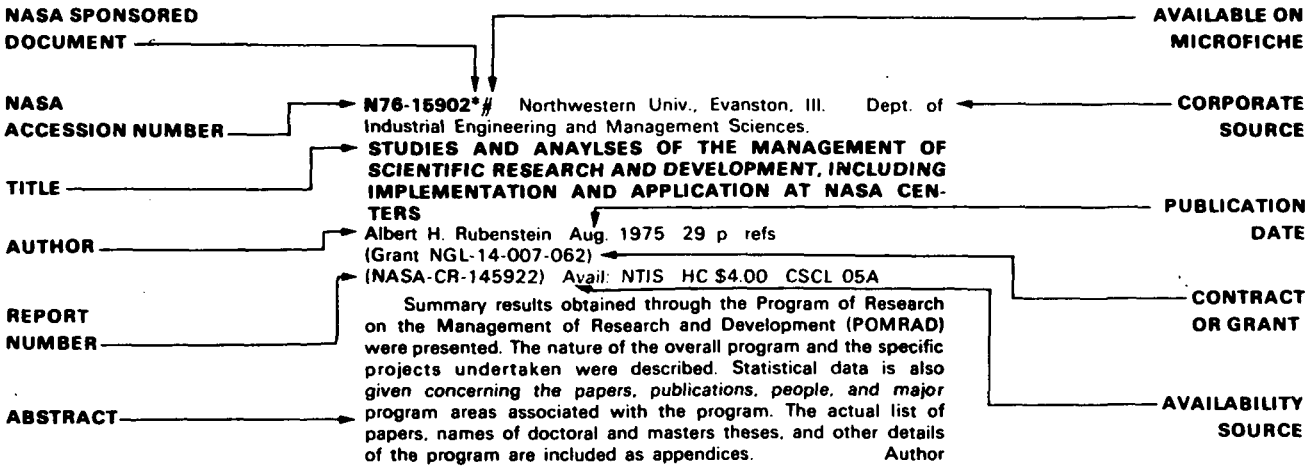

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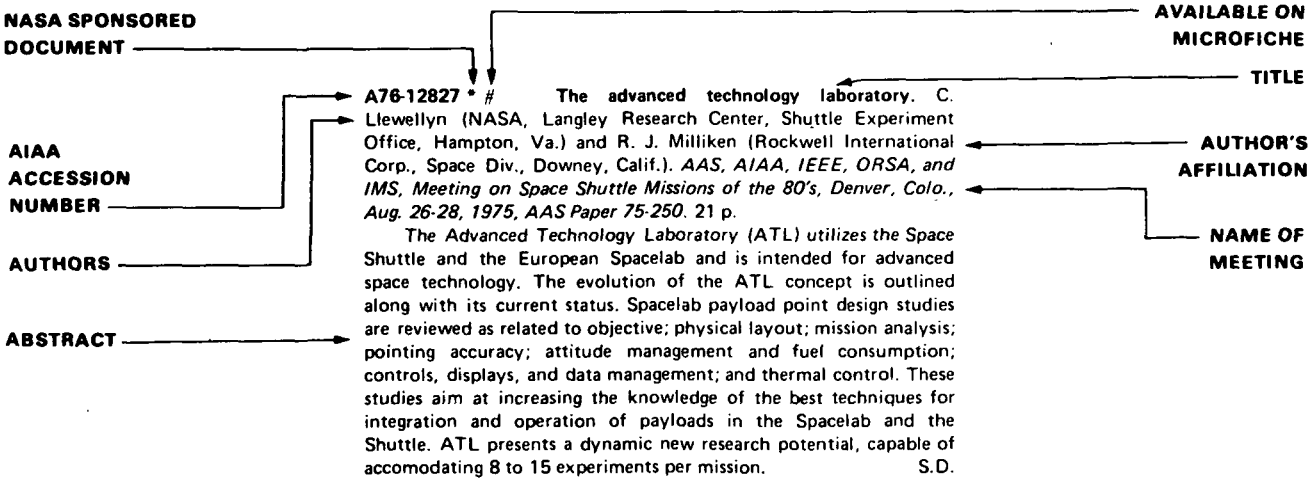


MANAGEMENT

a continuing literature survey

MARCH 1977

IAA ENTRIES

A76-10404 # **Modern techniques for passenger processing.** G. Steensma (KLM - Royal Dutch Airlines, Schiphol Airport, Netherlands). In: International air transportation; Proceedings of the Conference, San Francisco, Calif., March 24-26, 1975. San Francisco, American Society of Civil Engineers, 1975, p. 227-243.

Present concepts and future trends in passenger processing and baggage handling systems are discussed. The relative advantages of centralized and decentralized terminal and processing concepts are considered. Emphasis is placed on the simplification of ground-handling to reduce costs, conserve resources, and provide faster passenger service. C.K.D.

A76-10843 # **Basic concepts of a progressive maintenance system. II (Grundlagen eines progressiven Instandhaltungssystems. II).** A. Domokos (Magyar Legikozlekedesi Vallalat, Budapest, Hungary). *Technisch-ökonomische Information der zivilen Luftfahrt,* vol. 11, no. 4, 1975, p. 223-227. In German.

The paper examines general problems in the application of a computer for an aircraft repair and maintenance system. The computer would determine maintenance cycles on the basis of the type of defects encountered, past flying time, and expected future flying time. Considerations for coding of structural elements for minimum defect analysis time are discussed. Problems in schedule optimization are examined. P.T.H.

A76-11709 **Analysis of human factors in aircraft accidents.** P. J. Dean and R. F. Thatcher (Defence and Civil Institute of Environmental Medicine, Downsview, Ontario, Canada). *(Joint Committee on Aviation Pathology, Symposium, Downsview, Ontario, Canada, Sept. 17-19, 1974.) Aviation, Space, and Environmental Medicine,* vol. 46, Oct. 1975, p. 1260-1262.

Basic approaches used in the analysis of human factors are discussed and a description is given of two recent examples of studies which led to a new evaluation of the employed methods of analysis. In the operational analysis, possible factors which might have played a role in the accident are identified with the aid of a guide list of about 100 items. G.R.

A76-12498 **The asset management approach to spares support.** M. D. Basch (Federal Express Corp., Memphis, Tenn.). *Logistics Spectrum,* vol. 9, Fall 1975, p. 37-39, 42.

A program of asset management applicable to commercial aircraft spare parts support is discussed which achieves required service levels at reduced costs through integration of inventory, transportation, and warehousing. The program involves implementation of centralized back-up support, objective forecasting and planning, and a positive inventory control system. A practical model for determining the least costs sparing levels on a national or local basis is presented. C.K.D.

A76-12827 * # **The advanced technology laboratory.** C. Llewellyn (NASA, Langley Research Center, Shuttle Experiment Office, Hampton, Va.) and R. J. Milliken (Rockwell International Corp., Space Div., Downey, Calif.). *AAS, AIAA, IEEE, ORSA, and IMS, Meeting on Space Shuttle Missions of the 80's, Denver, Colo., Aug. 26-28, 1975, AAS Paper 75-250.* 21 p.

The Advanced Technology Laboratory (ATL) utilizes the Space Shuttle and the European Spacelab and is intended for advanced space technology. The evolution of the ATL concept is outlined along with its current status. Spacelab payload point design studies are reviewed as related to objective; physical layout; mission analysis; pointing accuracy; attitude management and fuel consumption; controls, displays, and data management; and thermal control. These studies aim at increasing the knowledge of the best techniques for integration and operation of payloads in the Spacelab and the Shuttle. ATL presents a dynamic new research potential, capable of accomodating 8 to 15 experiments per mission. S.D.

A76-13195 # **B-1 program management.** P. R. Doty (USAF, Aeronautical Systems Div., Wright-Patterson AFB, Ohio). *American Institute of Aeronautics and Astronautics, Aerodynamic Deceleration Systems Conference, 5th, Albuquerque, N. Mex., Nov. 17-19, 1975, Paper 75-1404.* 5 p.

In the fall of 1974, the Secretary of the Air Force announced his approval of a recommendation to change the mode of crew escape on the B-1 Weapon System from an integrated and separable crew module, to use of high technology ejection seats for individual crew members. The purpose of this paper is to present a management oriented overview of the basis for this announcement and to provide an understanding of the background of the B-1 development program, its current status, and planned future. Emphasis throughout is on the management aspects related to the initial selection of the crew escape system and factors which caused its major reorientation. (Author)

A76-13825 **Design to Cost Conference, Palo Alto, Calif., June 2, 3, 1975 and Boston, Mass., June 19, 20, 1975, Abridged Proceedings.** Conference sponsored by the American Institute of Aeronautics and Astronautics and Electronic Industries Association. Los Angeles, American Institute of Aeronautics and Astronautics, Inc., 1975. 94 p. $10.00.

Objectives of design to cost are (1) to establish cost as a parameter equal in importance with technical requirements and schedules throughout the design, development, production, and operation phases, and (2) to establish cost elements as management goals in achieving the best balance between life cycle cost, acceptable performance, and schedule. Papers contained herein describe efforts undertaken in the direction of the above objectives with specific aerospace and defense projects. Attention is given to cost reduction programs followed with the NAVSTAR global positioning system, the F-16 air combat fighter, the B-1 electronics countermeasures system, NASA operations, a lightweight Doppler navigation system, and inertial navigation system maintenance. T.M.

A76-14294 # **New directions in automated spacecraft cost estimation.** P. P. Pekar, Jr. (Estech, Inc., Chicago, Ill.), A. L.

Friedlander, and D. L. Roberts (Science Applications, Inc., Chicago, Ill.). *Journal of Spacecraft and Rockets*, vol. 12, Aug. 1975, p. 458-464. 10 refs.

This paper sets forth in summary form a financial analysis and cost modeling results obtained from examining eight unmanned lunar and planetary spacecraft programs. The paper differs from the popular method of estimating total project costs by forecasting dollars, and comes to the conclusion that cost forecasting can be improved by selecting manhours as the basic cost unit. To develop this theme, the authors analyzed nearly 5000 spacecraft cost elements spread across 327 prime and subcontracts. A nonrecurring and recurring cost model was then constructed. The results of this research along with comparative cost forecasts are reported. On the basis of the analysis, the following conclusions were deduced: (1) manpower is a homogeneous and standard unit across lunar/planetary progress, (2) manpower has been found to be the cost driver in lunar and planetary programs, (3) manpower analysis provides management with more insight in analyzing estimated and on-going projects, and (4) the effect of learning and inheritance can be analyzed and measured better in terms of manpower. (Author)

A76-14337 **Analysis of enterprise control system based on its information model.** I. V. S. Moiseev. *(Aviatsionnaia Tekhnika*, vol. 18, no. 2, 1975, p. 64-68.) *Soviet Aeronautics*, vol. 18, no. 2, 1975, p. 50-54. 9 refs. Translation.

A76-16779 **Sampling inspection and replenishment of stocks in the case of stored equipment with deteriorating quality (Stichprobenprüfung und Lagerergänzung bei eingelagerten Geräten mit abnehmender Qualität).** D. Oesterer. *Wissenschaftliche Berichte AEG-Telefunken*, vol. 48, no. 5, 1975, p. 213-217. In German.

The characteristics of the sampling procedure for the time of equipment storage are considered along with the strategies which are to be used after sampling. A mathematical description of two strategies is presented and the relative merits of the two strategies are discussed. Attention is given to the characteristics of the cost functions in the case of both strategies. G.R.

A76-16846 # **Fuel management model.** J. W. Stroup and W. J. Lackey (Douglas Aircraft Co., Long Beach, Calif.). *Operations Research Society of America and Institute of Management Sciences, Joint National Meeting, Las Vegas, Nev., Nov. 17-19, 1975, Paper.* 8 p.

This paper discusses the Fuel Management Model, a means of providing information to (1) assess fuel requirements by station for future aircraft schedules, (2) reduce fuel costs or consumption through efficient aircraft fueling policy, and (3) provide an airline with valuable inputs to negotiations with suppliers. Fuel shortages or different unit prices at different stations may require tankering (carrying more fuel than required on a flight leg) in order to minimize fuel costs or cope with fuel shortages. The fuel management model indicates where tankering is desirable or needed and incorporates these operations into the fueling policy. When fuel shortages occur it becomes important to consider a total fueling policy based on an entire flight schedule so that the competing demands from many flights can be resolved in the most efficient manner. The fuel management model is capable of providing such a policy based on the simultaneous consideration of fuel requirements of a large number of flights and supply limitations by station and supplier. (Author)

A76-18066 **Managing downstream weapons acquisition costs.** R. R. Shorey (U.S. Department of Defense, Office of the Secretary of Defense, Washington, D.C.). *Defense Management Journal*, vol. 12, Jan. 1976, p. 10-18.

The paper analyzes the key elements for structuring an approach to managing downstream weapons acquisition costs: operating and support (O&S) cost visibility; O&S cost-related thresholds; design trades to minimize life cycle costs; contract and other incentives to reduce O&S costs; and logistics alternatives. A sizable undertaking is required to extract O&S cost data from various diverse sources and information systems and to relate this to the weapon systems supported according to well-defined cost elements. A specific example of O&S cost-related parameters established as thresholds is provided. It is essential that the early establishment of O&S cost-related thresholds be supported by design analyses and trade-offs. Several approaches are discussed which aim at encouraging the contractor to assign top talent to initially design reliability and low support costs into a weapon system. Major conclusion is to reduce the out-year O&S cost budget by emphasis during the development and procurement phase of the design and support concept decisions which have the principal O&S cost impacts. S.D.

A76-18067 **Source selection and contracting approach to life cycle cost management.** J. W. Stansberry (U.S. Department of Defense, Office of the Secretary of Defense, Washington, D.C.). *Defense Management Journal*, vol. 12, Jan. 1976, p. 19-22.

Examination of a few examples shows that life cycle costing (LCC) must be considered early in the system acquisition process in order to avoid unnecessary expenditures for support costs. LCC must be introduced into the contractual process in all three phases: conceptual formulation/validation, full-scale development, and production. A discussion of LCC and source selection indicates that contracts must contain clauses specifically addressing LCC, ensuring that contractor efforts result in adequate LCC estimates prior to full-scale development. An additional contracting technique for encouraging contractors to design equipment with optimal life cycle costs is the reliability improvement warranty supported by monetary incentives. The production phase as the crucial phase for LCC is discussed on the examples of an aircraft and a radio. Recommendations on the application of the LCC concept are formulated, with provision for flexibility in design to cost goals so that appropriate adjustment can be made in order to reduce ownership cost. S.D.

A76-18068 **Warranties as a life cycle cost management tool.** C. R. Knight (ARINC Research Corp., Annapolis, Md.). *Defense Management Journal*, vol. 12, Jan. 1976, p. 23-28.

Warranties can provide significant benefits whenever their use is suitable to the type of military procurement. Reliability and maintainability of the equipment supported depend largely on contractor effort during design, development, and production of the equipment. A graph of reliability versus initial cost is presented which indicates an increasing cost associated with higher reliability. The basic problems with which the government customer is faced are discussed. The burden for a major portion of life cycle costs is placed on the manufacturer who must concern himself with both initial cost and support cost, in which case the cost curve of interest to the contractor is the total cost. Total cost responsability speculates that imposition of warranty provides the proper motivation - shared by buyer and seller - for reduced total costs. Misgivings expressed by equipment users and producers are discussed along with the supplier's risk in warranty pricing. Further investigation is needed to evaluate the full potential of warranties and their range of applicabilities as a cost-management technique. S.D.

A76-18069 **Designing for life cycle cost.** W. H. Boden (Magnavox Co., Fort Wayne, Ind.). *Defense Management Journal*, vol. 12, Jan. 1976, p. 29-37.

Life cycle cost (LCC) is referred to as the total cost of acquiring the product, establishing the necessary logistics base from which to deploy and use the product, and maintaining the product in operable condition over some prescribed period of time. A system of negative

and positive incentives is shown to provide the motivation for the contractor to realize or improve upon the predicted costs. The discussion is limited to the case of a UHF radio as a relatively simple subsystem equipment used in many different applications within systems. To win an LCC competition, the designer must attempt to assess the sensitivities of the overall LCC model and particularly examine any peculiarities of the sample use plan that will be implemented to measure the apparent LCC. In so doing, the designer is governed by three primary variables: the equipment specification, the maintenance-use concept, and the LCC verification sampling plan. Life versus MTBF (mean time between failures) versus cost-to-repair is discussed, along with designing the remote version of UHF radio and its maintenance philosophy. Future trends in LCC challenges to save ownership cost as opposed to discarding failed products are examined. S.D.

A76-18070 Techniques for a multifaceted discipline. D. Earles (Raytheon Co., Huntsville, Ala.). *Defense Management Journal*, vol. 12, Jan. 1976, p. 38-47.

Life cycle costing is a multifaceted technique consisting of a costing discipline, a procurement technique, an acquisition consideration, and a tradeoff tool. It is primarily concerned with operating and support (O&S) cost-estimating methods, minimizing total life costs for component procurements, source selection and balancing of acquisition and ownership costs, repair levels, and the impact of specific design features on O&S costs. Cost estimation by analogy is discussed relative to cost-to-cost estimating relationships and non-cost-to-cost estimating relationships. Life cycle cost (LCC) structuring is examined, with particular reference to LCC models as related to total cost models, logistic support models, design trade models, and level of repair models. It is shown that by the use of definitions and models provided by the customer, it is entirely possible to conduct a design competition which includes the lowest life cycle cost as a source selection factor, where the customer must design system requirements to meet affordable total life cycle costs. S.D.

A76-18072 Models a key to Air Force life cycle cost implementation. D. E. Collins (USAF, Wright-Patterson AFB, Ohio). *Defense Management Journal*, vol. 12, Jan. 1976, p. 54-59.

The life cycle cost (LCC) concept of weapon systems is established as a decision criterion throughout the weapon systems acquisition cycle. Three types of models that treat the operating and support (O&S) cost component of LCC are discussed: (1) cost factors models supported by Air Force-derived cost factors used to compute estimates of weapon systems O&S costs; (2) accounting models, i.e., models that compute the O&S portion of LCC as a function of equipment and program logistics parameters and add these costs; and (3) models that optimize over some subset of the range of support alternatives to minimize O&S costs. Accounting models are discussed relative to source selection decisions and design tradeoff decisions. Also discussed are optimum repair level analysis, maintenance manpower policy, and spares inventories. Efforts to incorporate consideration of O&S costs during conceptual and preliminary design studies need to be intensified. S.D.

A76-18073 Avionics proliferation - A life cycle cost perspective. R. M. Genet (USAF, Plans and Analysis Directorate, Wright-Patterson AFB, Ohio) and T. D. Meitzler (USAF, Aerospace Guidance and Metrology Center, Newark Air Force Station, Ohio). *Defense Management Journal*, vol. 12, Jan. 1976, p. 60-64.

Avionics proliferation is referred to as the development, production, and fielding of a large number of different avionics systems performing the same basic function. Proliferation can therefore result in greater expenditures in research, development, production, and logistic support. A detailed computerized accounting-type life cycle cost (LCC) model is developed to obtain the cost estimates for three options of inertial navigational system: use of an existing inertial navigational system already in the inventory, use of an already developed off-the-shelf system not in the inventory, and development of a new system. The model data are discussed along with performance versus LCC. It is shown that by applying LCC analysis across multiple system applications, an avionics policy might be derived that precludes unnecessary proliferation without excluding the introduction of new systems which represent true advances in such areas as production cost and reliability over existing systems in the inventory. S.D.

A76-18074 Design to cost models - Helping program managers manage programs. R. H. Anderson and T. E. Dixon (USAF, Systems Command, Kirtland AFB, N. Mex.). *Defense Management Journal*, vol. 12, Jan. 1976, p. 65-71. 12 refs.

Design to cost (DTC) is a management concept in which rigorous cost goals are established during development, and the control of systems costs (acquisition, operating and support) to these goals is achieved by practical tradeoffs between operational capability, performance, cost, and schedule. Two models are discussed: (1) the Mission Completion Success Probability (MCSP) model, which determines the probability that the total system completes its mission without being degraded below acceptable limits because of a critical failure of one or more of its subsystems; and (2) the Designing to System Performance/Cost (DSPC) model, which provides for the optimal allocation of resources and can sometimes be employed during the preliminary design phase to select the initial or baseline system configuration when more than one candidate subsystem is available to perform a given system functional requirement. System capability is evaluated on the basis of the Designing to System Performance/Cost/Effectiveness (DSPCE). A synopsis of DTC management methodology using MCSP, DSPC, and DSPCE is provided. S.D.

A76-18291 # Stress in the case of air traffic control personnel /taking into consideration future systems/ (Beanspruchung des Flugverkehr-Kontrollpersonals /unter Berücksichtigung künftiger Systeme/). W. Rohmert (Darmstadt, Technische Hochschule, Darmstadt, West Germany). *Deutsche Gesellschaft für Luft- und Raumfahrt, Jahrestagung, 8th, Bonn, West Germany, Sept. 16-18, 1975, Paper 75-026.* 10 p. 7 refs. In German.

The activities of persons engaged in air traffic control operations are examined and the stresses produced by these activities are analyzed. The investigation makes use of an approach of activity analysis developed by Rohmert et al. (1975). Results of a quantitative study of problem difficulty are discussed along with possible changes of stress conditions which occur as a result of the introduction of new systems. Attention is given to the results of stress measurements based on the observation of electrophysiological parameters. The described approach makes it possible to predict the stress corresponding to certain operational conditions. G.R.

A76-18650 * NASA management of the Space Shuttle Program. F. Peters (NASA, Johnson Space Center, Houston, Tex.). *Project Management Institute, Annual Seminar, San Francisco, Calif., Oct. 19-22, 1975, Paper.* 8 p. NASA-supported research.

The management system and management technology described have been developed to meet stringent cost and schedule constraints of the Space Shuttle Program. Management of resources available to this program requires control and motivation of a large number of efficient creative personnel trained in various technical specialties.

This must be done while keeping track of numerous parallel, yet interdependent activities involving different functions, organizations, and products all moving together in accordance with intricate plans for budgets, schedules, performance, and interaction. Some techniques developed to identify problems at an early stage and seek immediate solutions are examined. V.P.

A76-19198 **Compensating quality control.** L. F. Simmons (Georgia, University, Athens, Ga.). *Journal of Quality Technology*, vol. 8, Jan. 1976, p. 13-23. 5 refs.

The unique characteristics of compensating quality control through the combination of computer and multivariate analysis are illustrated on the basis of a hypothetical example of extrusion process in which the principal quality indicator is outside diameter of the tube under production. Three independent variables whose change have almost an immediate effect on the outside diameter during the extrusion process are considered: pulley speed, air flow, and screw speed. A quality control algorithm based on Box's (1957) principles is described, where a factorial experiment is performed by making small changes in the three independent variables which suffice to generate information on the effects of the variables without producing large quantities of unacceptable material. A computer is used to make the changes in the independent variables, retrieve the results, and analyze the data. The algorithm is discussed relative to formulation of the quality control procedure with its heuristics, simulated examples of the application of the quality control procedure, and examination of the influencing parameters of the procedure. S.D.

A76-19330 * **Space Shuttle management issues.** H. M. Roseman (NASA, Washington, D.C.). *American Institute of Industrial Engineers, Spring Annual Conference, 26th, Washington, D.C., May 20-23, 1975, Paper.* 6 p. NASA-supported research.

This paper describes the many management methods being implemented on the Space Shuttle Program. Management attention to cost reduction and the techniques being used to meet the Shuttle cost commitment are described. A detailed explanation is given for the NASA Performance Measurement System but all other major management tools being used are also discussed. (Author)

A76-19392 # **Engineering and maintenance preparation for Tri-Star into British Airways.** E. Gregory (British Airways, London, England). *Tech Air*, vol. 32, Feb. 1976, p. 2-7.

Engineering and maintenance provisions for the introduction of the first six TriStar-1011s into the British Airlines fleet are described. Provisioning was done manually. The total investment in spare engines and related equipment amounted to 6.7 per cent of the total aircraft cost. Preparations were made for 'in-house' warranty work, including negotiation of specific warranty agreements with manufacturers and development of a warranty procedures manual. A 75,000-lb-thrust engine installation was constructed, and service hangar space was expanded. A TriStar simulator was specified and utilized in training crews. Factors affecting the final selection of the check system are summarized. C.K.D.

A76-19396 **Competition in regular air transportation (La concurrence dans le transport aérien régulier).** C. Abraham. *France Transports - Aviation Civile*, Fall 1975, p. 69-75. In French.

A competitive market model is set up to probe the relative advantages in cost cutting and improved management claimed for competition as against minimized waste of resources and seat-mile capacity claimed for regulation. The central hypothesis of the model is a pronounced relationship between the portion of air traffic handled by an airline and the fraction of the total capacity offered by that airline. The nature of the market and its constraints are defined, variables with time and traffic load are isolated, and consideration is given to the share of total traffic, revenue from passengers, seat capacity, operating costs (investment, sales, personnel, fuel, overhead), and pricing/marketing policies (parameters to be optimized). Shortcomings and limitations of the model are enumerated and discussed. R.D.V.

A76-19599 * # **Down and up with PERT at Goddard.** J. E. Zerega (NASA, Goddard Space Flight Center, Greenbelt, Md.). *Astronautics and Aeronautics*, vol. 14, Feb. 1976, p. 65.

During the 1960s NASA Goddard Space Flight Center (GSFC) used the Program Evaluation and Review Technique (PERT) as its principal schedule planning and control tool in flight projects. After a temporary replacement of PERT by other techniques, PERT has been reinstituted on all but one of GSFC's flight projects. PERT has been combined with a computer graphics program which makes it possible to produce PERT drawings in only a few hours' time. G.R.

A76-20138 **Aspects of economics and production management in mechanical engineering (Voprosy ekonomiki i organizatsii proizvodstva v mashinostroenii).** Edited by A. A. Afanas'ev. Kazan, Kazanskii Aviatsionnyi Institut (KAI, Trudy, Seriia Aviatsionnaia Tekhnologiia i Organizatsiia Proizvodstva, No. 162), 1973. 40 p. In Russian.

Papers are presented on the service life of aircraft engines, on cost effectiveness criteria for aircraft structures on improving productivity in machine construction workshops, and on optimal production of aircraft engines. Also examined are the production of gas turbine engines, the analysis of automatic systems, and the optimization of the maintenance cycle of automatic machines. B.J.

A76-20141 # **Indices and stimulation of production effectiveness in machine construction factory workshops (Pokazateli i stimulirovanie effektivnosti proizvodstva v tsekhakh mashinostroitel'nykh predpriiatii).** A. F. Egorov and K. Kh. Gizatullin. In: Aspects of economics and production management in mechanical engineering. Kazan, Kazanskii Aviatsionnyi Institut, 1973, p. 12-16. 6 refs. In Russian.

A method, utilizing various technico-economic indices at the planning level, is proposed for increasing the productivity of machine workshops, with a large quantity of production, complex products, a long-duration production cycle, and frequent changes in product design and production technology. The indices utilized include production quantity, productivity, hourly cost, and mean wave of the working personnel. B.J.

A76-21160 # **Model variants for the application of factor analysis to the investigation of the development of essential material and financial characteristic criteria in air transportation (Modellvariante für die Anwendung der Faktorenanalyse zur Untersuchung der Entwicklung wesentlicher materieller und finanzieller Kennziffern der Personenbeförderung im Luftverkehr).** P. Wölk (Gesellschaft für internationalen Flugverkehr mbH, Berlin, East Germany). *Technisch-ökonomische Information der zivilen Luftfahrt*, vol. 11, no. 6, 1975, p. 332-339, 368. In German.

Several mathematical models evaluating the effects of various operational and economic factors in air transportation are described. The key to the modeling is the development of various characteristic criteria which are dependent upon these factors. The models include the plan-plan comparison of plan numbers of an initial base with plan numbers of a corresponding new base. B.J.

A76-21161 # **Intensification measures for the maintenance of capital goods at Aeroflot (Intensivierungsmassnahmen zur Aus-**

lastung der Grundfonds bei der Aeroflot). E. Muchordych (Gosudarstvennyi Nauchno-Issledovatel'skii Institut Grazhdanskoi Aviatsii, Moscow, USSR). *(Grazhdanskaia Aviatsiia,* no. 6, 1975, p. 18, 19.) *Technisch-ökonomische Information der zivilen Luftfahrt,* vol. 11, no. 6, 1975, p. 340-344. In German. (Translation).

The paper is devoted to production engineering and project management techniques used by Aeroflot to maintain and repair its fleet. Emphasis is on the production capacity of the maintenance methods, with an analysis of the following characteristic parameters: manhours, production cycles, parallel production, failures, deadlines and efficiency. The concept of project intensity is introduced and used to compare the flight performance of two aircraft. B.J.

A76-21851 # **Federal technology transfer - Results of a survey of formal programs.** J. D. Roessner (NSF, Office of National R & D Assessment, Washington, D.C.). *American Society of Mechanical Engineers, Winter Annual Meeting, Houston, Tex., Nov. 30-Dec. 4, 1975, Paper 75-WA/Aero-4.* 18 p. 8 refs. Members, $1.50; nonmembers, $3.00.

In early spring of 1975, 25 Federal agencies having formal technology transfer programs or activities were surveyed via structured questionnaire. Data on program structure, procedures, staffing, budgets, and relationships with user groups were collected and analyzed. This paper reports the findings of the study. Measures of program effectiveness are developed and related to factors that research and experience suggest are likely to influence program success. In addition, patterns suggesting differences and similarities across programs are identified and analyzed. Strategies likely to improve the effectiveness of transfer/utilization programs are identified and needs for further research discussed. (Author)

A76-21852 * # **Risk Management Technique for design and operation of facilities and equipment.** O. H. Fedor (NASA, Kennedy Space Center, Cape Canaveral, Fla.), W. N. Parsons (Boeing Co., Seattle, Wash.), and J. Coutinho (U.S. Army, Material System Analysis Activity, Aberdeen Proving Ground, Md.). *American Society of Mechanical Engineers, Winter Annual Meeting, Houston, Tex., Nov. 30-Dec. 4, 1975, Paper 75-WA/Aero-5.* 6 p. 8 refs. Members, $1.50; nonmembers, $3.00.

The Risk Management System collects information from engineering, operating, and management personnel to identify potentially hazardous conditions. This information is used in risk analysis, problem resolution, and contingency planning. The resulting hazard accountability system enables management to monitor all identified hazards. Data from this system are examined in project reviews so that management can decide to eliminate or accept these risks. This technique is particularly effective in improving the management of risks in large, complex, high-energy facilities. These improvements are needed for increased cooperation among industry, regulatory agencies, and the public. (Author)

A76-22609 # **COS B - A European Satellite Program.** E. Högenauer (Messerschmitt-Bölkow-Blohm GmbH, Ottobrunn, West Germany). *Association Aéronautique et Astronautique de France, Symposium Spatial Européen, 14th, Toulouse, France, Apr. 23-25, 1975, Paper.* 48 p.

Technical and managerial experiences of the COS B Program will be discussed. A brief technical description of the satellite is presented. The effectiveness in comparison with already executed European Satellite is discussed. A statement about the reality of the European space cooperation is given with the background of the experience gained in the COS-B program. (Author)

A76-23260 # **Network analysis in airline projects.** A. J. Ferguson (British Airways, London, England). *Tech Air,* vol. 32, Mar. 1976, p. 2-11.

The application of network analysis to the planning and control phases of the Concorde program is discussed. The network consists of commercial activities: passenger and mail procedures, cargo loading and containerization, traffic handling and line station facilities, manpower organization and training, and marketing; engineering and maintenance: spares and equipment requirements, maintenance and overhaul plans and documentation, airport ramp facilities, hangar and docking facilities, component/engine overhaul and test facilities and line station spares; flight operations: flight simulation and technical training, flight planning and documentation, route airfield requirements, and cabin services; and support services. A typical subnet diagram is included illustrating the many intertwined cabin service activities. Typical sections from reports which give a complete catalogue of all activities currently in the control network are provided, including report sections dealing with engineering management and support services. B.J.

A76-23786 **Information flows, management styles, and technological innovation.** J. D. Goldhar (National Science Foundation, Office of Science Information Service, Washington, D.C.), L. K. Bragaw (U.S. Coast Guard Academy, New London, Conn.), and J. J. Schwartz (Pennsylvania, University, Philadelphia, Pa.). *IEEE Transactions on Engineering Management,* vol. EM-23, Feb. 1976, p. 51-62. 35 refs.

The paper provides a data base for improving R & D management through better understanding of the information flow and management style variables in the innovation process. The research reported concentrates on the initial 'idea-generation' stage of innovation. It has four main parts: (1) a background discussion of technological innovation emphasizing idea stimuli and behavioral characteristics of innovators; (2) a description of the types, sources and channels of stimulus information; (3) a discussion of the role and importance of R & D management discussion making styles; and (4) a new model for the 'idea-generation' stage which incorporates information flows and a variety of possible managerial and policy actions. Conclusions include recommendations to R & D managers about characteristics of research environments conducive to technological innovation. (Author)

A76-23787 * **The timing and sources of information for the adoption and implementation of production innovations.** J. E. Ettlie (Illinois, University, Chicago, Ill.). *IEEE Transactions on Engineering Management,* vol. EM-23, Feb. 1976, p. 62-68. 12 refs. Research supported by Northwestern University, U.S. Army, and NASA.

Two dimensions (personal-impersonal and internal-external) are used to characterize information sources as they become important during the interorganizational transfer of production innovations. The results of three studies are reviewed for the purpose of deriving a model of the timing and importance of different information sources and the utilization of new technology. Based on the findings of two retrospective studies, it was concluded that the pattern of information seeking behavior in user organizations during the awareness stage of adoption is not a reliable predictor of the eventual utilization rate. Using the additional findings of a real-time study, an empirical model of the relative importance of information sources for successful user organizations is presented. These results are extended and integrated into a theoretical model consisting of a time-profile of successful implementations and the relative importance of four types of information sources during seven stages of the adoption-implementation process. (Author)

A76-24061 **The economics of light aircraft production.** R. H. Wild. *Interavia,* vol. 31, Mar. 1976, p. 224-226.

A hypothetical case history of the production of a light single-engined aircraft is presented to illustrate economic problems inherent in aircraft manufacturing. The estimated cost and gross margins are followed through successive stages of development. The economic impact of cutbacks in production at various stages is discussed. C.K.D.

A76-26049 # **Economics of air transport (Ekonomika grazhdanskoi aviatsii).** A. V. Miroshnikov, I. I. Spotkai, N. N. Gromov, E. V. Makarov, G. S. Dibrova, E. F. Busalov, and A. Ia. Chernyshev. Moscow, Izdatel'stvo Transport, 1975. 304 p. 53 refs. In Russian.

The book evaluates and characterizes in detail the role of air transport in the general transportation picture as well as the whole national economy. Most of the details apply to the Soviet economy and air transport system, though it is attempted to extend the discussion to general economies. Topics covered include the organization of the control of civil aviation; civil aviation planning principles; management of main civil aviation funds; indices and means of increasing the efficiency of the use of main funds; structure, normalization, and turnover of working capital; productivity and a system for remuneration of labor in civil aviation; material incentive systems; labor and salary planning; methods for determining prime costs in civil aviation; construction of tariff systems; comparison of expenditures and intakes and securing profitability; economic effectiveness of capital investments; and methods for determining the economic effectiveness of aircraft and engine utilization and of the introduction of new types of aircraft. P.T.H.

A76-26192 # **Organization and execution of the Symphonie project (Organisation und Durchführung des Projektes Symphonie).** G. Mösl. *Deutsche Gesellschaft für Luft- und Raumfahrt, Symposium über Symphonie und zukünftige Kommunikationssatelliten, Bad Godesberg, West Germany, Nov. 27, 1975, Paper 75-041.* 25 p. In German.

The paper sets forth the scope and goals of the French-German communications project known as Symphonie, and outlines the basic structure of the project organization, describing the bilateral decision process, organization of project groups, and the role of the main contractor, the French-German industrial consortium CIFAS. Execution of the project is then summarized in terms of schedules, deadlines, agreements and contracts, and costs. P.T.H.

A76-28274 **Economic and financial aspects of quality (Aspects économiques et financiers de la qualité).** J.-M. Gogue (Le Matériel Téléphonique, Boulogne-Billancourt, Hauts-de-Seine, France). *AFCIQ, Bulletin,* vol. 12, Mar. 1976, p. 11-15. In French.

The relationship between costs and quality is dicussed and an attempt is made to give a definition of the cost of quality. Definitions are given for important terms encountered in quality control and reliability analysis (e.g., product qualification, maintenance and sampling, repairs, guarantees, inspection, product adaptation, etc.) which are classified under three general categories: prevention, detection and faults. Some applications of the calculation of quality costs are presented and the implementation of a quality control procedure is described. B.J.

A76-28638 **Railroad research - The changing emphasis.** R. E. Parsons (Federal Railroad Administration, Washington, D.C.). *Mechanical Engineering,* vol. 98, Apr. 1976, p. 29-33.

To solve today's and tomorrow's railroading problems, urgent needs are short-term safety-oriented solutions. Four areas of research and development are discussed: rail safety, which includes the track program; freight systems, which covers vehicles, components, yards, and terminals; passenger systems, which is aimed primarily at supporting intercity passenger service and solving Amtrak's problems; and rail economics and rail systems analysis to find better ways of conducting and managing rail operations. Future R&D plans include electrification with a more central power supply for at least the high-density main lines. A new area in freight systems deals with inter-modal truck-rail research and development that maximizes the basic efficiencies of each system. S.D.

A76-31424 # **The Lifting-Body-Airship - A future delivery system for remote area logistics.** W. M. Miller, Jr. (Aereon Corp., Princeton, N.J.), W. F. Putman (Aereon Corp.; Princeton University, Princeton, N.J.), and C. D. Havill. *Canadian Aeronautics and Space Journal,* vol. 22, Jan.-Feb. 1976, p. 23-29. 14 refs.

The problem of gaining access to natural resources located in remote or almost inaccessible regions is considered on the basis of three criteria for an optimal solution. It is argued that the Lifting-Body-Airship (LBA) uniquely meets these criteria and can provide 'remote area logistics' for the developing world. Fuel efficiency and productivity are compared for conventional airships and CTOL, VTOL, C/STOL, and V/STOL LBAs. It is shown that the STOL LBA is unsurpassed in productivity while the V/STOL LBA is the most energy-efficient vehicle. F.G.M.

A76-31808 **Airline deregulation - A hoax.** J. W. Callison (Delta Air Lines, Inc., Atlanta, Ga.). *Journal of Air Law and Commerce,* vol. 41, Autumn 1975, p. 747-791. 107 refs.

An attempt is made to establish that the Federal Aviation Act of 1938 provides for the goals of the reforms contained in the Aviation Act of 1975. The history of the Civil Aeronautics Board's application of provisions regarding entry and exit and pricing competition is examined. It is argued that needed reforms can be accomplished by periodic review of the existing statute; extensive new legislation is deemed unnecessary. C.K.D.

A76-31809 **Need for continued economic regulation of air transport.** M. A. Brenner (Trans World Airlines, Inc., New York, N.Y.). *Journal of Air Law and Commerce,* vol. 41, Autumn 1975, p. 793-813. 8 refs.

It is argued that competitive conditions in the air transportation tend to lead to overcapacity. This is the direct result of a combination of factors which is unique to the supply/demand equation of industry, including the inseparable linkage of production and consumption, with no storage for surplus, the competitive value of schedule frequency, and substantial 'fixed' costs. It is predicted that free price competition would eliminate competition in non-price channels, especially in schedule capacity, only until all carriers have matched the lowered price, with an eventual increase in overcapacity. It is argued that deregulation would have severe detrimental effects on the ability of airlines to raise capital for future progress. C.K.D.

A76-31812 **Deregulation, the adjustment process.** W. L. Demory (Civil Aeronautics Board, Washington, D.C.). *Journal of Air Law and Commerce,* vol. 41, Autumn 1975, p. 873-883. 12 refs.

The short-term process of adjustment to the elimination of price and entry control in the air transportation industry is examined using static equilibrium models. It is predicted that fares and service may temporarily reach unprofitable levels in some markets until a new equilibrium point is attained. The existing network should be maintained, since the vast majority of city pairs are economically viable. Certificated carriers may be expected to have an advantage during the adjustment period due to an established route network, market identity, and a history of service. Empirical evidence from England and Australia, where the trucking industry was abruptly deregulated, indicates that no severe instability would occur. C.K.D.

A76-33216 # **Methods of interpretation of aerial photographs in forest inventory and management in the USSR.** V. I. Sukhih and S. G. Sinitsin (Ministry of Forestry of USSR, Moscow, USSR). In: Symposium on Remote Sensing and Photo Interpretation, Banff, Alberta, Canada, October 7-11, 1974, Proceedings. Volume 2. Ottawa, Canadian Institute of Surveying, 1975, p. 535-540. 12 refs.

Methods used in the U.S.S.R. to estimate forest resources and to monitor the extent of damage due to insect infestation and industrial emissions are outlined. False color multispectral photographs facilitate the accurate determination of the boundaries of forest compartment. These photographs, on a scale of 1:15,000, are used in conjunction with ground data to obtain forest estimates. The following relations are determined on the basis of ground measurements at test sites considered typical of the forest under investigation: crown diameter to diameter at breast height; height and diameter at breast height; total height to the height at which the crown diameter is greatest; crown density to crown stock. The number of trees counted at the test site is compared with the number visible in an aerial photograph. Stereoscopic analyses of the photographs are then carried out to determine the difference in absolute parallax, from which tree height estimates are derived. Correlations between the density, height, and diameter of crowns permit calculation of trunk diameter. Special techniques based on this method are applied in the case of forests in dry or mountainous areas. C.K.D.

A76-33610 # **Planning and programming aircraft production.** C. G. Ives (Hawker Siddeley Aviation, Ltd., Hatfield, Herts., England). *Tech Air*, vol. 32, June 1976, p. 2-7.

Production program planning for the production of a new aircraft is discussed in detail. The determination of the correct sequence and priority of the activities applicable to the different stages of production is considered, together with the allocation of elapsed times for each unit on the basis of past experience and an evaluation of the complexity of the design under production. The application of program evaluation and review technique (PERT) networks in the planning and scheduling of aircraft production is described, and factors affecting the allocation of manpower are discussed. C.K.D.

A76-35861 # **The economics, organization and planning of aircraft production (Ekonomika, organizatsiia i planirovanie aviatsionnogo proizvodstva).** D. E. Starik, F. I. Paramonov, and I. I. Bugakov. Moscow, Izdatel'stvo Mashinostroenie, 1976. 384 p. 23 refs. In Russian.

The book provides an analysis of the role of aircraft production in the national economy of the USSR, and its relationship to other heavy industry. Methods of organizing and planning the production of a multicomponent aircraft are given for the overall project and for individual components and subsystems. Particular attention is allocated to proper assignment of available manpower and to the physical layout of production units; determination of the time to be allowed for completion of the different stages of work is considered in detail. Economic models for assessing the cost effectiveness of a new technology are outlined. The administration of support functions, such as the production of spare parts and the maintenance and quality control of completed aircraft, is discussed. C.K.D.

A76-36223 **Selecting a project management technique.** R. P. Klaver. *Defense Management Journal*, vol. 12, Apr. 1976, p. 53-60.

Criteria for selecting a project management technique are discussed and a classification tree including such techniques as PERT, MOST, SKED, TOPS, MAP, RAMPS, CPM, ESP and GERT is presented. Tables are presented listing differences between combined Gantt charts/cost curves and project control charting system and also desired project management technique features for a small development project. Selection procedures are considered, with emphasis on decision criteria and first-cut and second-cut decision matrices. B.J.

A76-36591 **An aircraft manufacturer's view of service problems and their correction.** E. A. Green and A. S. Lied (Lockheed-California Co., Burbank, Calif.). *Society of Automotive Engineers, Air Transportation Meeting, New York, N.Y., May 18-20, 1976, Paper 760513.* 10 p.

The high equipment investment cost of today's large transport aircraft, the high daily utilization desired or required for profitable operations, and the potential revenue losses associated with service interruptions make it mandatory for the manufacturer to take an active part in the early reduction and correction of service problems. This paper deals with an aircraft manufacturer's approach to meeting this challenge. The accumulation and evaluation of service data are discussed together with the investigations initiated to properly understand the problem, and the management procedures established to assure a safe and speedy problem resolution with a minimum of service interruption. Specific examples are used to illustrate the types of decisions reached. The continuous coordination effort required between the aircraft manufacturer and its subcontractors to attain and exceed service reliability objectives is considered. (Author)

A76-36592 **Managing service deficiencies - A pilot perspective.** G. T. Henderson and D. G. Teuscher (United Airlines, Inc., Chicago, Ill.). *Society of Automotive Engineers, Air Transportation Meeting, New York, N.Y., May 18-20, 1976, Paper 760514.* 10 p.

The role of the Captain in the preservation of service quality and safety is discussed. The materials used by the Captain in assessing the capability of his aircraft to complete a given mission safety are outlined, with special attention given to the use of the Minimum Equipment List. Communication between pilots and manufacturers on the subject of design deficiencies is stressed. Factors adversely affecting the ability of the pilot to deal effectively with deficiencies, including poor dispatch planning, a surfeit of bells, horns and lights in the cockpit even under normal operating conditions, and warning system inaccuracy, are considered, together with the consequences of derivative technology and aging transport fleets. C.K.D.

A76-36900 **Technological support for future communications satellites /Future Communications Satellite Program of the West German Federal Ministry for Research and Technology/ (Zur Technologie-Förderung zukünftiger Kommunikationssatelliten /ZKS-Programm des BMFT/).** R. Mayer (Bundesministerium für Forschung und Technologie, Bonn, West Germany). *Raumfahrtforschung*, vol. 20, May-June 1976, p. 156-160. In German.

Planning for industrial policy and technological developments are discussed as a basis for a development and support program of the Federal Ministry for Research and Technology regarding future communication satellite systems. The support of the most important technology areas of advanced communication satellites will enable the German electronics and space industry to offer competitive systems and subsystems for global and domestic systems. (Author)

A76-38195 # **Developing a Design to Cost System.** R. S. H. Millard (Hercules, Inc., Magna, Utah). *American Institute of Aeronautics and Astronautics and Society of Automotive Engineers, Propulsion Conference, 12th, Palo Alto, Calif., July 26-29, 1976, AIAA Paper 76-662.* 13 p. 16 refs.

This paper presents the author's experience in developing a Design to Cost System for solid rocket motor manufacturing at the contractor level. Cost models used for derivation of design to cost targets, considerations in apportioning costs at the component level, mechanisms for substantiating target costs including a tracking and reporting system, controls, responsibilities, and interactions of involved personnel are all described. The necessary forms, form guides, and reporting formats are included. The paper is intended as a primer for those defense contractors who are faced with the design to cost requirement for the first time. (Author)

A76-38196 # **Design-to-Cost for development contracts.** M. Kayton (TRW Defense and Space Systems Group, Redondo Beach, Calif.). *American Institute of Aeronautics and Astronautics and Society of Automotive Engineers, Propulsion Conference, 12th, Palo Alto, Calif., July 26-29, 1976, AIAA Paper 76-663.* 5 p. 14 refs.

During the preliminary design of a weapon system that will be in use for many decades, it is important to understand what costs are being committed in the future and on what basis to compare the present and future costs of alternative designs. Economically-sound methods for treating costs are described, including an accurate means of treating inflation. Spacelab avionics is used as an example. The history of Design-to-Cost is traced from World War I, when specialized military products were first procured at administratively-determined prices. A trend is predicted toward fixed specification parameters, not subject to trade studies, and flexible parameters which can be varied according to contractually-defined sensitivity coefficients. The future effect on government and industry of including Design-to-Cost in development contracts is predicted.
(Author)

A76-39219 **Design to Cost Conference, Newport Beach, Calif., December 1, 2, 1975 and Arlington, Va., February 9, 10, 1976, Abridged Proceedings.** Conference sponsored by the American Institute of Aeronautics and Astronautics. Los Angeles, American Institute of Aeronautics and Astronautics, Inc., 1976. 116 p.

Summaries are presented of ten papers reviewing the state of the art of design-to-cost methods and discussing the application of these methods to particular projects. The design-to-cost objectives of the Department of Defense are outlined. Individual topics include the implementation of the design-to-cost programs for the APN-209 absolute altimeter, the XM-1 tank, the F-15, the advanced medium STOL transport, and the guided missile frigates FFG-7 ship acquisition program. The management of life cycle costs in the Department of Defense is also treated. C.K.D.

A76-39282 **Energy conservation - Back to basic engineering.** F. H. Ramseur, Jr. (Cities Service Oil Co., Tulsa, Okla.). *Energy Communications,* vol. 1, no. 3, 1975, p. 319-328.

Engineering involvement in the development, organization, and maintenance of an energy conservation program for industrial operations is discussed. The efforts of the engineering staff may be effectively channeled in two directions. Together with the operations and maintenance group for a given plant, the engineering staff should pursue the identification, evaluation, and implementation of energy optimization opportunities in routine operations and direct maintenance programs required for energy optimization. Key indicators of energy efficiency should be developed to characterize a given process or piece of equipment. In addition, the Process Engineering Group should define potential energy optimization opportunities requiring physical revision and capital expenditure and identify areas in which there is a need for basic changes in operating philosophy and standards. The engineering staff should be further responsible for the continuous evaluation and balancing of available fuels and costs, and for anticipating future energy developments and their associated technological requirements. C.K.D.

A76-39475 **Effective management of research and development.** P. A. F. White. New York, Halsted Press, 1975. 301 p. 84 refs. $24.95.

General considerations of R and D activities are discussed, taking into account the total national expenditure on R and D, expenditure by different sectors, expenditure in universities and research associations, the cost per professional scientist, research in industry, and profitability and research ratio. Attention is also given to the structure of R and D organizations, available sources of research effort, the choice of an R and D portfolio, the control of R and D projects, the efficiency and productivity in R and D, aspects of staff selection and management, laboratory planning and administration, and leadership in research organizations. G.R.

A76-39597 **Design organisation - Past, present and future.** H. G. Conway. *Aeronautical Journal,* vol. 80, May 1976, p. 205-208.

Basic differences in design methodology practiced today and its counterpart at the time of the industrial revolution are identified, and major trends are extrapolated to predict the general organization of a design team in the future. There has been an increasing tendency for personnel to have obtained training in theoretical rather than practical design. The extreme complexity and multidisciplinary nature of major design projects today makes adequate communication between members of the design team at all levels, from production to top management, of paramount importance. In the future, the average level of education of design personnel will increase, and the range of skills, particularly at the lower end of the talent scale, will become more limited. Design teams must be able to successfully integrate technical and aesthetic considerations. The computer will be of key importance in the design process. C.K.D.

A76-39598 **Co-operation and diversification.** W. J. Strang (British Aircraft Corp., Ltd., Bristol, England). *Aeronautical Journal,* vol. 80, May 1976, p. 209-212.

Special features of design management in cooperative and diversified projects are discussed with particular reference to the aerospace industry. The advantages and limitations of different forms of organization for cooperative projects - direct partnership, prime contractor with risk-sharing subcontractors, prime contractor with subcontractors - are considered. It is argued that stable partnerships in European aerospace must of necessity be multiproject. Political acceptability and industrial efficiency are primary requirements for successful organization of such partnerships. The desirability of developing strong project loyalty is stressed for both single- and multiproject endeavors. Diversification offers the opportunity to exploit skills and facilities in new and profitable areas and to utilize temporary excess manpower. In high-technology fields, care must be taken to ensure good communication between design and production teams and to select areas with a large enough market to offset the high cost of research and development. C.K.D.

A76-40341 **Development of automatic control systems for fuel and energy management (Rozvoj automatizovanych systemu rizeni v resortu paliv a energetiky).** M. Drahny, J. Kolombova, P. Ludvicek, J. Spanhel, and P. Kohout (Vyzkumny Ustav Energeticky, Prague, Czechoslovakia). *Energetika,* vol. 26, Feb. 1976, p. 51-54. In Czech.

The paper discusses the goals and principles determining the process of introducing automatic control systems to aid in the management of fuel and energy resources. Problems related to the change-over to automation are examined from the viewpoint of management and administration responsible for such plans. Means at the disposal of the central administrative body are outlined, and plans for their employment are described. Successful implementation of automatic control systems depends on three factors: the availability of qualified personnel, development of a methodology, and procurement of the corresponding technical means. P.T.H.

A76-40347 **A brief history of solid-waste management.** D. G. Wilson (MIT, Cambridge, Mass.). *International Journal of Environmental Studies,* vol. 9, no. 2, 1976, p. 123-129. 10 refs.

This paper reviews documents giving no more than a series of glimpses of solid-waste problems and treatment over the last three-thousand years in, principally, the Western Hemisphere. The problems faced by city dwellers in dealing with their solid wastes are shown to have changed remarkably little during this period. Major changes have occurred in the character of wastes only in the last few decades, but these changes have not brought about changes of a similar scope in management methods. (Author)

A76-40644 **Maritime application - Fleet management systems.** E. D. Story (Marine Management Systems, Inc.). In:

EASCON '75; Electronics and Aerospace Systems Convention, Washington, D.C., September 29-October 1, 1975, Record. New York, Institute of Electrical and Electronics Engineers, Inc., 1975, p. 8-A to 8-N.

The paper examines the application of the MARISAT system to fleet management. There are three basic areas of application identified according to how data is transmitted and used within a shipping company's operation: general communications (ship to shore and shore to ship), fleet management functions (primarily ship to shore), and industry service functions (primarily shore to ship). The vessel performance reporting system is discussed along with the use of shipboard minicomputers. B.J.

A76-41500 Managing high-technology programs and projects. R. D. Archibald (Bendix Corp., Southfield, Mich.). New York, Wiley-Interscience, 1976. 287 p. 67 refs. $18.95.

The development of the project management concept is one of the most significant contributions to management theory and practice. All aspects of program/project management are treated: basic principles, characteristics of programs and projects, the unique rôle of the program/project manager and ways of filling the role, the organizational aspects of both single and multiple projects, and the specifics of managing particular programs or projects. Basic project management information needs are described for planning, work authorization, control, evaluation, and reporting. The complexities of advanced computer-based project management information systems are not included as they are beyond the scope of the book; however, appropriate reference to and summary descriptions of such systems are included. Outlines for two five-day seminars on project management are presented. S.D.

A76-42227 # Experimental design, the problem of quality, relationship among those collaborating (Conception des expériences, problème de la qualité, les relations entre les coopérants). L. Dulherm (Centre National d'Etudes Spatiales, Toulouse, France). In: Technology of scientific space experiments; International Conference, Paris, France, May 26-30, 1975, Reports. Toulouse, Centre National d'Etudes Spatiales, 1975, p. 1-9. In French.

The paper deals with various aspects of program and mission planning concerning the development of a scientific satellite (D2B) for ultraviolet astronomy (solar and galactic). Experience in creating an organization for satellite development planning is discussed from the technological and contractual points of view. Problems of quality control are considered, with emphasis on radiation protection of the optical equipment, and fatigue testing of the components. Collaboration of laboratories in research and development is examined. B.J.

A76-42230 # Coordination of the OSO-I experiment of the LPSP (Coordination de l'expérience OSO-I du L.P.S.P.). M. Vite (CNRS, Laboratoire de Physique Stellaire et Planétaire, Verrières-le-Buisson, Essonne, France). In: Technology of scientific space experiments; International Conference, Paris, France, May 26-30, 1975, Reports. Toulouse, Centre National d'Etudes Spatiales, 1975, p. 33-50. In French.

The paper describes the organization of a joint project involving NASA and the Laboratoire de Physique Stellaire et Planétaire, utilizing the OSO-I. The general organization of the project is discussed, with emphasis on the responsibilities of the LPSP, the relationship between the laboratory and CNES, and the relationship between the laboratory and NASA. Various aspects of internal coordination in the laboratory are examined, including scientific, engineering, and administrative responsibilities. The development of a protoflight is considered, giving attention to models and prototypes and integration and qualification of the protoflight. B.J.

A76-42233 # Methods of operation at the Département de Recherches Spatiales /Radioastronomie/ of l'Observatoire de Meudon (Méthodes de travail au Département de Recherches Spatiales /Radioastronomie/ de l'Observatoire de Meudon). R. Knoll. In: Technology of scientific space experiments; International Conference, Paris, France, May 26-30, 1975, Reports. Toulouse, Centre National d'Etudes Spatiales, 1975, p. 71-81; Discussion, p. 82, 83. In French.

The Radioastronomie Spatiale group was created 13 years ago and has performed a number of experiments utilizing sounding rockets, balloons, and interplanetary probes. The STEREO and ISEE programs are briefly described. Various operational aspects of the laboratory are examined, including technological autonomy, subcontracting, component reliability-performance tradeoffs (applied to circuitry and packaging), circuit design (preamplifier, intermediate frequency amplifier, and Gaussian white noise generator). The relationship between the laboratory and CNES is discussed, together with budgeting and personnel factors. B.J.

A76-42234 # Scientific space experiments realized at Saclay since 1966 - Organization and methods of operation (Expériences scientifiques spatiales réalisées à Saclay depuis 1966 - Organisation et méthodes de travail mises en place). P. Keirle (Commissariat à l'Energie Atomique, Centre d'Etudes Nucléaires de Saclay, Gif-sur-Yvette, Essonne, France). In: Technology of scientific space experiments; International Conference, Paris, France, May 26-30, 1975, Reports. Toulouse, Centre National d'Etudes Spatiales, 1975, p. 85-93. In French.

Scientific space experiments developed by the Service d'Electronique Physique of the nuclear research center at Saclay are reviewed, giving attention to balloon and sounding rocket X-ray experiments, the ESRO II proton spectrometer experiment, the Heos A1 proton and electron spectrometer experiment, the TD1 experiment and the Heos 2 experiment. Some considerations toward the reexamination of project planning and organization methods at CEN Saclay are put forth. These considerations include the difficulty of defining the technical specifications of the instrumentation at the start of the project, the problem of close collaboration between physicists and technicians during the planning stage, and the reutilization of experience gained in previous research and development. B.J.

A76-42236 # Atlas S 183 experiment aboard Skylab (Atlas S 183 expérience embarquée sur Skylab). M. A. Magnan (CNRS, Laboratoire d'Astronomie Spatiale, Marseille, France). In: Technology of scientific space experiments; International Conference, Paris, France, May 26-30, 1975, Reports. Toulouse, Centre National d'Etudes Spatiales, 1975, p. 107-118. In French.

The joint NASA-French Atlas S 183 experiment aboard Skylab was designed for the ultraviolet spectrophotometry of stars and other celestial bodies. The instrumentation weighed 80 kg, had a power of 50 W and three telemetry channels, and, being semiautomatic, depended largely on the astronauts. Various features of the Atlas experiment are discussed, including planning and financing (with a discussion of time and cost factors), organization and planning of the project, and qualification and integration processes. B.J.

A76-42237 * # Planning and operating experiment S-183 on the three Skylab missions. H. L. Atkins (NASA, Marshall Space Flight Center, Space Sciences Laboratory, Huntsville, Ala.), G. Courtes, M. Laget, and A. Vuillemin (CNRS, Laboratoire d'Astronomie Spatiale, Marseille, France). In: Technology of scientific space experiments; International Conference, Paris, France, May 26-30, 1975, Reports. Toulouse, Centre National d'Etudes Spatiales, 1975, p. 119-133. 8 refs.

The Skylab vehicle from its first conception until its flight underwent several iterations. In a similar manner, the scientific

experiments changed in both their physical appearance and operational mode because of the evolution of Skylab. In some cases the scientific requirements changed operational requirements of Skylab. The interactions between Skylab and the scientific experiments objectives as well as individual experiment problems are the subject of this paper. The authors use examples from the experiment S-183 (Ultraviolet Panorama) as well as examples from sophisticated groups of experiments such as the Apollo Telescope Mount (ATM). Examples of the positive aspects of the operation are indicated as well as problems, their solution, and the decision-making process. Various phases of the program are discussed and important aspects emphasized. Some general conclusions and recommendations are presented which, hopefully, will aid potential experimenters on Shuttle payloads. (Author)

A75-42259 # **Use of a computer for management of onboard experiments (Utilisation d'un calculateur pour la gestion d'expériences embarquées).** M. Lamboley (Centre National d'Etudes Spatiales, Toulouse, France). In: Technology of scientific space experiments; International Conference, Paris, France, May 26-30, 1975, Reports. Toulouse, Centre National d'Etudes Spatiales, 1975, p. 365-371; Discussion, p. 371, 372. In French.

The paper gives a general description of the CN 2 computer for deferred-time remote control, management and real time control of satellite instruments, and formatization of telemetry. The process of exchanging information between the computer and the ground and between the computer and the onboard instruments is outlined. The advantages and limitations of computer management are discussed. P.T.H.

A76-42260 # **General organization of the utilization of scientific satellites (Organisation générale de l'exploitation des satellites scientifiques).** M. R. Vidal and M. M. Dauch (Centre National d'Etudes Spatiales, Toulouse, France). In: Technology of scientific space experiments; International Conference, Paris, France, May 26-30, 1975, Reports. Toulouse, Centre National d'Etudes Spatiales, 1975, p. 373-381. In French.

The paper describes the structure, goals, and operational procedures of a new organization formed within CNES to oversee the various projects in order to ensure their maximum utilization. The group will survey problems at the level of the experiments themselves, utilization of results, and publication of results. P.T.H.

A76-43054 # **Objectives concerning the design of a uniform complex analysis of basic-funds reproduction in the coal and energy sector (Aufgaben beim Aufbau einer einheitlichen komplexen Analyse der Grundfondsreproduktion im Bereich Kohle und Energie).** A. Frenzel, I. Kalzikis, and R. Zitzmann (Institut für Energetik, Leipzig, East Germany). *(Ministerium für Kohle und Energie, Kolloquium, Leipzig, East Germany, Mar. 18, 1975.) Energietechnik*, vol. 26, July 1976, p. 325-327. 5 refs. In German.

The basic-funds analysis is to provide an instrument for the direction of activities related to coal and energy considerations in the German Democratic Republic. The criteria which determine the basic-funds analysis are discussed. Attention is given to approaches for obtaining the required data and developing suitable data processing procedures. G.R.

A76-43105 # **Using pattern recognition in an industrial environment.** R. A. Hughes, H. E. Rauch, and M. A. Fischler (Lockheed Missiles and Space Co., Inc., Sunnyvale, Calif.). *American Institute of Aeronautics and Astronautics and American Astronautical Society, Astrodynamics Conference, San Diego, Calif., Aug. 18-20, 1976, AIAA Paper 76-802*. 12 p. 8 refs.

Overview of the methods and experience gained in applying pattern recognition concepts and techniques to exploratory data analysis and decision making for real problems in an industrial environment. The tools described here include conventional statistical analysis, discrimination or classification (Fisher linear discriminant), hypothesis-generation (minimum spanning tree clustering and centroid clustering), data display (two-dimensional projection), and data base handling and interactive graphics capability. These tools act as hypothesis generators in that they provide insight that is not normally available from conventional mathematical and statistical analysis of data. (Author)

A76-43294 **The project Spacelab - A transatlantic challenge for Europe (Das Projekt Spacelab - Eine transatlantische Herausforderung an Europa).** D. R. Ottemeyer (ERNO Raumfahrttechnik GmbH, Bremen, West Germany). *Astronautik*, vol. 13, Sept. 1976, p. 57-60. In German.

In 1972 an agreement was signed concerning the participation of the European countries in the U.S. space program. The contribution of Europe is related to the development of Spacelab which is to be placed in orbit with the aid of the Space Shuttle. West Germany is to contribute 53% and Italy 18% of the expenses. The industrial team which conducts the development work for Spacelab consists of experts from firms of the ten nations which participate financially in the program. Attention is given to organizational questions, details concerning the development program, aspects of mission preparation, and future developments. G.R.

A76-45524 **Contract Management Conference, Arlington, Va., May 17, 18, 1976 and Newport Beach, Calif., June 10, 11, 1976, Abridged Proceedings.** Conference sponsored by the American Institute of Aeronautics and Astronautics. Los Angeles, Calif., American Institute of Aeronautics and Astronautics, Inc., 1976. 127 p.

The partial proceedings of the Contract Management Conference are presented primarily in the form of tables. Topics treated include cost escalation administration, data management, cost/price analysis in major contracts and subcontracts, and the preparation of claims for equitable price adjustment. Also considered are negotiation tactics in government contracts, contracting for design to cost/life cycle cost, and the use of cost/schedule control systems criteria in contract management. B.J.

A76-45627 **Life Cycle Cost /LCC/ management of major military ATE systems.** R. D. Warwood and A. R. Berg (Honeywell, Inc., Government and Aeronautical Products Div., Minneapolis, Minn.). In: Automatic Support Systems Symposium for Advanced Maintainability, Westbury, N.Y., October 28-30, 1975, Conference Record. New York, Institute of Electrical and Electronics Engineers, Inc., 1975, p. 190-195.

In many instances, where philosophies, formulas, and standards developed for new and unique avionics subsystems are applied to ATE systems, the resulting ATE system design deviates from the goal of life cycle costs. This misapplication is caused by failure to recognize that ATE systems are different from avionics subsystems. In addition, ATE is also unlike other support systems in that it is a collection of common and peculiar items. The present paper deals with important areas where improved system engineering or management considerations can decrease the LCC not only of the ATE but also of the weapon system. V.P.

A76-45990 # **The Spacelab utilization program of the DFVLR.** P. Kleber (Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt, Institut für Raumsimulation, Cologne, West Germany). In: International Scientific-Technological Conference on Space, 16th, Rome, Italy, March 18-20, 1976, Proceedings. Rome, Rassegna Internazionale Elettronica Nucleare

ed Aerospaziale, 1976, p. 491-499.

Among the important tasks assumed by DFVLR in the preparation of Spacelab missions, the most important tasks are: development of a scientific program in which DFVLR acts as a user of Skylab; management and organization of the development and conclusion of Spacelab utilization contracts sponsored by BMFT (Federal Ministry for Research and Technology); and functional support for other German industrial and research centers. These task include the correlation of the activities with NASA and European nations. A detailed discussion of the DFVLR activities is presented. V.P.

A76-46532 **Airport economics and financing.** B. L. Schroder (J. Henry Schroder Wagg and Co., Ltd., London, England). In: The challenging future; Proceedings of the Fifth World Airports Conference, Brighton, England, May 5-7, 1976.
London, Institution of Civil Engineers, 1976, p. 7/1-7/14. 10 refs.

Due to the recent economic recession, both airlines and (to a lesser degree) airports have suffered financially. Airlines and airports are in a high fixed cost industry, but can make very good profits when operating at capacity and when they are not over-invested. The British Airport Authority has demonstrated that good profits allow an airport to be self financing, thereby reducing the requirement to borrow. The basic principles of airport finance are discussed, and the profit objective is outlined. Various methods of financing airport developments, including grants, self generated funds, and borrowing, are examined. V.P.

A76-47017 **USAF's crusade to streamline industrial production.** E. Ulsamer. *Air Force Magazine,* vol. 59, Oct. 1976, p. 62-67.

The anomaly of a lag in the modernization of manufacturing plants and their technology in the production of aerospace parts and the sophistication of aerospace systems is examined. Possible carrot-and-stick incentives are considered: tax credits, termination liability, guaranteed amortization, interest credits, and value engineering. USAF promotion of adaptive numerical control of machine tools, laser welding, diffusion bonding, hot isostatic pressing, isothermal forging, and future merged computer-aided design and integrated computer-aided manufacturing are discussed. In the drive for superior advanced systems at reduced costs, 'firms that fail to replace obsolescence and inefficiencies are going to feel the results' in USAF procurement and contracting policies. R.D.V.

A76-47711 # **How to determine the guaranteed efficiency and output of hydroelectric power stations (Stanovenie zabezpeceneho vykonu a vyroby vodnych elektrarni).** V. Ondrusek (Vyskumny Ustav Energeticky, Bratislava, Czechoslovakia). *Energetika,* vol. 26, Aug. 1976, p. 369, 370. 5 refs. In Slovak.

The guaranteed output of a hydroelectric plant is defined and its major deterministic and stochastic components are presented. Determinateness and randomness of loads on power plants, cyclic regularities over periods of time, average loads by time period or time of year, regulation of large storage basins and impounding reservoirs, and restraints placed on power station operation by the needs of the national economy are discussed with attention given to computational considerations, simplified assumptions in models, and limitations on predictions based on earlier trends in power consumption patterns. Daily average and monthly average flowrates for different times of year are considered most useful. Water stream diversions, more regular for industrial purposes and more erratic for agricultural purposes and irrigation, are taken into cognizance. R.D.V.

STAR ENTRIES

N76-10900*# Santa Clara Univ., Calif. Graduate School of Business.
MANAGEMENT SYSTEMS RESEARCH STUDY Semiannual Status Report, Feb. - Aug. 1975
A. V. Bruno 3 Sep. 1975 61 p refs
(Grant NsG-2036)
(NASA-CR-145403) Avail: NTIS HC $4.25 CSCL 05A

The development of a Monte Carlo simulation of procurement activities at the NASA Ames Research Center is described. Data cover: simulation of the procurement cycle, construction of a performance evaluation model, examination of employee development, procedures and review of evaluation criteria for divisional and individual performance evaluation. Determination of the influences and apparent impact of contract type and structure and development of a management control system for planning and controlling manpower requirements. Author

N76-10902# Messerschmitt-Boelkow-Blohm G.m.b.H., Munich (West Germany). Space Div.
EXOSAT, EUROPEAN X-RAY OBSERVATORY SATELLITE, STUDY C: OPTIMISATION OF PLANNING Final Report
[1974] 482 p
(Contract ESTEC-2079/73)
(ESA-CR(P)-679) Avail: NTIS HC $12.00

Three different program options were analyzed in detail in order to assess EXOSAT planning and costing: (1) a hardware development phase plan containing four modelling phases (breadboard and mechanical unit modelling (MU), engineering modelling (EM), qualification modelling (QM), and flight modelling (FM)), (2) three modelling phases in which the EM and QM phases are combined into a single phase, and (3) three modelling phases in which the QM and FM phases are combined into a single QF phase. A nominal program plan and total program costs were established for each option. The third option was shown to be the most favorable choice in terms of absolute cost. The first and third options were found to be comparable from the cost/risk bandwidth criterion. Author (ESA)

N76-10903# Defense Supply Agency, Alexandria, Va. Office of the Assistant Director Plant Programs and Systems.
COMPENDIUM OF INVENTORY CONTROL POINT MANAGEMENT INFORMATION. VOLUME 1: MANAGEMENT DATA
Nov. 1974 274 p
(AD-A011140) Avail: NTIS CSCL 15/5

The study develops a data base that will enable top management in the DoD to compare ICP primary operating costs and evaluate the relative efficiency of each ICP in the performance of materiel management functions. The study collects ICP management data which portrays the ICPs' mission and functions; organization, organizational relationships, and location; size; personnel authorizations; workload; productivity; resource allocation and consumption; unit costs; performance; and goals, standards, and objectives. The ICP management data are then analyzed to determine compatibility and comparability; and to identify causal relationships which exist between workload, resources, and performance. The data are presented in a manner which will facilitate its review and analysis by the Office of the Secretary of Defense. GRA

N76-10904# Defense Supply Agency, Alexandria, Va. Office of the Assistant Director Plans Programs and Systems.
COMPENDIUM OF INVENTORY CONTROL POINT MANAGEMENT INFORMATION. VOLUME 2: APPENDICES
Nov. 1974 106 p
(AD-A011141) Avail: NTIS CSCL 15/5

The purpose of the study is to develop a data base that will enable top management in the DoD to compare ICP primary operating costs and evaluate the relative efficiency of each ICP in the performance of materiel management functions. GRA

N76-10907# Army Aviation Systems Command, St. Louis, Mo. Systems Analysis Office.
AVSCOM'S SPARE PARTS BREAKOUT STUDY
Mark E. Barkeley and Alan R. LeMay Jun. 1975 94 p refs
(AD-A011245; AMSAV-D-75-4; USAAVSCOM-TR-75-20) Avail: NTIS CSCL 15/5

The report is delimited to the AVSCOM Spare Parts Breakout Program, with materiel considerations being restricted to those items which are on the demand stockage list (DSL), authorized stockage list (ASL), and select others. The objectives of the study are the following: Evaluate the current practices and procedures of the Spare Parts Breakout Program for areas of improvement; determine whether potential resource savings can be realized from the Spare Parts Breakout Program. GRA

N76-10908# Army Procurement Research Office, Fort Lee, Va.
PROCUREMENT RESEARCH RESOURCES/SOURCES Final Report
Monte G. Norton and Keith A. Ulrich Apr. 1975 155 p refs
(AD-A011233; APRO-505) Avail: NTIS CSCL 15/5

In response to a two-fold need in the procurement research community this study presents a resources matrix and an annotated sources guide. The resources matrix identifies procurement research activities that have a demonstrated capability in specific procurement research areas; the annotated sources guide combines and describes basic procurement information sources as an aid to performing procurement research, including staff studies. This project was conducted with the intent that the resources matrix will be employed primarily as a management tool while the sources guide would serve primarily as a research aid. GRA

N76-10909# Assistant Secretary of Defense (Program Analysis and Evaluation), Washington, D.C.
ACCEPTANCE RATES AND TOOLING CAPACITY FOR SELECTED MILITARY AIRCRAFT
Oct. 1974 108 p
(AD-A011501) Avail: NTIS CSCL 01/3

This paper presents the detailed data for certain military aircraft used in a study of planned and actual production rates prepared by OASD (Program Analysis and Evaluation) for the Secretary of Defense. The study objective was to determine the degree of optimism in Service planning and its impact on production of aircraft. The conclusions are summarized under the following heads: Initial buildup, maximum production rate, tooling capacity, average production rates, and production span. Eighteen Navy and Air Force aircraft programs were used as the basis for the analysis. GRA

N76-10910# Michigan Univ., Ann Arbor. Dept. of Industrial and Operations Engineering.
AIRCRAFT ENGINES: DEMAND FORECASTING AND INVENTORY REDISTRIBUTION Final Report, 15 May 1973 - 15 Mar. 1974
Herbert P. Galliher and Richard C. Wilson Feb. 1975 152 p refs

(Contract F33615-73-C-4158)
(AD-A011595; ARL-75-0008) Avail: NTIS CSCL 21/5

Using historical experience with J79 engines, an investigation was made of the quantitative relationships between engine age, utilization, overhaul-rate, failure-rate, and fleet age-distribution. Based upon these considerations, a new computerized method for forecasting demand for spare engines is proposed to replace present AFM 400-1 procedures. A procedure for redistributing multi-indentured stocks of repairable components and assemblies from depot to base is proposed. The procedure requires forecasts of removal rates, base-to-depot return rates, MOD-METRIC-like stock-allocation levels, repair and ship times as inputs. Whenever a stock unit becomes available at the depot or is required at a base, the procedure determines in real time a stock allocation which seeks to minimize long-run expected system backorders. GRA

N76-10911# Army Materiel Command, Texarkana, Tex. Intern Training Center.
DISCRETE SERVO ANALYSIS TECHNIQUES AS APPLIED TO THE DYNAMIC MODELING OF INDUSTRIAL INVENTORY SYSTEMS Final Report
R. Gregory Gudger May 1974 64 p refs
(AD-A007094; USAMC-ITC-02-08-73-019) Avail: NTIS CSCL 05/1

This research explores the use of servo - control modeling and analysis techniques in the analysis of inventory systems. The analysis is conducted with respect to both deterministic and random demand inputs to the system. The effects of different levels of proportional control are discussed with the aim of providing the manager with the consequences of different levels of reaction to changing demand levels. The results indicate that the techniques presented are most readily applicable to inventories of physical items rather than services. The analysis shows rapid response and the damping of random fluctuations to be of an opposing nature. GRA

N76-10906# RAND Corp., Santa Monica, Calif.
SCHEDULING AIRCREWS AND AIRCRAFT: PROBLEMS OF RESOURCE ALLOCATIONS IN THE STRATEGIC AIR COMMAND Interim Report
Morton B. Berman Jan. 1975 122 p refs
(Contract F44620-73-C-0011)
(AD-A011613; R-1610-PR) Avail: NTIS CSCL 15/7

The investigation focuses on the B-52 flying organizations of the Strategic Air Command in an attempt to demonstrate how organizational behavior affects internal resource allocation efficiency in a public-sector organization. Existing organization theory is used to develop a set of predictive hypotheses on how resource allocation decisions are made at the wing level. Selected hypotheses on sources of inefficiency and on how and why resources are allocated differently among bomb wings are empirically tested using data obtained in field visits to wings. Resulting analyses are used to identify methods for improving decision behavior. GRA

N76-10909# Assistant Secretary of Defense (Program Analysis and Evaluation), Washington, D.C.
ACCEPTANCE RATES AND TOOLING CAPACITY FOR SELECTED MILITARY AIRCRAFT
Oct. 1974 108 p
(AD-A011501) Avail: NTIS CSCL 01/3

This paper presents the detailed data for certain military aircraft used in a study of planned and actual production rates prepared by OASD (Program Analysis and Evaluation) for the Secretary of Defense. The study objective was to determine the degree of optimism in Service planning and its impact on production of aircraft. The conclusions are summarized under the following heads: Initial buildup, maximum production rate, tooling capacity, average production rates, and production span. Eighteen Navy and Air Force aircraft programs were used as the basis for the analysis. GRA

N76-10917# Calspan Corp., Buffalo, N.Y.
REENTRY DATA FACILITY USERS GUIDE
May 1975 28 p
(Contract DAHC60-73-C-0033)
(AD-A011405) Avail: NTIS CSCL 05/2

The RDF (Reentry Data Facility) has been established to service the large collection of field data and associated documentation covering some 16 years of down-range radar data gathering and processing. The objectives of the Reentry Data Facility are to preserve and organize MSR (Missile Site Radar), TTR (Target Track Radar), and DR (Discrimination Radar) mission data and mission-related documentation that are of value for the support of reentry physics investigations; provide qualified users with access to the data/documents; and service user requests for data/documents. To this end, the RDF has systematically filed the data and associated documents from all three radars, maintains the capability to reprocess and format data in accordance with user requests, provides for the reproduction and delivery of data, and will periodically inform the reentry community of all available RDF capabilities and services. GRA

N76-12085# Office of the Director of Defense Research and Engineering, Washington, D.C.
THE DoD LABORATORY UTILIZATION STUDY Final Report
John L. Allen, Rodney E. Grantham, and Donald B. Nichols 28 Apr. 1975 174 p refs
(AD-A012660) Avail: NTIS CSCL 14/2

This study of the utilization of DoD in-house laboratories was initiated in April 1974 by a memorandum to the Assistant Secretaries of the Military Departments (R and D) in response to a management objective of the Secretary of Defense. The charge for the study was to (1) determine the requirements for DoD laboratories, (2) assess the capability of the laboratories to meet these requirements, (3) identify excess capacity, overlapping capabilities, shortfalls or instances where R and D could be contracted to industry at a savings, and (4) define a program to upgrade the quality of the laboratories. Author (GRA)

N76-12220# National Bureau of Standards, Washington, D.C. Inst. for Computer Sciences and Technology.
COMPUTER PROGRAM PACKAGE FOR METRIC CONVERSION: REFERENCE MANUAL Final Report
Ruth K. Anderson and Joseph O. Harrison, Jr. Jul. 1975 148 p refs
(COM-75-10960/3; NBS-TN-872; LC-75-600045) Avail: NTIS HC $6.00; SOD HC also available as C13.46:872 CSCL 09B

The programs in this package are designed to convert customary units and vise versa. In addition to the programs themselves, the package contains documentation explaining how to get the programs running on different computers and how to use them, and test problems to permit users to verify that the programs run correctly on their own computers. The Caterpillar program converts 31 different metric units to their U.S. customary equivalents. In contrast, the General Motors programs convert in both directions but work with millimeters and inches only. The General Motors programs are written in FORTRAN and are suitable for use on a wide range of computers with little or no modification. The Caterpillar program is operated in batch mode while the General Motors programs are interactive. GRA

N76-12870# Harry Diamond Labs., Adelphi, Md.
AN HDL APPLICATION OF THE COST/SCHEDULE CONTROL SYSTEM (C/SCS) CRITERIA
Del P. Rovis May 1975 52 p refs
(HDL Proj. 001A14)
(AD-A012763; HDL-TR-1698) Avail: NTIS CSCL 05/1

The requirements (criteria) established in DODI 7000.2 for contractor implementation of a Cost/Schedule Control System (C/SCS) are most readily adapted to function-oriented industrial

organizations. These criteria are generally not suitable for application by task-oriented organizations such as are found in government R and D. This report describes how DODI 7000.2 was applied by a government R and D laboratory for single-project management of C/SCS supported development programs. The methods and procedures developed for this application are presented with illustrations showing the actual implementation process. Problems inherent in the required transition from a task-oriented to a function-oriented configuration are discussed as well as the methods used to overcome them. Central to a satisfactory solution of these problems is that the necessary changes provided the minimum upset to the existing management and accounting system. Also introduced is a method for charting and measuring performance. GRA

N76-12872# Michigan Univ., Ann Arbor. Center for Research on Utilization of Scientific Knowledge.

SURVEY-GUIDED DEVELOPMENT: DATA BASED ORGANIZATIONAL CHANGE

David G. Bowers and Jerome L. Franklin Jun. 1975 213 p refs

(Contract N00014-67-A-0181-0013; NR Proj. 170-719)

(AD-A012868) Avail: NTIS CSCL 05/1

The report summarizes and integrates a large body of knowledge drawn from theoretical formulations, empirically based research, and field experience to describe a data-based approach to organizational development. Termed survey-guided development, this approach entails several facets including (a) measurement based on a validated model of organizational functioning, (b) use of organizational members as change-agents fulfilling a transducer role, (c) thorough preparation of organizational members prior to the utilization of data, (d) survey feedback procedures implemented at the work group level, (e) diagnostically based interventions, and (f) evaluation of progress and corrective measures as integral aspects of the organizational development effort. GRA

N76-12873# California Univ., Irvine. Graduate School of Administration.

THE ORGANIZATION AND THE PERSON Final Project Report

Lyman W. Porter and Robert Dubin Jul. 1975 31 p refs

(Contract N00014-69-A-0200-9001; NR Proj. 151-315)

(AD-A012895) Avail: NTIS CSCL 05/9

The project has been concerned with two central issues: (1) what factors affect the attachment of employees to their work and work organization, and (2) what are the consequences of attachment or the lack of it. The authors investigated the nature of the individual-organizational linkages. In so doing, they have focused on both the attitudinal and behavioral aspects of this linkage -- how employees feel about themselves, their jobs, their work and their organizations; and what kinds of work behavior they exhibit in the job situation. GRA

N76-12874# Massachusetts Inst. of Tech., Cambridge. Operations Research Center.

SOME ISSUES IN HIERARCHICAL PLANNING

Henry Gabbay Jun. 1975 57 p refs

(Contract N00014-75-C-0556; NR Proj. 347-027; MIT Proj. OSP-82491)

(AD-A012885; TR-112) Avail: NTIS CSCL 13/8

This paper presents hierarchical planning in a production environment as a sequence of aggregate and detailed problems which are solved iteratively. An example of inconsistency between aggregate and detailed models is given. This issue is resolved by defining certain planning horizons. A characterization of the optimal aggregate linear programming solution is presented which suggests a lower bound procedure. Extensions for regular and overtime hours are discussed. GRA

N76-12960 Stuttgart Univ. (West Germany). Inst. A fuer Mechanik.

HOSPITAL MANAGEMENT WITH ELECTRONIC DATA PROCESSING [KRANKENHAUSSTEUERUNG MIT EDV]

U. Clauss *In its* Contrib. to Mech. and System Theory Mar. 1975 p 41-52 refs In GERMAN; ENGLISH summary

The research project DEPAK is described; its aim is to demonstrate the possibility of computer-aid for a hospital of average size. Those parts of DEPAK are described, which deal with the information flow between the ward and the laboratories. The requests are to be processed by computer; thus it is possible to give the laboratories further information and to arrange the requests in order to improve the sequence of operation.

Author (ESA)

N76-13766# Yale Univ., New Haven, Conn. School of Organization and Management.

HIERARCHICAL LEVEL AND LEADERSHIP STYLE: ON THE RESOLUTION OF A CONTRADICTION

Arthur G. Jago and Victor H. Vroom Jul. 1975 49 p refs

(Contract N00014-67-A-0097-0027; NR Proj. 177-935)

(AD-A013353; TR-8) Avail: NTIS CSCL 05/10

Previous research regarding the effects of hierarchical level on leadership behavior has produced seemingly contradictory results. The methodologies employed in the present investigation were able to produce both patterns of results from data obtained in the same organization. Analysis of data collected from managers at four different hierarchical levels and within the same level show opposite relationships. Reasons for the incongruity and its implications for the organization are discussed. GRA

N76-13945# Army Missile Research, Development and Engineering Lab., Redstone Arsenal, Ala. Advanced Systems Concepts Office.

ROOT CAUSE ANALYSIS, A DIAGNOSTIC FAILURE ANALYSIS TECHNIQUE FOR MANAGERS

Augustine E. Magistro and Lawrence R. Seggel 26 Mar. 1975 96 p refs

(AD-A012670; RF-75-2) Avail: NTIS CSCL 05/1

This report presents a proven technique for technical problem analysis. An analysis method is described and a format presented which is aimed at the systematic solution of failures. Examples of typical problems and solutions are included in addition to guidance for the organization and operation of teams charged with establishing the rootcause of failures. Comments on group processes should be helpful to new root cause team managers in the operation of the teams, and a bibliography of material on problem solving and decision making provides sources of data related to the topics. Although the text focuses on hardware development activities, it can readily be seen that the root cause analysis technique has broad application to general problems, e.g., low sales, business reversals, increased costs, etc. This technique is easy to learn and requires no special skills. Use of the format provides explicit data for the systematic evaluation of postulated failure modes. Rigid adherence to this technique makes the root cause of the problem obvious through the process of elimination and, therefore, assures that the source (root) of the problem, not the symptoms, is dealt with. Author (GRA)

N76-13946# Operations Research, Inc., Silver Spring, Md. Tactical Systems Div.

AN OVERVIEW OF DoD POLICY FOR AND ADMINISTRATION OF INDEPENDENT RESEARCH AND DEVELOPMENT Final Report

Howard Emery Bethel May 1975 165 p refs

(AD-A013362; DSMS-PMC-75-1) Avail: NTIS CSCL 05/1

Independent research and development (IR/D) is contractor initiated and conducted research and development effort not

sponsored by a contract or grant. The DOD recognizes IR/D as a normal cost of business and accepts its reasonable and allocable share of these costs. The allowability of IR/D costs and DOD policy and administration of this area have been and are controversial. This report presents an overview of DOD IR/D policy and administration. The evolution, current status, and major areas of existing controversy are highlighted. Current DOD policy appears to be a reasonable balance of the needs for good stewardship of the taxpayer's funds and the needs for a strong technological base. Major shifts in policy, whether to the more liberal extremes advocated by the industry or the more restrictive extremes advocated by Senator Proxmire and Admiral Rickover, would probably be detrimental to the best interests of the Department of Defense. GRA

N76-13947# Burns and McDonnell, Kansas City, Mo.
FEASIBILITY STUDY OF AUTOMATION AND SURVEILLANCE SYSTEMS FOR UTILITY PLANTS AT FORT LEONARD WOOD, MISSOURI, FOR THE US ARMY DISTRICT, OMAHA, CORPS OF ENGINEERS, OMAHA, NEBRASKA, VOLUME 1
Dennis E. Cotter, Arthur W. Homer, and Robert L. Miller 1975 96 p
(Contract DACA45-74-C-0108)
(AD-A013410; Rept-74-051-4-Vol-1) Avail: NTIS CSCL 05/1

It is concluded from the studies performed in this report that utility automation and surveillance at Fort Leonard Wood is desirable. Conclusions and specific recommendations are set forth for each of the following utilities studies: (1) Water supply, treatment and distribution; (2) Sewage Lift Stations; and (3) Heating and air-conditioning facilities; (a) Central Heating Plants; (b) Central Cooling Plants; (c) Local Heating and Cooling Plants; and (d) Miscellaneous Plants. Recommendation for improvements, process automations and surveillance are based upon consideration of safety, reliability, efficient utilization of manpower, and anticipated energy savings. Cost estimates are included for all recommendations set forth herein. Author (GRA)

N76-13948# Naval Postgraduate School, Monterey, Calif.
TOWARD A HANDBOOK FOR NAVAL MANAGERS M.S. Thesis
Dana Page French, Jr. Jun. 1975 407 p refs
(AD-A013560) Avail: NTIS CSCL 05/1

The handbook condenses and extracts from the literature of management and the broad social sciences those concepts that are pertinent to Navy managers in the fleet in helping to solve their management problems. Each concept shows where additional information about it can be found through references to a reading list. The concepts are drawn from history, psychology, social psychology, sociology, political science, anthropology, economics, management, organization development, biology, philosophy, and the military. The problems are categorized as enlisted problems, officer problems, individual problems, unit problems, Navy problems, American problems, and human problems. Two additional chapters explain each social science and the differences between them and how to use the book. GRA

N76-13949# West Virginia Univ., Morgantown. Regional Research Inst.
ENVIRONMENTAL MANAGEMENT AND REGIONAL ECONOMIC DEVELOPMENT
William H. Miernyk 6 Nov. 1971 24 p refs Presented at the Southern Econ. Assoc. and the Southern Regional Sci. Assoc., Miami Beach, Fla., 6 Nov. 1971
(Grant EDA-OER-411-G-72-9)
(COM-75-11073/4; EDA/OER-75-020) Avail: NTIS HC $3.50 CSCL 13B

A preliminary report is made on a long-range investigation of the trade-offs between environmental management and regional economic development. The analytical tool is a dynamic regional input-output model. The full study, which will take into account all types of pollution, is being conducted in a series of discrete phases. The first phase deals with the special case of surface coal mining. Phase two is concerned with the abatement of air pollution. In this phase, a regional variant of Leontief's augmented input-output model of the static-open variety with built in pollution-related activities, is used. For this purpose, regional pollution output coefficients will be grafted onto the West Virginia dynamic regional model. GRA

N76-13951# Naval Postgraduate School, Monterey, Calif.
MAJOR CAUSES OF ORGANIZATIONAL CONFLICT: DIAGNOSIS FOR ACTION Working Paper
C. Brooklyn Derr Jun. 1975 80 p refs
(AD-A013472; NPS-55Dr75062) Avail: NTIS CSCL 05/1

Six major causes of organizational conflict are delineated; implications for managing these conflicts using collaboration, bargaining and power plays are pointed out; a conflict management paradigm pointing out which mode of conflict management works best for which cause is presented; literature on organizational conflict management is referenced. GRA

N76-13970*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
GUIDELINES FOR APPLICATION OF LEARNING/COST IMPROVEMENT CURVES
Leon M. Delionback 31 Oct. 1975 39 p refs
(NASA-TM-X-64968) Avail: NTIS HC $4.00 CSCL 05C

The differences between the terms learning curve and improvement curve are noted, as well as the differences between the Wright system and the Crawford system. Learning curve computational techniques were reviewed along with a method to arrive at a composite learning curve for a system given detail curves either by the functional techniques classification or simply categorized by subsystem. Techniques are discussed for determination of the theoretical first unit (TFU) cost using several of the currently accepted methods. Sometimes TFU cost is referred to as simply number one cost. A tabular presentation of the various learning curve slope values is given. A discussion of the various trends in the application of learning/improvement curves and an outlook for the future are presented. Author

N76-13974# Army Electronics Command, Fort Monmouth, N.J.
LIFE CYCLE COST MODEL Final Report
Thomas W. Otto, Jr. Jul. 1975 41 p
(DA Proj. 1S7-63707-D-437)
(AD-A013369; ECOM-4338) Avail: NTIS CSCL 14/1

Recent experience in performing Life Cycle Cost Analyses on single channel tactical radio equipment has shown the need for a complete and computerized LCC model. This report discusses such a model which has been developed by the author. The cost categories and each of their elements are presented initially in broad terms; then the mathematical equations which compute each element are presented. Additionally, a comprehensive discussion of the Learning Curve and various methods of applying it are presented. Author (GRA)

N76-14960# Research Inst. of National Defence, Stockholm (Sweden).
INFORMATION, UNCERTAINTY, AND ADAPTIVE PLANNING
Per Strangert May 1974 154 p refs
(FOA-P-C-8392-M3) Avail: NTIS HC $6.75

The role and nature are investigated of formal criteria for the evaluation of strategies in planning when uncertainty is expected to resolve over time. After the description of a practical defense planning process, a classification of uncertainty with respect to its change over time is introduced which serves to

define the concept of uncertainty resolution over time. A number of applications of multistage decision-making are studied. From these are derived a set of requirements for a formal description to be applicable to practical planning. A formalism is proposed, founded upon the concept of uncertainty about the future state of information. Author

N76-14961*# National Aeronautics and Space Administration, Washington, D.C.
RESEARCH AND TECHNOLOGY OPERATING PLAN. SUMMARY: FISCAL YEAR 1976 RESEARCH AND TECHNOLOGY PROGRAM
1976 178 p
(NASA-TM-X-72913) Avail: NTIS HC $3.50 CSCL 05A

A compilation of the summary portions of each of the Research and Technology Operating Plans (RTOP) used for management review and control of research currently in progress throughout NASA was presented. The document is arranged in five sections. The first one contains citations and abstracts of the RTOP. This is followed by four indexes: subject, technical monitor, responsible NASA organization, and RTOP number. Author

N76-14962# Air Force Systems Command, Washington, D.C.
LABORATORY PROGRAM MANAGERS GUIDE. PART 1: STATEMENT OF WORK PREPARATION
Jun. 1975 96 p
(AD-A013967; AFSC-TR-75-02-Pt-1) Avail: NTIS CSCL 05/2

The primary objective of this guide is to provide laboratory level project engineers with a systematic approach for Statement of Work (SOW) preparation. The systematic approach presented should enable a project engineer to review and understand all factors that bear on this project BEFORE the Statement of Work is attempted. Statement of work review procedures are recommended to assist the project engineer identifying and correcting any gaps between what he intended to write and what he has actually written. The need and purpose for format consideration is also discussed. GRA

N76-14963# Naval Postgraduate School, Monterey, Calif.
MANAGEMENT BY OBJECTIVES AT A RESEARCH, DEVELOPMENT, TEST AND EVALUATION ACTIVITY ***M.S. Thesis***
Larry Eugene Blose and Michael Jerome Stansel Jun. 1975 131 p refs
(AD-A013627) Avail: NTIS CSCL 05/1

NAVMAT Instruction 5200.37 of 24 September 1973 required a Management by Objectives (MBO) program to be initiated throughout the Naval Material establishment. The Pacific Missile Range (PMR) at Point Mugu, California requested assistance from the Naval Postgraduate School in establishing their MBO program. A pilot MBO program was established at PMR to determine MBO's feasibility in a research and development (R and D) organization. Due to time constraints, the program was limited to the implementation of short range goals and objectives. GRA

N76-14964# Office of Naval Research, London (England).
CENTRALIZATION AND VIGOR. PART 2: ORGANIZATION AND FUNDING OF RESEARCH IN FRANCE
Philip L. Stocklin 18 Jul. 1975 26 p refs
(AD-A013782; ONRL-R-11-75-Pt-2) Avail: NTIS CSCL 05/1

French scientific activity is characterized by centralization of planning, administration and funding, together with a vigor resulting from a highly developed research infrastructure of cross-Ministry, interdisciplinary work flow and communication, together with a mix of longevity funding and specific project support. Major features of the current French National Plan, the Sixth Plan, are summarized as they affect research. National organization for research, centered on a controlling agency in the Ministry of Industry and Trade, is outlined. Funding by Ministry and by field of research for 1974 is given, together with illustrations of organization and infrastructure including the computer industry and oceanography. GRA

N76-14982# Virginia Research, Inc., Arlington.
TODAY'S R AND D BUILDING A BASE FOR BETTER TRANSPORTATION Final Report
15 Apr. 1975 46 p
(Contract DOT-OS-50101)
(PB-243667/3; DOT-TST-75-111) Avail: NTIS HC $4.00 CSCL 13B

A concept of a strategic R and D plan for the Department of Transportation is presented. The concept of a core program of R and D of the DOT core program is presented in its present stage of development. The plan shows the relationship within the DOT between socio-economic R and D and R and D in the areas of engineering and in the physical, technical, and life sciences, and presents scenarios for the time frame circa 2000 A.D. for transportation systems for urban passenger, intercity passenger, and freight. Against this background, ongoing R and D programs are described as practical examples of the foregoing conceptual structure. GRA

N76-15902*# Northwestern Univ., Evanston, Ill. Dept. of Industrial Engineering and Management Sciences.
STUDIES AND ANALYSES OF THE MANAGEMENT OF SCIENTIFIC RESEARCH AND DEVELOPMENT, INCLUDING IMPLEMENTATION AND APPLICATION AT NASA CENTERS
Albert H. Rubenstein Aug. 1975 29 p refs
(Grant NGL-14-007-062)
(NASA-CR-145922) Avail: NTIS HC $4.00 CSCL 05A

Summary results obtained through the Program of Research on the Management of Research and Development (POMRAD) were presented. The nature of the overall program and the specific projects undertaken were described. Statistical data is also given concerning the papers, publications, people, and major program areas associated with the program. The actual list of papers, names of doctoral and masters theses, and other details of the program are included as appendices. Author

N76-15903# Naval Surface Weapons Center, White Oak, Md.
A MANAGEMENT APPROACH IN ACCIDENT PREVENTION Final Report
William T. Fine Jul. 1975 43 p
(AD-A014562; NSWC/WOL/TR-75-104) Avail: NTIS CSCL 05/1

A loss control system is described which employs management introspect for determining the underlying causes of accidents and hazardous situations, and improves the overall effect of accident prevention activities. Monetary and productive waste and losses, as well as accidents, are reduced by using accidents and hazards as indicators to detect management failures. Procedures are outlined, together with examples which demonstrate how the investigation of minor injuries and unsafe conditions can identify the management failures which are causing huge hidden losses as well as accidents. A logical method is given to track the primary cause of accidents and hazards back to the underlying management failures. Management failures are placed in general categories and summarized to determine and locate problem areas. GRA

N76-15905# National Bureau of Standards, Washington, D.C. Experimental Technology Incentives Program.

PROCEEDINGS OF PROCUREMENT PRACTICES SYMPOSIUM FEDERAL, STATE AND LOCAL Final Report
Theodore F. Fody and Joseph G. Berke 30 May 1975 168 p Symp. held 28-30 Jan. 1975 Sponsored in part by Federal Supply Service, Natl. Assoc. of State Purchasing Officials, Natl. Inst. of Governmental Purchasing, Inc.
(COM-75-11210/2; NBSIR-75-716) Avail: NTIS HC $6.75 CSCL 15E

The general objectives of the conference are to recommend ways to encourage information interchange and interaction between federal, state and local procurement levels and industry; to explore the use of special incentives such as life cycle costing, value incentives clauses, and unsolicited proposals as a means to promote innovation in products purchased by all levels of government; to establish the interrelationship between marketing, R and D and procurement and develop approaches to acquire the latest technology through the procurement process; to explore various product testing and evaluation efforts such as certification programs, tests by independent, company owned association laboratories, university and government laboratories. GRA

N76-15906# Systems Research Labs., Inc., Dayton, Ohio.
A PROCEDURE FOR QUANTIFICATION OF TECHNOLOGICAL CHANGES ON HUMAN RESOURCES Interim Report
Norman R. Potter, Kenneth D. Forkan, and Duncan L. Dieterly (AFHRL, Wright-Patterson AFB, Ohio) Wright-Patterson AFB, Ohio AFHRL Jun. 1975 93 p refs
(Contract F33615-74-C-4019; AF Proj. 7907)
(AD-A014335; AFHRL-TR-75-33) Avail: NTIS CSCL 05/5

A long standing research objective of the human factors psychologist has been the capability to predict the human resource requirements of new equipment. An even more intriguing problem is the prediction of human resource requirements based on the introduction of new technology. The purpose of this study was to locate and apply an existing method, or to develop a new procedure for quantifying the effects of incoming technology. A procedure integrating the Design Option Decision Tree (DODT) with a modificaton of the method of summated ratings was developed to permit quantification of specific human resource components at each of the design options represented in the DODT. Using judgmental data collected from an Air Force operational unit, the method developed under this study effort was evaluated. It was concluded that quantifying human resource components associated with hardware design options by means of a technique incorporating a DODT and a modification of the method of summated ratings was a feasible approach and could provide one methodological procedure for measuring the effects of advances in technology on human resources. See also AD-A014332 and AD-A014333. GRA

N76-15908# Sowle (Don) Associates, Inc., Arlington, Va.
ACQUISITION RESEARCH PROGRAM: A STARTING POINT
Jul. 1975 59 p refs
(Contract N00014-75-C-0849; NR Proj. 274-241)
(AD-A014115) Avail: NTIS CSCL 15/5

Seven projects have been proposed as the starting point for a concerted program of research aimed at strengthening the Navy Systems acquisition process. The proposed research would focus on special aspects of the following subjects: acquisition research center; mission needs and goals; competition among systems; the acquisition team; truth in negotiations; claims and disputes; logistic support; and Navy electronic systems management. The results of the proposed research projects are expected to pave the way for the development of more effective major systems and large reductions in the time and money that must be invested in their acquisition. These benefits are expected to result through such improvements as: clearer statement of mission needs and goals; better understanding of Navy major systems programs by Congress, industry, the press, and the public; more effective competition in the development of major systems; better lower-cost paperwork; and reduction in the number and size of claims and disputes. For each of the seven proposed research projects, the report outlines a work statement and discusses relevant background, previous improvement efforts, reference material, current research, and anticipated benefits. GRA

N76-15916# Naval Postgraduate School, Monterey, Calif.
DESIGN TO COST: CONCEPT AND APPLICATION M.S. Thesis
Noel Paul Horn and Peter Vincent Dabbieri, Jr. Dec. 1974 135 p refs
(AD-A004233) Avail: NTIS CSCL 15/5

Design-to-cost has been instituted as one of the several reforms to Department of Defense procurement practices. This thesis presents historical needs for such reforms. Design-to-cost is described and placed in context with other policy revisions. Impacts of recent changes and resultant controversies are explored. Sample cases display the actual implementation of design-to-cost. Problem areas are enumerated and remedial actions proposed. Author (GRA)

N76-15917# Directorate of Aerospace Studies, Kirtland AFB, N. Mex.
HANDBOOK FOR THE IMPLEMENTATION OF THE DESIGN TO COST CONCEPT Final Report
Richard H. Anderson and Thomas E. Dixon Feb. 1975 106 p refs
(AD-A013802; SA-TR-75-2) Avail: NTIS CSCL 15/5

This report documents various models and methodologies in the form of a practical handbook of management tools. These management tools provide a system Program Manager with the means to do the following on a day-by-day basis: (1) Evaluate current system progress; (2) Identify problem areas associated with various subsystems where corrective actions or additional subsystem options are required; (3) Identify subsystems for which a reduction in performance has a small effect on total system performance and investigate if these subsystems can be replaced by lower cost subsystems with the cost savings invested more effectively in the improvement of other more critical subsystems; (4) Select the combination of subsystem options yielding the maximum total system performance achievable at the Design to Cost goal, i.e., optimal allocation of resources; and (5) Evaluate the effect of any proposed change in system design and its impact on Design to Cost goals. GRA

N76-15919# Naval Postgraduate School, Monterey, Calif.
A REVENUE AND EXPENSE APPORTIONMENT CONCEPT FOR THE ANALYSIS OF INTERNAL RETURNS ON INVESTMENT: THE SIMPLE CASE
James P. Hynes Apr. 1975 82 p refs
(AD-A014559; NPS-55HJ75041) Avail: NTIS CSCL 05/3

This paper presents a technique which uses revenue, expense, and investment data to assign returns on investment to each activity in an interactive economic system. It is a simple case of a more general model. The economic system may be a group of firms, a single firm, or a part of a firm. The technique, referred to here as revenue and expense apportionment, is particularly suited for joint cost and joint product situations such as those encountered in transportation, petrochemical production, and industrial funded activities in the Government. The principal theme of the apportionment concept is that revenues and expenses can be logically distributed among activities by using a transfer pricing mechanism so as to reveal how each segment shares in a system's overall return on investment, even when joint products are involved. The apportionment concept assigns returns to the activities involved in creating products and services; this is in contrast to approaches that distribute revenues and expenses directly to products and services. The apportionment concept is also linked to profit maximization concepts when the model of the system meets some fundamental requirements. The managerial

and economic applications of the apportionment methodology include segmental investment evaluation, limited segmental performance analyses, pricing analyses and regulation. Included in this paper is a brief discussion of existing approaches, a description of the way in which a system is to be modelled in order to apply the apportionment technique, a discussion of apportionment concepts, their interpretation, numerical examples, and some economic implications. Author (GRA)

N76-15920# Mantech of New Jersey, Rockville, Md.
EXECUTIVE SUMMARY OF THE NAVY WEAPON SYSTEM LIFE-CYCLE COST MODEL (WSCOM)
Stephen S. Wood Jul. 1975 9 p refs Sponsored by Navy (AD-A014319; P-7509) Avail: NTIS CSCL 15/5

The Navy Weapon System Life-Cycle Cost Model is a generalized user-oriented cost model that calculates and displays system costs in accordance with a Work Breakdown Structure (WBS) or similar hierarchal cost level scheme. It is applicable to any development program in which costs must be monitored and recalculated for frequent changes in cost-related parameters. The model is intended for use by a cost analyst. GRA

N76-15921# Aerospace Guidance and Metrology Center, Newark Air Force Station, Ohio.
PROCEEDINGS OF THE LIFE CYCLE COST TASK GROUP OF THE JOINT SERVICES DATA EXCHANGE FOR INERTIAL SYSTEMS Final Report
Russell B. Stauffer 21 Nov. 1974 88 p Presented at the 5th Quarterly Meeting, Redondo Beach, Calif., 19 Nov. 1974 (AD-A014108; AGMC-74-046) Avail: NTIS CSCL 17/7

These proceedings describe the activities of the fifth quarterly meeting of the Life Cycle Cost Task Group of the Joint Services Data Exchange for Inertial Systems held 19-21 November 1974. The proceedings contain the text and slides (where available) of the invited papers and the results of sub group meetings on charter revisions, creation of LCC Task Group descriptive paper and preparation of input/output specifications for the LCC model under development. GRA

N76-16808 Northwestern Univ., Evanston, Ill.
MODELS FOR GRAPHICALLY-ENHANCED DATA BASE MANAGEMENT SYSTEM DESIGN Ph.D. Thesis
Wayne Dennis Dominick 1975 224 p
Avail: Univ. Microfilms Order No. 75-29614

The overall objective of this research is to formulate comprehensive and generalized methodologies for the design of a graphically-enhanced data base management system which is both maximally data independent and terminal device independnet, and thereby develop the theory and the models which have general applicability to data independent, structurally extensible and application extensible data base management system design and to device independent graphics system design, as well as to their combined and integrated usage. The research methodology consists of the development of four basic design models: the logical data, the user language, the physical storage, and the display. Each of the design models is contrasted with existing techniques and, in each case, is shown to be a significant extension of the current state of the art. Dissert. Abstr.

N76-16834* Boeing Computer Services, Inc., Seattle, Wash.
COMPUTER GRAPHICS FOR MANAGEMENT: AN ABSTRACT OF CAPABILITIES AND APPLICATIONS OF THE EIS SYSTEM
Barry J. Solem *In* NASA. Langley Res. Center Appl. of Computer Graphics in Eng. 1975 p 427-446

CSCL 09B

The Executive Information Services (EIS) system, developed as a computer-based, time-sharing tool for making and implementing management decisions, and including computer graphics capabilities, was described. The following resources are available through the EIS languages: centralized corporate/gov't data base, customized and working data bases, report writing, general computational capability, specialized routines, modeling/programming capability, and graphics. Nearly all EIS graphs can be created by a single, on-line instruction. A large number of options are available, such as selection of graphic form, line control, shading, placement on the page, multiple images on a page, control of scaling and labeling, plotting of cum data sets, optical grid lines, and stack charts. The following are examples of areas in which the EIS system may be used: research, estimating services, planning, budgeting, and performance measurement, national computer hook-up negotiations. Y.J.A.

N76-16972# California Inst. of Tech., Pasadena. Div. of Humanities and Social Sciences.
GOVERNMENT POLICIES AND TECHNOLOGICAL INNOVATION. VOLUME 1: PROJECT SUMMARY Final Report
Roger G. Noll May 1975 40 p 5 Vol.
(Grants NSF DA-39495; NSF RDA-73-07241)
(PB-244571/6; NSF/RDA-73/4/1-Vol-1) Avail: NTIS HC $4.00 HC also available $42.00/set of 5 reports as PB-244570-SET CSCL 05A

The issue of whether the existing state of knowledge in social science research provides an adequate information base for making decisions about public policies that affect technological innovation is discussed. The principal conclusions of the study are (1) the state of social science literature on matters relating to technological innovation is far too undeveloped to warrant many strong conclusions with respect to government policy to alter innovative behavior; (2) the most effective type of policy for increasing innovative performance in areas where it is deemed socially desirable to do so is likely to be a system of grants and prizes for specific projects, administered by several agencies having overlapping responsibilities; and (3) generalized public policies applied more or less evenly across all industries are virtually certain to be inefficient, providing too little incentive to innovate in some areas and increasing the appropriability of some innovations beyond that which is necessary to induce them. GRA

N76-16973# California Inst. of Tech., Pasadena. Div. of Humanities and Social Sciences.
GOVERNMENT POLICIES AND TECHNOLOGICAL INNOVATION. VOLUME 2-A AND VOLUME 2-B: STATE-OF-THE-ART SURVEYS Final Report
Roger G. Noll Nov. 1974 239 p refs 5 Vol.
(Grants NSF DA-39495; NSF RDA-73-07241)
(PB-244572/4; NSF/RDA-73/4/2-Vol-2-A; NSF/RDA-73/4/2-Vol-2-B) Avail: NTIS HC $8.00 HC also available $42.00/set of 5 reports as PB-244570-SET CSCL 05A

State-of-the-art literature reviews are presented on the following subjects: a review and decision theoretic literature with implications regarding governmental research and development policies; patent policy, technological innovation, and government contracts--a selective critique; institutional structure and technological charge; market structure and R&D; a dynamic theory of competition; the market for innovation; public policy and innovation--two cases; government administrative behavior and technological innovation. GRA

N76-16974# California Inst. of Tech., Pasadena. Div. of Humanities and Social Sciences.
GOVERNMENT POLICIES AND TECHNOLOGICAL INNOVATION. VOLUME 3: RESEARCH AND POLICY STUDIES Final Report

Roger G. Noll May 1975 173 p refs 5 Vol.
(Grants NSF DA-39495; NSF RDA-73-07241)
(PB-244573/2; NSF/RDA-73/4/3-Vol-3) Avail: NTIS HC $6.75 HC also available $42.00/set of 5 reports as PB-244570-SET CSCL 05A

Research and policy studies are presented on the following subjects: factor bias and innovations--a microeconomic approach; the consequences of public utility regulation of hospitals; background memorandum--the regulation of atomic energy for power generation; comments regarding limitations on programming available for broadcast on pay-TV channels; on comparative dynamics; rate regulation and freight traffic allocation--a review and revision; the public policy issues involved in dealing with environmental degradation--a dynamic approach; separability and vanishing externalities; stability of pure trade equilibrium with externalities; patent provisions in federal research and development contract policy. GRA

N76-16975# California Inst. of Tech., Pasadena. Div. of Humanities and Social Sciences.
GOVERNMENT POLICIES AND TECHNOLOGICAL INNOVATION. VOLUME 4 (A, B, AND C): ABSTRACTS Final Report
Roger G. Noll Oct. 1974 518 p refs 5 Vol.
(Grants NSF DA-39495; NSF RDA-73-07241)
(PB-244574/0; NSF/RDA-73/4/4-Vol-4/A/B/C) Avail: NTIS HC $12.75 HC also available $42.00/set of 5 reports as PB-244570-SET CSCL 05A

Abstracts are presented of the books and articles read in connection with the state-of-the-art surveys. They are organized under the following headings: decision theory and project management; case studies of innovation; bureaucratic behavior; public policies towards health and environmental resources; the market for innovation; market structure; rights to knowledge; public policy proposals. GRA

N76-16976# California Inst. of Tech., Pasadena. Div. of Humanities and Social Sciences.
GOVERNMENT POLICIES AND TECHNOLOGICAL INNOVATIONS. VOLUME 5 (A AND B): BIBLIOGRAPHY Final Report
Roger G. Noll Oct. 1974 233 p refs 5 Vol.
(Grants NSF DA-39495; NSF RDA-73-07241)
(PB-244575/7; NSF/RDA-73/4/5-Vol-5/A/B) Avail: NTIS HC $8.00 HC also available $42.00/set of 5 reports as PB-244570-SET CSCL 05A

A complete bibliography is presented of all items perused in compiling the state-of-the-art surveys. State of the art literature reviews are included on the following subjects: decision theory and project management; case studies of innovation; Bureaucratic behavior; public policies towards health and environmental resources; the market for innovation; market structure; rights to knowledge; public policy proposals. GRA

N76-16977# Real Estate Research Corp., Chicago, Ill.
ENERGY, LAND USE, AND GROWTH POLICY: IMPLICATIONS FOR METROPOLITAN WASHINGTON, SECOND EDITION Final Report
James S. Roberts Aug. 1975 118 p
(Grant HUD-CPA-DC-1011)
(PB-245249/8) Avail: NTIS HC $5.50 CSCL 10A

Plans xor a workshop to be held to obtain recommendations for the National Science Foundation on specific industrial productivity problems are outlined. Discussion and question and answer sessions will be aimed at formulating research projects or objectives that would aid productivity. For the workshop purpose, a definition of industrial productivity includes all actions contributing to industry-wide efficiency, total product cost, and production volume. Six industries, automotive, electrical machinery machine tool, household appliances, food processing, and iron and steel, were selected for study. A list of problem areas and questions, researchable problem guidelines, and a list of questions for the industry participants are included. GRA

N76-16979# Oregon Research Inst., Eugene.
BEHAVIORAL FOUNDATIONS OF DECISION ANALYSIS Final Technical Report
Paul Slovic 6 Aug. 1975 14 p
(Contract N00014-73-C-0438; ARPA Order 2449; NR Proj. 197-026)
(AD-A015369) Avail: NTIS CSCL 05/10

This paper summarizes the work done by the Institute in the areas of probability assessment, prediction and choice; evaluation of past decisions; and decision theory. Twelve completed reports and six studies in progress are described. GRA

N76-17093 Hawker Siddeley Aviation Ltd., Woodford (England).
THE SIGNIFICANCE OF VARIOUS MANAGEMENT AND TECHNICAL TECHNIQUES ON AIRCRAFT STRUCTURAL DESIGN
Alan James Troughton *In* AGARD Specialists Meeting on Structural Design Technology Nov. 1975 16 p refs

Techniques are summarized which are used in aircraft structural design. The in-service performance of aircraft as regards structural accidents and incidents is given together with typical costs for R&D structural activities. All aircraft structural design techniques are reviewed including stressing, detail design, computer aided design and alternative methods of testing. The use of value engineering in obtaining optimum cost aircraft is discussed. Author

N76-17845# National Bureau of Standards, Washington, D.C.
COMPUTER SECURITY GUIDELINES FOR IMPLEMENTING THE PRIVACY ACT OF 1974 Final Report
Thomas C. Lowe May 1975 23 p refs
(COM-75-11372/0; FIPS-Pub-41) Avail: NTIS HC $3.50 CSCL 09B

Guidelines are provided for use by Federal ADP organizations in implementing the computer security safeguards necessary for compliance with Public Law 93-579, the Privacy Act of 1974. A wide variety of technical and related procedural safeguards are described. These fall into three broad categories: physical security, information management practices, and computer system/network security controls. As each organization processing personal data has unique characteristics, specific organizations should draw upon the material provided in order to select a well-balanced combination of safeguards which meets their particular requirements. GRA

N76-17856*# National Aeronautics and Space Administration, Washington, D.C.
SPECIAL REPORT WRITER: A FLEXIBLE INFORMATION MANAGEMENT SYSTEM. DOCUMENTATION AND USER'S MANUAL
W. A. Greene Feb. 1976 105 p
(NASA-TM-X-3346) Avail: NTIS HC $5.50 CSCL 09B

A special report writer (SSR) was developed which performs multiple correlations on files containing several data hierarchies. Output reports are specified in a simple notation, readily learned by persons having limited familarity with ADP. The SRR system can be adopted by other NASA installations while the basic techniques themselves are compatible with the information management needs of a wide range of organizations. Specifically, elements. Such extra information is nice, sometimes useful, but how much does it cost. A program is presented here for

the most difficult case of a real square matrix whose eigenvalues are wanted without their corresponding eigenvectors. The program requires no extra storage space and the running time is about 50% longer than for the fastest reliable program which only computes eigenvalues. There are many industrial applications in which the matrix elements are known to only two or three decimal figures. Each condition number will indicate how accurately such a matrix determines the associated eigenvalue. When no digits in an eigenvalue are reliable the suspect eigenvalue should be tagged and this information passed on to a higher level in the whole computation. A number of programming devices keep, the code, storage, and running time down to a minimum. An interesting case study is included.
GRA

N76-17989# Stanford Univ., Calif. Dept. of Engineering-Economic Systems.
FLEXIBILITY AND DECISION ANALYSIS Technical Report, 1 Apr. 1973 - 31 Apr. 1975
Miley Wesson Merkhofer 30 Jun. 1975 130 p refs
(Contract N00014-67-A-0112-0077; Grant NSF GK-36491; ARPA Order 2449; NR Proj. 197-024)
(AD-A015290; EES-DA-75-1) Avail: NTIS CSCL 05/1

The notion that a good decision strategy is a flexible one has long been intuitively appreciated by decision makers. Decision analysis, however, has had little to say on the subject of flexibility. The purpose of this thesis is to place the flexibility concept within the decision analysis framework. The analysis begins with an application of decision theory techniques to the problem of choosing between flexible and inflexible decision strategies. A precise mathematical definition of decision flexibility is proposed wherein the relative flexibility of a decision is measured by the size of the decision choice set. Further application of the theory of decision analysis provides a measure of the value of flexibility.
GRA

N76-17990# Air Force Systems Command, Wright-Patterson AFB, Ohio. Foreign Technology Div.
ORGANIZATION PROBLEMS IN THE DEVELOPMENT OF SCIENTIFIC AND TECHNICAL FORECASTING IN HUNGARY
L. Kishmarti and D. Parish 11 Feb. 1975 12 p Transl. into ENGLISH from the book "Sovet Ekon. Vzaimopomoschi. Postoiannaya Komissiya po Koordinatsii Nauchn. i Tekhn. Issled. Teoriya i Praktika Prognozirovaniya Razvitiya nauki i Tekhn. v Stranakh-Chlenakh Sev" Moscow, 1971 p 153-156
(AD-A007401; FTD-HC-23-2348-74) Avail: NTIS CSCL 05/1

A methodology for scientific and technical forecasting in Hungary is developed. Forecasts are worked out to evaluate expected world events and the influence of probable events on Hungarian science, technology, and economics is evaluated. This approach is also used to determine concepts of scientific and technical development.
Author

N76-18004*# National Aeronautics and Space Administration, Washington, D.C.
OUTLOOK FOR SPACE Report to the NASA Administrator by the Outlook for Space Study Group
Jan. 1976 373 p refs
(NASA-SP-386) Avail: NTIS MF $2.25; SOD HC $4.40 CSCL 22A

Future space activities within the context of national needs were examined, and directions that the United States should take in the civilian use and exploration of space for the time period from 1980 to 2000 were identified. It was decided that the following activities should be pursued: (1) those related to the continuing struggle to improve the quality of life (food production and distribution, new energy sources, etc., (2) those meeting the need for intellectual challenge, for exploration, and for the knowledge by which man can better understand the universe and his relationship to it, (3) those related to research over the high temperature component which is consistent with the presence of an additional low temperature thermal component. Iron abundance in the source relative to normal cosmic abundance is discussed, as in the relation of this observation to shock wave and multi-component thermal models for supernova remnants.
Author

N76-18005*# National Aeronautics and Space Administration, Washington, D.C.
A FORECAST OF SPACE TECHNOLOGY, 1980 - 2000
Jan. 1976 320 p refs
(NASA-SP-387) Avail: NTIS MF $2.25; SOD HC $4.00 CSCL 22A

The future of space technology in the United States during the period 1980-2000 was presented, in relation to its overall role within the space program. Conclusions were drawn and certain critical areas were identified. Three different methods to support this work were discussed: (1) by industry, largely without NASA or other government support, (2) partially by industry, but requiring a fraction of NASA or similar government support, (3) currently unique to space requirements and therefore relying almost totally on NASA support. The proposed work was divided into the following areas: (1) management of information (acquisition, transfer, processing, storing) (2) management of energy (earth-to-orbit operations, space power and propulsion), (3) management of matter (animate, inanimate, transfer, storage), (4) basic scientific resources for technological advancement (cryogenics, superconductivity, microstructures, coherent radiation and integrated optics technology).
Y.J.A.

N76-18038# Advisory Group for Aerospace Research and Development, Paris (France).
AGARD BULLETIN. TECHNICAL PROGRAM 1976
Jun. 1975 36 p refs
(AD-A010370; AGARD-Bull-75-2) Avail: NTIS HC $4.00 CSCL 05/2

A chronological listing of meetings scheduled for 1976 is presented. Detailed descriptions of AGARD programs and publications are included; these include panels on aerospace medicine, avionics, electromagnetic wave propagation, flight mechanics, fluid dynamics, guidance and control, propulsion and energetics, structures and materials, and technical information.
M.J.S.

N76-18089# Stanford Research Inst., Arlington, Va.
THE ECONOMIC IMPACT OF ENERGY SHORTAGES ON COMMERCIAL AIR TRANSPORTATION AND AVIATION MANUFACTURE. VOLUME 1: IMPACT ANALYSIS Final Report
J. E. Gorham, D. Gross, and J. C. Snipes Jun. 1975 259 p refs 2 Vol.
(Contract FEA-C-03-50033-00)
(PB-246271/1; FEA/B-75/588-Vol-1) Avail: NTIS HC $9.00 CSCL 05C

The impact is evaluated of the energy shortage on commercial air transportation and its related manufacturing industries. As a result, the forces are analyzed of change at work in the air transportation industry relating to the energy crisis, both desirable and undesirable, that are likely to affect the way the industry does business, its efficiency or inefficiency in the use of fuel, the impact of continued fuel price increases, and the ability of the industry to use the most fuel-efficient aircraft presently or prospectively available. The cumulative impact is considered of these factors affecting air transportation on the need for, number of, and timing of requirements for new aircraft in order to assess the secondary impact on the aircraft, engines, and parts manufacturing industries.
GRA

N76-18090# Stanford Research Inst., Arlington, Va.
THE ECONOMIC IMPACT OF ENERGY SHORTAGES ON

COMMERCIAL AIR TRANSPORTATION AND AVIATION MANUFACTURE. VOLUME 2: AVIATION INDUSTRIES PROFILES AND ENERGY USAGE CHARACTERISTICS Final Report

J. E. Gorham, D. Gross, and J. C. Snipes Jun. 1975 284 p refs 2 Vol.

(Contract FEA-C-03-50033-00)

(PB-246272/9; FEA/B-75/589-Vol-2) Avail: NTIS HC $9.25 CSCL 05C

The results are summarized of the economic impact of energy shortages on commercial air transportation and aviation manufacture. GRA

N76-18644# Select Committee on Small Business (U. S. House).

SMALL BUSINESS AND THE ENERGY SHORTAGE, VOLUME 1

Washington GPO 1973 568 p refs Hearings before Subcomm. on Special Small Business Problems of Permanent Select Comm. on Small Business, 93d Congr., 1st Sess., 22 May; 6, 21, and 27 Jun.; 10 and 17 Jul.; 5 Jul. 1973

(GPO-99-720) Avail: Subcomm. on Special Small Business Problems

The impact on small business of the growing energy problems and the measures needed to solve this problem are examined. Factors considered include: allocations; the extent of petroleum supplies, both domestic and of foreign origin; and forecasts of future supply and demand. Emphasis is placed on ways of reducing consumption. J.M.S.

N76-18645# Select Committee on Small Business (U. S. House).

SMALL BUSINESS AND THE ENERGY SHORTAGE, VOLUME 2

Washington GPO 1974 278 p refs Hearings before Subcomm. on Special Small Business Problems of Permanent Select Comm. on Small Business, 93d Congr., 2d Sess., 9 Oct.; 15 Nov. 1973; 8 Mar. 1974

(GPO-40-890) Avail: Subcomm. on Special Small Business Problems

For abstract, see N76-18644.

N76-18875# Dikewood Corp., Albuquerque, N.Mex.

COMPUTER-BASED SYSTEM FOR CONTROL AND DISSEMINATION OF ROUTINE MANAGEMENT ACTIONS AND NOTICES Final Report

B. G. VanBlaricum Oct. 1975 49 p refs

(Contract F29601-74-C-0022)

(AD-A016775; DC-TR-1242-13; AFSWC-TR-75-4) Avail: NTIS CSCL 05/1

To curtail the inevitability of 'losing' any of the multitudinous assignments which must be accomplished in the course of fulfilling an overall mission, a formalized method of communication, as well as an established record-keeping facility, are enabled in the computer-based system for control and dissemination of management actions and general information notices. Those assignments are routed from and to the relevant sub-groups with a summary capability for use of top management. Incorporation of this management vehicle resulted in the successful intercommunication and cross-correlation of the huge array of tasks associated with the operation of a multi-staffed management organization. GRA

N76-18983# Yale Univ., New Haven, Conn. School of Organization and Management.

IMPROVING ORGANIZATIONAL COMMUNICATION THROUGH LONG-TERM INTERGROUP INTERVENTION

Clayton P. Alderfer Aug. 1975 37 p refs

(Contract N00014-67-A-0097-0017; NR Proj. 170-817)

(AD-A014904; TR-8) Avail: NTIS CSCL 05/10

The frequency, accuracy, and utility of communication among groups within organizations affects and is affected by their ethnocentricism. This study reports on the design, formulation, modification, and evaluation of a relatively new type of intergroup intervention--the creation of a 'microcosm group' of 12 members from an organization of 250 members. Charged with improving communication among work groups and hierarchical levels, the group was developed and maintained according to boundary and relationship concepts from open systems theory. It represented a microcosm of the system which it worked, addressed problems raised by both employees and management, assisted in a survey feedback intervention, survived concerns raised by the union, middle management, and leadership succession at the top of the organization GRA

N76-18984# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.

AN ANALYSIS OF GOVERNMENT/CONTRACTOR INTERACTION AS A MOTIVATOR OF CONTRACTOR PERFORMANCE M.S. Thesis

Jack R. Runkle and Gerald D. Schmidt Aug. 1975 99 p refs

(AD-A016034; SLSR-19-75B) Avail: NTIS CSCL 05/1

The purpose of this study was to determine whether influential government/contractor interaction can be used to focus top managements attention on contractual performance. The hypothesis states that a relationship exists between the formal structure of influential government/contractor interaction and documented contractor performance ratings. Data were collected at five NASA Centers and included 323 performance ratings on fifty-six contracts over a period of eight years. The data were tested for significant relationships using a stepwise linear regression model which considered the effects of organizational level and interaction frequency on the performance rating, in addition to nine other variables which potentially affected the performance rating. Author (GRA)

N76-18985# Stanford Univ., Calif. Dept. of Engineering-Economic Systems.

MODELING AND DECISION ANALYSIS Technical Report, 1 May 1973 - 31 May 1975

Steven Nobumasa Tani 30 Jun. 1975 147 p refs

(Contract N00014-67-A-0112-0077; ARPA Order 2449)

(AD-A016276; EES-DA-75-3) Avail: NTIS CSCL 05/1

The author uses mathematical modeling in decision analysis to help obtain a 'better' profit lottery than can be assessed directly. The concept of the authenticity of probabilities is introduced to define the measure of 'goodness' of the profit lottery. The role of modeling is to simplify the assessment task through the decomposition of the profit lottery. However, budgetary constraints force one to make approximations in the modeling process and thereby causes one to misstate the profit lottery. The models used in a decision analysis should be regarded as subjective expressions of uncertainty rather than as objective descriptions of the real-world. A methodology is presented that quantitatively relates the modeling approximations made in a decision analysis to the results of the analysis. GRA

N76-18986# Georgetown Univ., Washington, D.C. Inst. for Management Science and Engineering.

MINIMIZING THE COST OF SERVICING A PRODUCT SUBJECT TO AN EXPECTED COMPLETION TIME CONSTRAINT

James E. Falk and Marshall Rose 22 Aug. 1975 33 p refs

(Contract N00014-75-C-0729; NR Proj. 347-020)

(AD-A016028; Serial-T-321) Avail: NTIS CSCL 15/5

This paper describes a problem in which end products, such as aircraft, are periodically serviced, owing to the failure or preventive maintenance of repairable items. Given the required sequence of item reinstallations, the item resupply times, and item repair probabilities, a relation between the item resupply times and the expected end-product service time is derived. An exact algorithm designed to minimize the total cost of repair

subject to a constraint on the expected service time is presented. A heuristic algorithm yielding the entire 'minimum cost per expected service time' curve is also described. GRA

N76-18989# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.
AN INVESTIGATION OF THE REQUIREMENTS FOR BASE ENGINEERING AUTOMATED MANAGEMENT SYSTEM (BEAMS) PRODUCTS CURRENTLY GENERATED AND THEIR EFFECTIVENESS M.S. Thesis
Craig A. Birch and James N. Roberts Aug. 1975 172 p refs
(AD-A015967; SLSR-47-75B) Avail: NTIS CSCL 05/2

In 1968, Air Force Civil Engineering introduced the Base Engineer Automated Management System (BEAMS). This computerized system, designed to fulfill civil engineering managers' informational needs, now generates over 100 products. The purpose of this research was to determine which BEAMS products, if any, were not meeting the informational needs of these civil engineering managers. In particular, 26 BEAMS products which are specified for distribution to the Base Civil Engineer, the Chief of Programs, the Chief of Operations and Maintenance Branch, or the Industrial Engineer examined. Questionnaires were developed to obtain the opinions of these four managers. A random sample of these managers stationed within the contiguous United States was selected to participate in the survey. Civil engineering managers were generally satisfied with the 26 BEAMS products which were investigated. Four products were perceived as not useful by one category of civil engineering managers, Chiefs of Programs. Six products were perceived by either BCEs or Chiefs of Programs as not effective in at least one area. GRA

N76-18993# Applied Communication Research, Inc., Stanford, Calif.
THE DESIGN, PRODUCTION, DISTRIBUTION AND MAINTENANCE OF A PLANNING GUIDE TO BE ENTITLED GUIDE TO INNOVATION IN THE DISSEMINATION OF SCIENTIFIC AND TECHNICAL INFORMATION Final Report
R. H. Miller, J. M. Bleil, J. W. Corcoran, C. K. Mick, and M. Butler-Paisley 30 Mar. 1975 63 p
(Contract NSF C-951)
(PB-243438/9) Avail: NTIS HC $4.50 CSCL 05B

A prototype management planning guide to innovation in the dissemination of scientific and technical information is developed. The data acquisition, data processing, and preparation of the planning guide is covered. Accompanying the final report is a proposal for the production, distribution, and maintenance of the planning guide and associated innovation clearinghouse services is included. GRA

N76-18994# Institute for Defense Analyses, Arlington, Va. Cost Analysis Group.
AN ARMY LOGISTIC SUPPORT INFORMATION SYSTEM
Francis L. McDonald Mar. 1975 79 p refs
(Contract DAHC15-73-C-0200)
(AD-A016272; P-1110; IDA/HQ-75-17188) Avail: NTIS CSCL 15/5

This study provides an information system to be used by OASD/PA and E in obtaining data on a regular basis from Army logistic cost and workload reporting systems. These data will permit OASD/PA and E to maintain current the IDA-developed methodology for estimating Army central supply and maintenance resource requirements. This methodology was designed to be used in studies of defense resource allocations related to proposed alternative Army force structures. GRA

N76-18997# Air Force Systems Command, Wright-Patterson AFB, Ohio. Foreign Technology Div.
SELECTION OF OPTIMUM CAPITAL EXPENDITURES DURING THE DESIGNING OF AN ASU
V. V. Lobanov, S. V. Kozachenko, and L. S. Lobanova 9 May 1975 12 p Transl. into ENGLISH from Tekh. Organ. Proizvod. (USSR), no. 1, 1972 p 4-5
(AD-A016144; FTD-ID(RS)I-1319-75) Avail: NTIS CSCL 13/8

The report discusses selecting the optimum capital expenditures in the creation of an automatic control system. GRA

N76-19005 Portland State Univ., Oreg.
A NEW INQUIRING SYSTEM FOR TECHNOLOGY TRANSFER AND ITS ROLE IN PLANNING AND POLICYMAKING Ph.D. Thesis
Kishandutt Jaydayal Sharma 1973 232 p
Avail: Univ Microfilms Order No 76-2960

An inquiring system for technology transfer which emphasizes a multidimensional viewpoint of the technology transfer process is developed. Topics discussed include: (1) a hierarchical structure for examining the technology tranfer problem; (2) measures for assessing the performance of technology transfer, and (3) a demonstration example of the suggested methodology. Special emphasis is placed on the needs of planners and policymakers who are considered the clients of the proposed inquiring systems. Dissert. Abstr

N76-19006*# National Aeronautics and Space Administration, Washington, D.C.
NASA AND THE NOW SYNDROME
1975 11 p
(NASA-TM-X-72918) Avail: NTIS HC $3.50 CSCL 05A

After a brief review of the space exploration programs, the future options in space are discussed F.O.S.

N76-19176* Ball Bros. Research Corp., Boulder, Colo.
AEROSPACE LUBRICATION TECHNOLOGY TRANSFER TO INDUSTRIAL APPLICATIONS
Thomas J. Loran and Bill Perrin *In* NASA. Kennedy Space Center 9th Aerospace Mech. Symp. Aug. 1975 p 45-57

CSCL 11H

Difficulties encountered in entering industrial markets with an aerospace lubrication and coating technology are discussed along with the technical, financial, and managerial solutions that evolved. Author

N76-19545# Midwest Research Inst., Kansas City, Mo.
BASE LINE FORECASTS OR RESOURCE RECOVERY, 1972 TO 1990 Final Report
Gary R. Nuss, William E. Franklin, David Hahlin, William Park, and Michael Urie Mar. 1975 386 p refs
(Contract EPA-68-01-0793)
(PB-245924/6; EPA/530/SW-107C) Avail: NTIS HC $10.75 CSCL 13B

An assessment is made of the future of resource recovery from municipal waste for the years 1972 to 1990, based on the assumption there would be no federal legislation to stimulate resource recovery to 1990. Key methods of recovery are examined with emphasis on large-scale system recovery techniques (primary energy/material recovery by SMSA). Data on material collection, recycling centers, and current scrap dealers are also included. The results are summarized by material for the resources studied; glass, ferrous metals, aluminum, plastics, rubber, paper. GRA

N76-19595 Stanford Univ., Calif.
DEVELOPMENT OF A PROCEDURE FOR FORECASTING LONG-RANGE ENVIRONMENTAL IMPACTS Ph.D. Thesis
Benjamin Schlesinger 1975 150 p
Avail: Univ. Microfilms Order No. 76-5799

A procedure is presented for forecasting long-range environmental impacts of large scale projects. The overall goal of this forecasting procedure is to allow planners and managers to compare proposed development alternatives on a more uniform basis given available environmental knowledge and a set of asssumptions about how a local environment will respond in the future. The methodology developed entails combining a schedule of primary environmental impacts expected as a result of future activities with a matrix of environmental factor relationships. Each term in this cross-impact matrix relates a change in one factor in one year to a change in another factor the following year by a linear multiplier. An extended version of

the matrix is proposed that contains additional terms to reflect the impact of several environmental factors changing at the same time. A case study involving strip mining of coal in the northern great plains region of the United States is used to test the procedure's concept and formulation. Dissert. Abstr

N76-19810# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.
A COMPARATIVE ANALYSIS OF LEADERSHIP STYLES EXISTING IN SYSTEM PROGRAM OFFICES IN DIFFERENT PHASES OF THE WEAPON SYSTEM ACQUISITION LIFE CYCLE M.S. Thesis
Jerry W. Coggeshall and Juan G. Jasso Aug. 1975 119 p refs
(AD-A016265; SLSR-6-75B) Avail: NTIS CSCL 05/10

The leadership styles of managers and specialists working in United States Air Force weapon system program offices were examined in terms of the phases of the weapon system acquisition life cycle. The research population consisted of military and civilian managers and specialists working in thirteen weapon system program offices, each identified with a particular phase of the weapon system acquisition life cycle. For purposes of comparison, phases of the weapon system acquisition life cycle were grouped into conceptual/validation, full-scale development, and production/deployment categories. The Leadership Opinion Questionaire (LOQ), which measures leadership dimensions of consideration and structure, was the instrument through which data were obtained. Statistical analyses were based upon the LOQ scores of 182 respondents from the three categories: conceptual/validation - 22; full-scale development - 80; and production/deployment - 80. GRA

N76-19811# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.
A COMPARATIVE ANALYSIS OF ORGANIZATIONAL CLIMATE EXISTING IN SYSTEM PROGRAM OFFICES IN DIFFERENT PHASES OF THE WEAPON SYSTEM ACQUISITION PROCESS M.S. Thesis
Julius C. Larson, Jr. and Peter J. Ruppert Aug. 1975 114 p refs
(AD-A016261; SLSR-1-75B) Avail: NTIS CSCL 05/10

Organizational climate is a relatively new concept that has come upon the social research scene. It can be conceptualized as the sum of all the different perceptions individuals in an organization have with respect to the organization. This study attempted to measure and assess the prevailing organizational climate in System Program Offices (SPOs) in different phases of the weapon system acquisition process. The researchers were interested in determining if organizational climate differed in different phases of weapon system acquisition. GRA

N76-19824# Inco, Inc., McLean, Va
TOSS COMMON USER CAPABILITY Final Technical Report
Lelia Irby, Leon Marcus, Marianne Russek, and Karen Hsing Jul. 1975 27 p
(Contract F30602-74-C-0116; AF Proj. 4594)
(AD-A015762; RADC-TR-75-186) Avail: NTIS CSCL 09/2

The TOSS Common User Capability addresses the need to make user communication with large structured files of data as simple and logical as possible by providing interactive interface between the TOSS Information Management System (TIMS) and a user who is more familiar with his data base than he is with the mechanics of programming and file manipulation. The specific areas of data base management incorporated in the TOSS Common User Capability are file data definition, updating a data base, querying a data base, and generating formatted reports of file data. User language access to data management functions is primarily in the form of a simple dialogue conducted at his terminal, in which the user's commands and responses are prompted by the system. GRA

N76-19829# Air Force Systems Command, Wright-Patterson AFB, Ohio. Foreign Technology Div.
HADES SYSTEM FOR COLLECTION AND TRANSFER OF DATA (DARO CELLATRON 1600)
P Bartovsky 11 Mar. 1975 18 p Transl. into ENGLISH from Mechanizace, Automatizace Administrativy (Czechoslovakia), v. 14, no. 1, 1974 p 20-23
(AD-A017193; FTD-HC-23-0758-75) Avail NTIS CSCL 09/2

The information system is described Functional units including the input and output equipment of the terminal stations are discussed along with the data transfer between units. Applications of the system are given. F.O.S.

N76-20009# Air Force Inst. of Tech. Wright-Patterson AFB, Ohio. School of Systems and Logistics
AN ANALYSIS OF NON-BEHAVIORAL FACTORS AFFECTING WORK ORDER TIME AND COST PRODUCTIVITY M.S. Thesis
Joseph H. Cox, Jr. and Joseph B. Lewis, Jr. Aug. 1975 104 p refs
(AD-A016032; SLSR-18-75B) Avail: NTIS CSCL 05/3

The improvement of productivity of the civil engineering work force has long been a goal of Air Force Civil Engineering managers. Each year the requirement to do more work with less resources has become more and more pronounced. The first step in any increase is the identification of those factors with a direct bearing on productivity. The authors of this thesis have taken actual work order and shop data from a U.S. Air Force base and developed linear mathematical models using multiple linear regression analysis to identify those non-behavioral factors with a direct or inverse relationship to productivity. After testing the models for statistical significance, the authors conclude that a linear relationship exists between certain work order and shop parameters and the amount of time and cost productivity for a given shop. GRA

N76-20010# National Science Foundation, Washington, D.C Office of Intergovernmental Science and Research Utilization.
REPORT OF THE OMB STUDY COMMITTEE ON POLICY MANAGEMENT ASSISTANCE. VOLUME 3: BACKGROUND PAPERS AND RESEARCH MATERIALS
Robert A. Shapek Jun. 1975 1168 p refs
(PB-243804/2; NSF/RA/G-75-010-Vol-3) Avail: NTIS HC $17.25; MF $2.75 (special price) CSCL 05A

An interagency study committee on policy management assistance, comprised of career executives from the primary Federal agencies with an interest in Federal technical assistance to state and local governments was asked to assess current Federal technical assistance efforts and then to develop Federal strategies and options for strengthening state and local policy management capabilities. The Federal technical assistance effort was surveyed and agencies made presentations to the Committee Non-Federal perspectives were acquired through a series of specially-commissioned studies -- including literature reviews, issue papers, and position papers. A compilation of those studies, as well as committee and staff working papers, and an extensive bibliography are reported. GRA

N76-20011# Air Force Inst. of Tech. Wright-Patterson AFB, Ohio. School of Engineering.
A STUDY OF THE PROGRAM MANAGEMENT RESPONSIBILITY TRANSFER PROCESS FOR THE F-16 M.S. Thesis
John D. Rominger Sep. 1975 104 p refs
(AD-A017639; GSM/SM/75S-8) Avail: NTIS CSCL 05/1

This report analyzes the Program Management Responsibility Transfer (PMRT) Process for several major aircraft weapons systems for the purpose of applying lessons learned to the F-16 PMRT process. The report looks at the problems encountered on previous switchover systems and recommends solutions or methods by which the F-16 can avoid the same problems. The primary data sources for this report were personal interviews of key program management personnel and official Air Force guidance in the form of regulations. GRA

N76-20019# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.
COST/SCHEDULE CONTROL SYSTEM CRITERIA: AN

ANALYSIS OF MANAGERIAL UTILITY Final Report
Marion A. Ostdiek and Richard T. Estes Aug. 1975 132 p refs
(AD-A016270; SLSR-15-75B) Avail: NTIS CSCL 15/5

The Cost/Schedule Control System Criteria (C/SCSC) is imposed on a contractor's management information system during the performance of a contract for a major weapon system. Previous studies on C/SCSC had identified managerial resistance to the criteria. Data, gathered through structured interviews with military and contractor managers, were analyzed to find if a predetermined set of attitudes affected the perceived utility of C/SCSC. The selected variables of acceptance of quantitative techniques, cost consciousness, knowledge of quantitative techniques, and hierarchical position were studied as major factors influencing the perceived utility of the criteria. Relationships between the selected variables were not supportive of all five stated hypotheses; however, the study provided detailed data on the selected variables and on C/SCSC as a management tool. After a review of the managers' opinions and the available data, a conclusion was reached showing that the criteria in their present form are not sufficiently productive for the project goals. The study also indicates that a significant difference exists between military and civilian managers. The contractor manager exhibited a high correlation between perceived utility and each of four variables while the military manager shows this relationship between perceived utility and only one of the four variables. GRA

N76-20028# Committee on Aeronautical and Space Sciences (U. S. Senate).
TO AUTHORIZE APPROPRIATIONS TO THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION FOR RESEARCH AND DEVELOPMENT, CONSTRUCTION OF FACILITIES, AND RESEARCH AND PROGRAM MANAGEMENT, AND FOR OTHER PURPOSES
Washington GPO 1976 25 p Act H.R. 12453 referred to Comm. on Aeron. and Space Sci., 94th Congr., 2d Sess., 30 Mar. 1976
(S-Rept-94-718) Avail: US Capitol, Senate Document Room

The National Aeronautics and Space Administration Authorization Act, 1976, which appropriates money to NASA for research and development, facility construction, research and program management, and various other operating expense is presented. Author

N76-20063*# Hudson Inst., Inc., Croton-on-Hudson, N.Y.
THE OUTLOOK FOR AERONAUTICS, 1980 - 2000 - STUDY REPORT
Mar. 1976 41 p
(Contract NAS5-20852)
(NASA-TM-X-72995) Avail: NTIS HC $4.00 CSCL 01B

Trends in civil and military aviation in the period 1980-2000 are examined in terms of the role that NASA should play in aeronautical research and development during this period. Factors considered include the pattern of industry and government relationships, the character of the aircraft to be developed, and the technology advances that will be required as well as demographic, economic, and social factors. Trends are expressed in terms of the most probable developments in civil air transportation and air defense and several characteristically different directions for future development are defined. The longer term opportunities created by developments in air transporation extending into the next century are also examined. Within this framework, a preferred NASA role and a preferred set of objectives are formulated for the research and technology which should be undertaken by NASA during the period 1976-1985. Author

N76-20064*# Hudson Inst., Inc., Croton-on-Hudson, N.Y.
THE OUTLOOK FOR AERONAUTICS, 1980 - 2000: APPENDIX B: STUDY GROUP REPORT ON AN INDUSTRY-UNIVERSITY-GOVERNMENT SURVEY
Mar. 1976 46 p
(Contract NAS5-20852)
(NASA-TM-X-72996) Avail: NTIS HC $4.00 CSCL 01B

Results of a comprehensive survey of key representatives of the aeronautical community are presented. Emphasis is placed on trends in civil and military aviation, the role of NASA in aeronautical research and development, and the required technology advances for the development of new aircraft. J.M.S.

N76-20065*# Hudson Inst., Inc., Croton-on-Hudson, N.Y.
DOMESTIC AND WORLD TRENDS AFFECTING THE FUTURE OF AVIATION (1980 - 2000), APPENDIX C
Mar. 1976 78 p
(Contract NAS5-20852)
(NASA-TM-X-72997) Avail: NTIS HC $5.00 CSCL 01B

The results are presented of a study of variables affecting aviation in the United States during the last fifth of the twentieth century. A series of key trends relating to economic, social, political, technological, ecological, and environmental developments are identified and discussed with relation to their possible effects on aviation. From this analysis a series of scenarios is developed representing an array of possibilities ranging from severe economic depression and high international tension on the one hand to a world of detente which enjoys an unprecedented economic growth rate and relaxation of tensions on the other. A scenario is presented which represents the manner in which events will most probably develop and their effect on the aviation industry. Author

N76-20066*# Hudson Inst., Inc., Croton-on-Hudson, N.Y.
THE OUTLOOK FOR AERONAUTICS, 1980 - 2000: EXECUTIVE SUMMARY
Mar. 1976 18 p
(Contract NAS5-20852)
(NASA-TM-X-72998) Avail: NTIS HC $3.50 CSCL 01B
For abstract, see N76-20063.

N76-20069# Federal Aviation Administration, Washington, D.C. Aviation Forecast Branch.
AVIATION FORECAST, FISCAL YEARS 1976 - 1987
Sep. 1975 76 p
(AD-A017095; FAA-AVP-75-7) Avail: NTIS HC $5.00 CSCL 01/2

The latest Federal Aviation Administration forecast of measures of workload and activity at towered airports, air route traffic control centers, and flight service stations for Fiscal Years 1976 to 1987 are given. The forecasts were made for the four major users of the system; air carriers, air taxi, general aviation and the military. The impact is reflected on aviation activity of a more rapid rate of price increase, especially for fuel, and a slower rate of real income growth than had been assumed in previous forecasts. Author

N76-20101*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
A STUDY OF THE FINANCIAL HISTORY OF THE U.S. SCHEDULED AIRLINES AND THE IMPROVEMENT OF AIRLINE PROFITABILITY THROUGH TECHNOLOGY
Darrell E. Wilcox Jul. 1975 64 p refs
(NASA-TM-X-73109; A-6462) Avail: NTIS HC $4.50 CSCL 05C

The financial history of the U.S. scheduled airline industry was investigated to determine the causes of the erratic profit performance of the industry and to evaluate potential economic gains from technology advances of recent years. Operational and economic factors affecting past and future profitability of the industry are discussed, although no attempt was made to examine the profitability of individual carriers. The results of the study

indicate that the profit erosion of the late 1960's and early 1970's was due more to excess capacity than to inadequate fare levels, but airline problems were severely compounded by the rapid fuel price escalation in 1974 and 1975. Near-term solutions to the airline financial problems depend upon the course of action by the industry and the CAB and the general economic health of the nation. For the longer term, the only acceptable alternative to continued fare increases is a reduction in unit operating costs through technological advance. The next generation of transports is expected to incorporate technologies developed under Government sponsorship in the 1960's and 1970's with significant improvements in fuel consumption and operating costs. Author

N76-20162# Dikewood Corp., Albuquerque, N.Mex.
PROGRAM MILESTONES FOR NEAR-TERM-COR Final Report
Robert L. Stohler Kirtland AFB, N. Mex. AFSWC Oct. 1975 29 p ref
(Contract F29601-74-C-0022)
(AD-A016453; DC-TR-1242-2; AFSWC-TR-75-6) Avail: NTIS CSCL 14/2

The report represents a first attempt to define the Near-Term COR (Continental Operations Range) configuration. Assumptions of equipment availability and interaction are presented in a 'PERT' type format to provide visibility for the effort involved. Because the preliminary planning for COR is not complete, and the integration contractor effort has not yet been defined, no specific times could be presented. Equipment configuration was based on support of the EWJT and buildup of a microwave communications systems. GRA

N76-20510# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. *School of Systems and Logistics.*
THE RELATIONSHIP OF THE QUALITY OF DELIVERED PRODUCTS TO DEPARTMENT OF DEFENSE PROCUREMENT POLICIES AND PROCEDURES M.S. Thesis
Lawrence M. Kruse and Dmitri Taras Aug. 1975 98 p *refs*
(AD-A016023; SLSR-20-75B) Avail: NTIS CSCL 15/5

The relationship of the quality levels of delivered products to Department of Defense procurement policies and procedures was explored by Chi-square and multiple regression statistical tests on a quality audit program sample of San Antonio Air Logistics Center spare parts contracts. The procurement process variables studied were priority of requirement, complexity of item, contrast specifications, type of inspection clause, type of solicitation, market environment, size of contractor, type of contractor quality capability evaluation, type of contract price agreement, type of contractual instrument, contract modifications, contract administration activity, and contract administration activity quality assurance functions. GRA

N76-20689# Resource Planning Associates, Inc., Cambridge, Mass.
ENERGY MANAGEMENT CASE HISTORIES
Oct. 1975 29 p refs
(Contract DI-14-01-0001-1895)
(PB-246763/7; FEA/D-75/335; FEA/D-CP-1B) Avail: NTIS HC $4.00 CSCL 10A

The experiences of four U.S. firms are discussed that have found that the financial benefits of an energy conservation program can be substantial and that such programs are good business management practice. This study illustrates such case experiences. It discusses the way they organized to achieve results, how they implemented their energy saving projects, and the results of their efforts. The analyses go beyond the specific process and business of the company discussed. GRA

N76-20869# Mitre Corp., Bedford, Mass.
SOFTWARE ACQUISITION MANAGEMENT GUIDEBOOK: REGULATIONS, SPECIFICATIONS AND STANDARDS
J. T. Connolly Oct. 1975 124 p refs
(Contract F19628-75-C-0001; AF Proj. 572H)
(AD-A016401; MTR-3080; ESD-TR-75-91) Avail: NTIS CSCL 09/2

Regulations, specifications and standards pertinent to Air Force software acquisition are identified and categorized by management and software development tasks required during a system acquisition. The place of software development in a system life cycle and the two principal Air Force management regulations impacting on software acquisition are discussed. Brief summaries of regulations, specifications and standards, and keyword cross-reference lists are included for selected documents. GRA

N76-21015# Dikewood Corp., Albuquerque, N.Mex.
CONTRACT WORK BREAKDOWN STRUCTURE FOR TESPO MANAGEMENT Final Report
June G. Brenton and Robert L. Stohler Oct. 1975 20 p refs
(Contract F29601-74-C-0022)
(AD-A017595; DC-TR-1242-3; AFSWC-TR-75-7) Avail: NTIS CSCL 05/1

Work Breakdown Structure (WBS) consists of a family-tree type subdivision of data, equipment, software, service, and other work activity to achieve a desired goal or produce an end product. This report presents representative schedules of contract WBSs for the Test and Evaluation Systems Program Office (TESPO) to use in management of many activities concerned with improving test and evaluation capabilities and providing a continental operations range (COR). GRA

N76-21016# RAND Corp., Santa Monica, Calif.
METHODOLOGY FOR SUBJECTIVE ASSESSMENT OF TECHNOLOGICAL ADVANCEMENT WITH APPENDIX
S. James Press, Alvin J. Harman, and Marc Nerlove Apr. 1975 112 p refs
(AD-A017522; R-1375) Avail: NTIS CSCL 05/1

This report presents techniques and approaches for assessing the feasibility of new systems or projects. Ways of generating information that will help to better articulate R and D options, and ways of developing analytical tools for refining the comparison among options are discussed. Described are ways that technical and economic expertise can be used for: assessing technological advances and trends, using quantitative techniques; comparing technological advances for various projects; and determining how technological advances affect R and D costs. GRA

N76-21017# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.
THE IDENTIFICATION OF A PRECEDENCE NETWORK ASSOCIATED WITH BASE LEVEL AIRCRAFT MAINTENANCE M.S. Thesis
Clark D. Hubbard and Charles R. Lindke Aug. 1975 157 p refs
(AD-A016389; SLSR-12-75B) Avail: NTIS CSCL 15/5

The objective of this study was to develop a method of identifying precedence networks associated with aircraft maintenance that is more efficient than totally relying on the memory and experience of mechanics in the field. A precedence network is the sequence in which tasks should be performed because of their interdependencies. An example of this type of dependency would be the necessity to repair a fuel cell before refueling an aircraft. This research involved the use of the Logistic Composite Model (L-COM) developed by Headquarters, Air Force Logistics Command and the Rand Corporation, the F-4E data base which had been constructed as part of Headquarters, Tactical Air Command's L-COM Study, and Maintenance Data Collection System records for F-4E aircraft. GRA

N76-21018# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Engineering.

DEVELOPMENT OF POSSIBLE GUIDELINES TO ASSIST USAF OPERATIVE EMPLOYEES TRANSITIONING IN FIRST-TIME SUPERVISORY POSITIONS M.S. Thesis
Robert J. Sallee Sep. 1975 244 p refs
(AD-A017221; GSM/SM/75S-9) Avail: NTIS CSCL 05/9

Air Force personnel making the transition from operative workers to supervisors for the first time need assistance in acquiring fundamentals of supervision which can be applied on the job. This thesis develops and presents a set of representative guidelines to help satisfy this need. Supervisory training programs of industry and the Air Force are reviewed to determine the attitudes, knowledge, and skills required by the first-time supervisor. Materials within these programs appropriate to the Air Force supervisor are collected and organized into a sample self-help handbook which could be used by the first-time supervisor. GRA

N76-21029# Committee on Aeronautical and Space Sciences (U. S. Senate).
NASA AUTHORIZATION FOR FISCAL YEAR 1977
Moss Washington GPO 30 Mar. 1976 57 p Rept. on H.R. 12453 of Comm. on Aeron. and Space Sci., 94th Congr., 2d Sess., 30 Mar. 1976
(S-Rept-94-718; GPO-57-010) Avail: U.S. Capitol, Senate Document Room

The bill to authorize appropriations to the National Aeronautics and Space Administration for research and development, construction of facilities, and research and program management is reported. Appropriations for FY 1977 are summarized in the following areas: space shuttle; space flight operations; expendable launch vehicles; physics and astronomy; lunar and planetary exploration; life sciences; space applications; earth resources operational systems; aeronautical research and technology; tracking and data acquisition; and technology utilization. J.M.S.

N76-21030# Committee on Aeronautical and Space Sciences (U. S. Senate).
TO AUTHORIZE APPROPRIATIONS TO THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION FOR RESEARCH AND DEVELOPMENT, AND PROGRAM MANAGEMENT, AND FOR OTHER PURPOSES
Washington GPO 23 Mar. 1976 15 p H.R. 12453 referred to the Comm. on Aeron. and Space Sci., 94th Congr., 2d Sess., 23 Mar. 1976
Avail: US Capitol, Senate Document Room

A bill authorizing appropriations to NASA by Congress is introduced. The appropriations were authorized for research and development, facility construction, research and program management, and various other activities-salaries, retirement, and other employee benefits as authorized by law. F.H.W.

N76-21038* George Washington Univ., Washington, D.C.
INSTITUTIONALIZATION OF TECHNOLOGY ASSESSMENT
In its Program of Policy Studies in Sci. and Technol.: Readings in Technol. Assessment Sep. 1975 244 p refs

CSCL 05A

The operational implications of a congressional assessment component are examined by means of a hypothetical structure. Legal and jurisdictional implications, and public policy are discussed. F.O.S.

N76-21042# Stanford Research Inst., Menlo Park, Calif.
CHOOSING TECHNOLOGICAL OPPORTUNITIES FOR INNOVATION IN THE PUBLIC SECTOR. VOLUME 1: BASIC REPORT AND SUMMARY Final Report
Charles W. Williams Mar. 1975 196 p refs
(Contract NSF C-846)
(PB-247075/5; NSF/RA/R-75-001A-Vol-1) Avail: NTIS HC $7.50 HC also avail. for $21.00/set of 3 reports as PB-247074-SET CSCL 05A

This study was undertaken in support of the continuing effort to stimulate technological innovations that will contribute to improving the delivery or performance of public services at the state and local levels of government. The specific purposes were: (1) further development and testing of methodologies for better relating technologies to needs; (2) formulation of better techniques for identification of technological opportunities; (3) establishing more utilitarian methods of barrier analysis, and (4) selection of a small number of innovational opportunities which seem worthy of more detailed priority analysis and support. The plan employed market research, an independent inventory of technological capabilities, and a listing of selection criteria based upon perceived needs. GRA

N76-21176# Federal Aviation Administration, Washington, D.C.
THE NATIONAL AVIATION SYSTEM PLAN 1976 - 1985, APPENDIX 2
Mar. 1975 109 p refs
(AD-A013614) Avail: NTIS CSCL 01/2

The Plan of 1975 is the sixth annual ten-year plan developed by the Federal Aviation Administration. It presents an integrated plan of action for meeting anticipated needs in the National Aviation System through 1985 and provides a focal point for industry/government cooperation in agency planning. Long range plans are made and policies formulated with respect to, the orderly development and use of the navigable airspace, and the orderly development and location of landing areas, Federal airways, radar installations and all other aids and facilities for air navigation, as will best meet the needs of, and serve the interest of civil aeronautics and national defense, except for those needs of military agencies which are peculiar to air warfare and primarily of military concern. The Plan summarizes system additions, improvements, and changes required to meet realistic needs of aviation for the next decade. It is oriented to serve several different groups including aviation users who pay user charges, airport sponsors who build and maintain airports, aviation manufacturers who are helping to construct the system, and FAA personnel who operate and maintain the system. GRA

N76-21193# AMC Inventory Research Office, Philadelphia, Pa.
DEMAND FORECASTING WITH PROGRAM FACTORS Final Report
Martin Cohen Sep. 1975 74 p refs
(AD-A017858; IRO-182) Avail: NTIS CSCL 15/5

Empirical demand forecasting studies have raised doubt about the often-made assumption that repair part demand is proportional to end-item usage. The study was made to test this assumption using a data base consisting of demands on the Army Aviation Systems Command National Inventory Point (AVSCOM NICP) for thousands of stocked items. A simulation of the NICP supply function was used to test the assumption and various proposed forecasting algorithms. The criterion was least holding and ordering cost for constant time-weighted requisitions short. The assumption that demand is proportional to end-item program was supported at least for the items responsible for the largest part of the costs, and an improved algorithm was found. GRA

N76-21577# Massachusetts Univ., Amherst. Dept. of Mechanical and Aerospace Engineering.
GROUP TECHNOLOGY APPLIED TO THE AUTOMATIC HANDLING OF SMALL PARTS Progress Report
G. Boothroyd, C. R. Poli, and L. E. Murch 1 Feb. 1975 47 p refs
(Grant NSF ATA-74-12611)
(PB-247268/6; NSF/RA/T-75-042; PR-1) Avail: NTIS HC $4.00 CSCL 13H

A comprehensive manual suitable for industrial use, describing feeding and orienting techniques for small parts is developed. The manual is being gradually assembled and consists of individual data sheets and a part coding system. Examples of the coding system and the data sheets already developed are presented.
GRA

N76-22094*# Stanford Research Inst., Huntsville, Ala.
USER BENEFITS AND FUNDING STRATEGIES Executive Summary, May - Oct. 1975
N. A. Beauchamp Oct. 1975 22 p refs
(Contract NAS5-22371)
(NASA-CR-144707) Avail: NTIS HC $3.50 CSCL 05A

A three-step, systematic method is described for selecting relevant and highly beneficial payloads for the Interim Upper Stage (IUS) that will be used with the space shuttle until the space tug becomes available. Viable cost-sharing strategies which would maximize the number of IUS payloads and the benefits obtainable under a limited NASA budget were also determined.
Author

N76-22098# Naval Postgraduate School, Monterey, Calif.
A MULTI-RESOURCE LEVELING ALGORITHM FOR PROJECT NETWORKS M.S. Thesis
Chung Ung Lee Sep. 1975 32 p refs
(AD-A016373) Avail: NTIS CSCL 05/1

This thesis presents a modification and extension to the Burgess and Killebrew heuristic resource leveling procedure for project networks. In contrast to previous algorithms appearing in the literature, the objective function of this algorithm is the minimization of the sum of the squared errors in each time period (deviations around the mean usage) of all resources over the duration of the project. This objective function continues the search for an improved schedule beyond that of previous algorithms with their associated objective functions. One important feature is that the algorithm tends to reduce the number of periods that a resource is idle during its duration on the project.
GRA

N76-22099# RAND Corp., Santa Monica, Calif.
AN ANALYST'S VIEW OF THE USES AND ABUSES OF MODELING FOR DECISION-MAKING
G. D. Brewer Jan. 1975 32 p refs
(AD-A016497; P-5395) Avail: NTIS CSCL 05/1

The report discusses the question of whether or not models, simulations, and games (MSGs) are being used to advantage by policy makers. Although these techniques are being used extensively, close inspection of much of the activity reveals a divergence between those who build MSGs and those who use them for policy making. Users are characterized as inadequately trained to know what they are buying; the experts responsible for the models are criticized for not assuming responsibility for their products. Ameliorative measures are suggested.
GRA

N76-22101# Dikewood Corp., Albuquerque, N.Mex.
CONCEPT OF A MANAGEMENT INFORMATION SYSTEM FOR TESPO Final Report
B. G. VanBlaricum and June G. Brenton Oct. 1975 45 p refs
(Contract F29601-74-C-0022)
(AD-A016452; DC-TR-1242-1; AFSWC-TR-75-5) Avail: NTIS CSCL 05/1

In a recent survey of available Management Information Systems, three systems that can most nearly fulfill the requirements of the Test and Evaluation System Program Office (TESPO) were selected for detailed investigation. The results of the survey and study are given in this report. The conclusion is drawn that the TESPO should select one of the three for implementation to assist with management of the Near-Term COR development and that the operating MIS be improved as experience is gained through operation and methods of improvement are further explored.
GRA

N76-22102# Naval Postgraduate School, Monterey, Calif.
MANPOWER PLANNING MODELS, 3. LONGITUDINAL MODELS
R. C. Grinold and K. T. Marshall Aug. 1975 90 p refs
(AD-A016440; NPS-55MT5081) Avail: NTIS CSCL 05/9

This is the third in a series of reports on manpower planning models. The emphasis in this report is on the formulation, theory, and application of longitudinal models. The concepts of chain flows are introduced and exploited in a number of applications.
GRA

N76-22103# Office of Management and Budget, Washington, D.C. *Study Committee on Policy Management Assistance.*
STRENGTHENING PUBLIC MANAGEMENT IN THE INTERGOVERNMENTAL SYSTEM: A REPORT PREPARED FOR OFFICE OF MANAGEMENT AND BUDGET BY THE STUDY COMMITTEE ON POLICY MANAGEMENT ASSISTANCE
1975 72 p refs Sponsored by NSF
(PB-248334/5; NSF/RA/G-75-023) Avail: NTIS HC $4.50 CSCL 05A

This report is the second of three reports by an interagency study committee. The objectives of the committee were to develop an inventory of federal policies and programs related to the policy management capacity of state and local governments, to identify the needs of state and local governments in policy management areas, and to assess the adequacy of the resources of the Federal government that bear on these needs. This report is designed to focus public debate on issues of public management and intergovernmental policy and program relationships.
GRA

N76-22107*# National Aeronautics and Space Administration, Washington, D.C.
INFORMATION MANAGEMENT, TODAY AND TOMORROW
Harold E. Pryor [1975] 5 p Presented at the Federal Govt./Kodak Symp., Williamsburg, Va., 14 Jan. 1976
(NASA-TM-X-74111) Avail: NTIS HC $3.50 CSCL 05B

Current problems and future trends in information management are briefly summarized in relation to scientific and technical information management systems and management of management information (planning, marketing, and operations).
J.M.S.

N76-22110# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.
THE INFORMATIONAL DIFFERENCES BETWEEN THE DEPARTMENT OF DEFENSE SPONSORED AND CIVILIAN-SPONSORED MANAGEMENT INFORMATION SYSTEMS M.S. Thesis
Patrick R. Ray and David W. Spicer Aug. 1975 155 p refs
(AD-A016388; SLSR-11-75B) Avail: NTIS CSCL 05/2

The Department of Defense has established an elaborate set of criteria (Cost/Schedule Control System Criteria - C/SCSC) which must be satisfied by a contractor's management information system before the award of a major weapon system contract. Meanwhile, many of these contractors continue to use much less elaborate, but not necessarily less effective, privately developed information systems to manage equivalent major non-military projects. In many cases, the contractor actually manages the weapon system contract with his own system, supporting the government system simply to satisfy contractual

requirements. This research is a first step in analyzing the need for such an elaborate DOD criteria. GRA

N76-22370# Army Materials and Mechanics Research Center, Watertown, Mass.
ARMY UTILIZATION MANAGEMENT OF METALLIC MATERIALS Final Report
Kenneth H. Abbott Oct. 1975 86 p refs
(AD-A017792; AMMRC-MS-75-8) Avail: NTIS CSCL 11/6

Twenty metallic materials are reviewed in terms of: (1) geologic abundance in context with their current use and anticipated demand; (2) possible substitutes for those which may be in short supply; (3) those abundant materials which are currently underutilized; (4) conservation of these materials within the DoD; and (5) the potential for improved recycling. Recommendations are made to improve materials conservation and management technology. Author (GRA)

N76-22650# Research Triangle Inst., Research Triangle Park, N.C.
RANN UTILIZATION EXPERIENCE. CAST STUDY NO. 12: OUTER CONTINENTAL SHELF OIL AND GAS
D. E. Kash and I. L. White 1975 33 p Prepared in cooperation with Oklahoma Univ., Norman
(Contract NSF C-927).
(PB-247256/1; NSF/RA/G-75-040) Avail: NTIS HC $4.00 Also included in complete report and summary PB-247243, HC $13.00 CSCL 08I

This University of Oklahoma study of outer continental shelf (OCS) oil and gas operations was, at the time of its completion, the only comprehensive and disinterested study of both OCS oil and gas extraction technologies and government regulatory and management policies relating to those operations. The final report includes specific policy recommendations that were incorporated almost verbatim into several pieces of proposed federal legislation. The study has also accounted for the reshaping of several current policies and procedures of the agencies that control OCS leasing and management. This report briefly discusses the study and utilization of its results. GRA

N76-22669# Select Committee on Small Business (U. S. House).
ENERGY DATA REQUIREMENTS OF THE FEDERAL GOVERNMENT. PART 2: OIL SHALE
Washington GPO 1974 145 p refs Hearing before Subcomm. on Activities of Regulatory Agencies of Permanent Select Comm. on Small Business, 93d Congr., 2d Sess., 28 Jan. 1974
(GPO-32-466) Avail: Subcomm. on Activities of Regulatory Agencies

The information and evaluation techniques by which the Department of the Interior determines the value of land leased in the oil shale program are examined. Recommendations are included. J.M.S.

N76-22678# Research Triangle Inst., Research Triangle Park, N.C.
RANN UTILIZATION EXPERIENCE: FINAL REPORT TO THE NATIONAL SCIENCE FOUNDATION (WITH APPENDICES) INCLUDES SUMMARY Report for 11 Dec. 1974 - 16 Jun. 1975
16 Jun. 1975 536 p refs
(Grant NSF C-927)
(PB-247243/9; NSF/RA/G-75-027-App) Avail: NTIS HC $13.00 CSCL 05A

This study analyzes 21 RANN projects which, in the judgment of NSF management, were significant in demonstrating fulfillment of the commitment to the practical application of knowledge in the solution of national problems. The 21 studies of specific RANN projects identify examples of utilized research. For example, information that helped the public learn about the energy crisis; a technology for precision bending of large steel beams, which may enhance the competitiveness of American shipbuilders; an enumeration of issues concerning cable television; the productivity of municipal service organizations; and environmental problems. GRA

N76-22679# Research Triangle Inst., Research Triangle Park, N.C.
RANN UTILIZATION EXPERIENCE: FINAL REPORT TO THE NATIONAL SCIENCE FOUNDATION (SUMMARY REPORT) Report for 11 Dec. 1974 - 16 Jun. 1975
R. M. Burger 16 Jun. 1975 22 p
(Grant NSF C-927)
(PB-247244/7; NSF/RA/G-75-028) Avail: NTIS HC $3.50 Also included in complete report and summary PB-24243, HC $13.00 CSCL 05A

N76-22912*# ILC Industries, Inc., Dover, Del.
APOLLO/SKYLAB SUIT PROGRAM MANAGEMENT SYSTEMS STUDY. VOLUME 2: COST ANALYSIS
30 Apr. 1974 58 p
(Contract NAS9-6100)
(NASA-CR-147587; SES-074-101-Vol-2) Avail: NTIS HC $4.50 CSCL 06K

The business management methods employed in the performance of the Apollo-Skylab Suit Program are studied. The data accumulated over the span of the contract as well as the methods used to accumulate the data are examined. Management methods associated with the monitoring and control of resources applied towards the performance of the contract are also studied and recommended upon. The primary objective is the compilation, analysis, and presentation of historical cost performance criteria. Cost data are depicted for all phases of the Apollo-Skylab program in common, meaningful terms, whereby the data may be applicable to future suit program planning efforts. Author

N76-23044# Delaware Univ., Newark. Coll. of Marine Studies.
AN EVALUATION MULTI-PURPOSE OFFSHORE INDUSTRIAL PORT ISLANDS. MAJOR RESEARCH PROBLEMS AND PROMISING RESEARCH APPROACHES Final Report
P. Swatek May 1975 98 p Prepared in cooperation with Texas A and M Univ., College Station, Harris (Frederic R.), Inc. and Gilbert Assoc., Inc.
(Grant NSF GI-43111)
(PB-248336/0; NSF/RA/E-75-054B) Avail: NTIS HC $5.00 CSCL 13B

Evaluated are economic engineering, legal, and environmental possibilities of large (four to six square mile) artificial industrial/port islands located off the U.S. Atlantic and Gulf Coasts. This volume describes the procedures and results from the workshop which was conducted to identify major problems and promising approaches to solve the problems associated with man made islands. The workshop was divided into the following functional groups: (1) Economics and finance; (2) industrial tenants; (3) environmental; (4) legal and institutional; and (5) structure and construction. GRA

N76-23046*# Draper (Charles Stark) Lab., Inc., Cambridge, Mass.
HEALTH-CARE DISTRICT MANAGEMENT INFORMATION SYSTEM PLAN: REVIEW OF OPERATIONS ANALYSIS ACTIVITIES DURING CALENDAR YEAR 1975 AND PLAN FOR CONTINUED RESEARCH AND ANALYSIS ACTIVITIES Final Report
George J. Nielson and William G. Stevenson Mar. 1976 169 p refs
(Contract NAS9-14815)

(NASA-CR-147579; R-966) Avail: NTIS HC $6.75 CSCL 05B

Operations research activities developed to identify the information required to manage both the efficiency and effectiveness of the Veterans Administration (VA) health services as these services relate to individual patient care are reported. The clinical concerns and management functions that determine this information requirement are discussed conceptually. Investigations of existing VA data for useful management information are recorded, and a diagnostic index is provided. The age-specific characteristics of diseases and lengths of stay are explored, and recommendations for future analysis activities are articulated. The effect of the introduction of new technology to health care is also discussed. Author

N76-23048# National Inst. for Community Development, Inc., Washington, D.C.
HEALTH SERVICE TECHNOLOGY BIBLIOGRAPHIC SERVICE. VOLUME 1: THE STATUS OF THE ACTIVATED PATIENT/CONSUMER CONCEPT Final Report, 22 Jun. 1974 - 20 Jul. 1975
Amelia Davis and Ronald D. Morgan 7 Oct. 1975 87 p
(Contract PHS-HRA-106-74-21)
(PB-247745/3; NCHSR-76/44-Vol-1) Avail: NTIS HC $5.00 HC also available from NTIS $16.00/set of 4 reports as PB-247744-SET CSCL 06E

Activated Patient/Consumer programs are analyzed along specific, defined dimensions and a comprehensive literature review is presented. Background information on the concept augmented by an annotated bibliography is given along with an analytical argument that supports the development of research and demonstration projects to further study the concept. A generic model for Activated Patient/Consumer Concept research and demonstration projects, and a profile of existing Activated Patient/Consumer project experience are included. GRA

N76-23049# National Inst. for Community Development, Inc., Washington, D.C.
HEALTH SERVICE TECHNOLOGY BIBLIOGRAPHIC SERVICE. VOLUME 2: ANALYSIS OF INFORMATION SYSTEMS REQUIREMENTS OF HMO's Final Report, 22 Jun. 1974 - 20 Jul. 1975
Elizabeth Ewing, Thomas Landau, Michael Nowicki, and Ransom Parker 7 Oct. 1975 70 p
(Contract PHS-HRA-106-74-21)
(PB-247746/1; NCHSR-76/45-Vol-2) Avail: NTIS HC $4.50 HC also available from NTIS $16.00/set of 4 reports as PB-247744-SET CSCL 06E

Results are presented of a literature review and a series of consultations relative to requirements for management information systems appropriate and necessary for use by Health Maintenance Organizations (HMO's). Emphasis is given to: (1) conceptual and operational issues relevant to the selection or design of information systems, and (2) examples of systems and components presently in use. A bibliography is included. GRA

N76-23053# Purdue Univ., Lafayette, Ind. Water Resources Research Center.
WATER QUALITY MANAGEMENT AND INFORMATION SYSTEMS Technical Report, 1 Jul. 1973
A. B. Whinston Sep. 1975 71 p refs
(PB-247142/3; TR-68) Avail: NTIS HC $4.50 CSCL 13B

A data management system is presented that will aid planners in the implementation of a decision support system which addresses the technical aspects of areawide water quality planning. The basis is the systematic study of the information flows and their relationships to the goals of the water planning group. The data required for the system include: (1) an area description, (2) quality goals, (3) point source data, (4) nonpoint source data, (5) cost information for the various types of treatments, (6) data on land use plans, populations and employment, and (7) design flow of municipal facilities. The system is capable of supporting data bases and models for a wide variety of planning problems in addition to water quality management. GRA

N76-23060# Committee of Conference (U. S. Congress).
NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT, 1976
Washington GPO 30 Jul. 1975 14 p Conference Rept. to accompany H.R. 4723, 94th Congr., 1st Sess., 30 Jul. 1975 (H-Rept-94-422; GPO-57-006) Avail: US Capitol, Senate Document Room

The recommendations concerning the Science Foundation's appropriations to the House and Senate are reported. Funding levels and programs are listed. F.O.S.

N76-23222 Transportation Systems Center, Cambridge, Mass.
ADVANCED AIR TRAFFIC AMANGEMENT SYSTEM STUDY
Robert H. Reck *In* Agard Plans and Develop. for Air Traffic Systems Feb. 1976 11 p refs

Plans for the advanced air traffic management system for the late 1980's and beyond are summarized. The plans are presented in the framework of an evolutionary system concept of traffic management building upon the upgraded third generation air traffic control system, and designed to meet the projected demands for service, safety, and flexibility in a cost effective manner. The advanced air traffic management system concept is characterized by the use of satellite to supplement ground equipment for aircraft surveillance, navigation, and communication over the United States and nearby oceanic regions; strategic flight planning and control for flight in dense traffic regions; centralization of the control system; and a high level of automation. A program of research and development is described to provide the information needed for planning future system developments. Author

N76-23449 British Library Lending Div., Boston Spa (England).
MEASUREMENT ENGINEERING
J. Schiele 1975 16 p refs Transl. into ENGLISH from Brennstoff-Waerme-kraft (West Ger.), vol. 27, no. 4, 1975 p 182-185
(BLL-NEL-TT-2634-(6075.461)) Avail: British Library Lending Div., Boston Spa, Engl.: 2 BLL photocopy coupons

The continuing development of measurement engineering in industrial manufacturing processes, as an essential precondition for introducing automation, and for economic and quality control requirements are briefly discussed. Areas covered are: mechanical measurement quantities, temperature and moisture measurement, analysis engineering and environmental protection, electrical measurement quantities, machine measurement engineering, and large plant instrumentation. A.L.

N76-23857 Cornell Univ., Ithaca, N.Y.
ON THE PROBLEM OF DYNAMIC MEMORY MANAGEMENT Ph.D. Thesis
Dennis Way Ting 1975 94 p
Avail: Univ. Microfilms Order No. 76-9571

The problem of dynamic memory allocation is studied. It is found that all allocation algorithms will require in the order of mlogm words of memory to preclude the possibility of memory overflow, where m is the maximum number of busy words at any one time. Dynamic memory compaction is then considered in light of the above result. A cost is defined by which performance of all compaction algorithms is evaluated. Finally, new compaction algorithms are proposed, and their implementations discussed. Dissert. Abstr.

N76-24056 British Library Lending Div., Boston Spa (England).
EXPERIENCE AND DEVELOPMENT OF AN AUTOMATIC SYSTEM FOR TECHNICAL AND ECONOMIC PLANNING AT WORKS
A. G. Karpov, A. A. Semin, I. I. Usacheva, and I. I. Mikhailyuk 1975 15 p refs Transl. into ENGLISH from Stal. (USSR), v. 5, 1975 p 461-464
(BLL-M-25217-(5828.4F)) Avail: British Library Lending Div., Boston Spa, Engl.: 2 BLL photocopy coupons

The types of problems solved by the Minsk-22 computer are given, and the introduction of automatic systems for technical and economic planning are discussed. The type of problems are: (1) analysis of operative information for running shops and individual plants; (2) planning, calculating and analyzing costs; (3) calculating and analyzing production and sales; (4) statistical analysis of the technical and economic particulars of steelmaking; and (5) calculation of sales of commercial products and profits.
F.O.S.

N76-24057# National Academy of Sciences - National Research Council, Washington, D.C. Ad Hoc Panel on Experimental R and D Incentives
NEW EXPERIMENTS IN RESEARCH AND DEVELOPMENT INCENTIVES Final Report
Jun. 1975 31 p ref
(Contract NSF C-310)
(PB-248193/5; AE/ERDIP-001) Avail: NTIS HC $4.00 CSCL 05A

An evaluation of the NSF program on experimental research and development incentives is given. Demand articulation (provides funds through state governments for innovative technology planning by municipalities) investment incentives (interactions with federal agencies whose activities influence availability of capital for innovative enterprises), and research application (longitudinal study of federal agencies' methods for stimulating transfer of their R and D results into the public marketplace) are among the factors discussed.
GRA

N76-24058# Air Force Business Research Management Center, Wright-Patterson AFB, Ohio.
AN ANALYSIS OF APPEALED AIR FORCE CONTRACT DISPUTES Final Independent Study
Paul E. Newman Nov. 1975 75 p refs
(AD-A018606; AFBRMC-I-3-1-74) Avail: NTIS CSCL 05/1

The objective of this study was to provide a synthesis of appealed contract disputes and to identify the relationships of the key variables which cause disputes in Air Force contracts. Using data from 180 FY-74 ASBCA Appeal Data Reports, an attempt was made to investigate relationships among eight variable types (major command, award method, contract type, procurement type, party of interest, principal clause, contract amount, and claim amount). Considerable effort was directed toward constructing 28 chi-square contingency tables and the results are discussed.
GRA

N76-24059# Assistant Secretary of Defense (Systems Analysis), Washington, D.C.
PROCEEDINGS OF THE 19TH ANNUAL DEPARTMENT OF DEFENSE COST ANALYSIS SYMPOSIUM
25 Sep. 1974 68 p refs Symp. held at Airlie, Vir., 22-25 Sep. 1974
(AD-A019185) Avail: NTIS CSCL 05/1

Contents: Relationships between the Congress and Department of Defense; Congressional Budget and Impoundment Control Act of 1974; Cost data problems; Inflation Considerations in weapon systems costs; Personnel costing; Design to cost (DTC) and life cycle cost (LCC) implications; Operations and support costs; Acquisition cost estimating; Economic analysis and program evaluation.
GRA

N76-24060# Defense Communications Engineering Office, Reston, Va.
DCS FIVE-YEAR PROGRAM (FYP) PRIORITY METHODOLOGY
Gary Dew Dec. 1975 49 p refs
(AD-A019515; TN-46-75) Avail: NTIS CSCL 05/1

Eight priority methodologies that could be used for the DCS Five Year Program (FYP) are discussed evaluated and compared. These are: purpose/function, popularity, programmatic/technological, cost-savings, utility, systems effectiveness, macro-systems, and composite. A priority system in the FYP is required in order to recognize and fund the more important programs and projects. The most likely candidate methodology is the composite priority methodology.
GRA

N76-24072# Committee on Science and Technology (U. S. House).
A PROPOSED NATIONAL SCIENCE POLICY AND ORGANIZATION ACT OF 1975
1975 62 p
(PB-248384/0) Avail: NTIS MF $2.25 CSCL 05A

A bill intended to be a stepping stone toward the implementation of a statutory science policy is proposed. Four important devices are suggested in this legislation: a comprehensive statement of national policy for Science and Technology to help crystallize and effect policy at the highest levels of government; a Department of Research and Technology Operations to bring together certain Federal research-related activities through a unified and efficient governmental structure; and a Science and Technology Information and Utilization Corporation to promote full, prompt and efficient access by the public to the benefits of research and development.
GRA

N76-24089*# Chase Econometric Associates, Inc., Bala Cynwyd, Pa.
THE ECONOMIC IMPACT OF NASA R AND D SPENDING Appendices
Michael K. Evans Apr. 1976 134 p refs
(Contract NASw-2741)
(NASA-CR-144353) Avail: NTIS HC $6.00 CSCL 05C

Seven appendices related to a previous report on the economic impact of NASA R and D spending were presented. They dealt with: (1) theoretical and empirical development of aggregate production functions, (2) the calculation of the time series for the rate of technological progress, (3) the calculation of the industry mix variable, (4) the estimation of distributed lags, (5) the estimation of the equations for gamma, (6) a ten-year forecast of the U.S. economy, (7) simulations of the macroeconomic model for increases in NASA R and D spending of $1.0, $.0.5, and 0.1 billions.
Y.J.A.

N76-24873# National Oceanic and Atmospheric Administration, Rockville, Md.
RESULTS OF A SURVEY OF STATE COASTAL ZONE MANAGEMENT PROGRAM INFORMATION NEEDS
Oct. 1975 37 p refs
(PB-249595/0; NOAA-76011506) Avail: NTIS HC $4.00 CSCL 13B

A survey of all state and territory coastal zone management programs was conducted in July and August 1975 to assess (1) FY 76 state program assistance needs, (2) the usefulness of past OCZM technical assistance efforts, and (3) their long term technical assistance needs. States and territories were asked to rank order candidate topics in various categories. The results of the survey are presented along with detailed comments states made on each topic and a copy of the survey form.
GRA

N76-24874# National Oceanic and Atmospheric Administration, Rockville, Md.

STATE COASTAL ZONE MANAGEMENT ACTIVITIES 1974
Oct. 1974 128 p refs
(PB-249753/5; NOAA-76011503) Avail: NTIS HC $6.00 CSCL 13B

In 1974 alone, more than $12,000,000 in federal and state funds have been committed to state coastal zone management efforts. Moreover, 31 of the 34 coastal states and territories are participating in the coastal zone management program. Each state's coastal zone management activities are analyzed. This information should enable a comparative analysis to be made of the differing approaches taken by the states. GRA

N76-24922# Naval Ship Research and Development Center, Bethesda, Md.
USER INTERFACES TO DATABASE MANAGEMENT SYSTEMS
David K. Jefferson Sep. 1975 14 p refs Presented at the 14th Ann. Tech. Symp., Washington, D. C., Ch. of the ACM, Gaithersburg, Md., 19 Jun. 1975 Revised
(TF53531009)
(AD-A019654; DTNSRDC-4751-Rev) Avail: NTIS CSCL 09/2

Users of database management systems are divided into four groups: databases administrators, programmers, parametric users, and casual users. The interfaces between user and system are divided into three groups: data-oriented, procedure-oriented, and problem-oriented. Two logical models of interfaces are described and evaluated: the network model and the relational model. An extended example is used to demonstrate advantages of each model. Efficiency of implementation is considered, particularly in regard to future hardware developments.
Author (GRA)

N76-24939# Army Construction Engineering Research Lab., Champaign, Ill.
REFERENCE MANUAL FOR THE AUTOMATED MILITARY PROGRESS REPORTING SYSTEM (AMPRS) Final Report
Uldis R. Poskus and Lee Thurber Nov. 1975 427 p refs
(DA Proj. 4A7-62719-AT-01)
(AD-A018438; CERL-TR-P-49) Avail: NTIS CSCL 09/2

This reference manual for the Automated Military Construction Progress Reporting System (AMPRS) contains the Dictionary of Data Elements, Code Tables, Data Element - Report Matrix, Output Report Analysis, Residency of AMPRS Data Elements, and Sequential Table of P and C prefixed numbers. This manual is designed to assist OCE Divisions and Districts responsible for military construction in operating AMPRS. This is one of five system manuals for the AMPRS. Others are: Executive Summary for the AMPRS, USERS Manual for the AMPRS, ADP Manual for the AMPRS, and Conversion Instructions for the AMPRS.
Author (GRA)

N76-24943# RAND Corp., Santa Monica, Calif.
THE COMPUTER RESOURCE MANAGEMENT STUDY: EXECUTIVE SUMMARY Interim Report
Stephen M. Drezner, Hyman Shulman, and Willis Ware Sep. 1975 37 p
(Contract F44620-73-C-0011)
(AD-A018884; R-1855-PR) Avail: NTIS CSCL 09/2

This report summarizes the findings of a study of policy and organizational aspects of the management of Air Force computer resources. Because computer technology is relatively recent and very fast-changing, the Air Force, like many other organizations, is experiencing difficulties in managing its computer resources. This report presents an illustrative system development life cycle, which depicts an orderly process for development. Five organizational and policy actions are recommended to improve the Air Force's management of its computer resources: (1) establish an Assistant Chief of Staff for Computer Resource Management; (2) develop all computer systems through a development channel in the DCS/Research and Development

N76-25078# Schwarz (Leroy B.), Rochester, N.Y.
SINGLE CYCLE CONTINUOUS REVIEW POLICIES FOR ARBORESCENT PRODUCTION/INVENTORY SYSTEMS Final Report
Leroy B. Schwarz 30 Oct. 1975 31 p refs
(AD-A018647; Working-Paper-7544) Avail: NTIS CSCL 05/1

In this paper the author examines optimal and near-optimal continuous review policies for a deterministic arborescent inventory system: known and constant outside demand must be met without backlogging or lost sales at minimum average system cost per unit time. Costs are of two types: a fixed order cost at each stage and proportional holding costs on each stage's echelon inventory. The author describes some characteristics of optimal policies and, under fairly mild conditions (e.g., zero initial inventory), prove that the optimal stationary policy is a 'single-cycle' policy. An efficient branch-and-bound algorithm for determining optimal single-cycle policies for arborescent systems is presented. The near-optimality of 'system myopic single-cycle policies' is also examined. GRA

N76-25079# Naval Postgraduate School, Monterey, Calif.
DOD BUDGET DATA ANALYZED BY ROBUST REGRESSION TECHNIQUES
Donald P. Gaver Sep. 1975 32 p refs
(AD-A018296; NPS-55GV75091) Avail: NTIS CSCL 05/1

This paper describes the application of modern robust/resistant regression techniques to DOD data. Sampling experiments to evaluate certain estimating procedures are also summarized. Author (GRA)

N76-25080# Decisions and Designs, Inc., McLean, Va.
MODELING SUBSEQUENT ACTS FOR DECISION ANALYSIS
Rex V. Brown Jul. 1975 43 p refs Sponsored in part by DARPA
(Contracts N00014-75-C-0426; N00014-73-C-0149; NR Proj. 197-031; NR Proj. 197-023)
(AD-A018888; Rept-75-1) Avail: NTIS CSCL 12/1

In this report, a central and commonly adopted convention of applied decision analysis, the 'preposterior model', is critically examined and found dangerous. In addition, some alternative models are explored. Author (GRA)

N76-25081# Stanford Research Inst., Menlo Park, Calif.
AN INTERACTIVE MANAGEMENT SUPPORT SYSTEM FOR PLANNING, CONTROL, AND ANALYSIS
Richard E. Fikes and Marshall C. Pease Nov. 1975 43 p refs
(Contract N00014-71-C-0210)
(AD-A019484; SRI-TR-1031-12) Avail: NTIS CSCL 05/1

A management support system currently being implemented at SRI considers the operational problems faced by the commander of a naval air squadron. It provides a research environment in which to study means of aiding him in planning the use of his resources of pilots, aircraft, maintenance mechanics and facilities, and other limited resources to accomplish missions and other required objectives. It provides a tool for studying how to aid him in controlling the operations, both by identifying events which may require replanning and, where it can, by adjusting operations appropriately. Finally, it provides a facility in which to study how he can analyze and evaluate past operations to improve the squadron's performance. GRA

N76-25089# Royal Naval Personnel Research Committee, London (England).
A SOURCE OF BIAS IN HUMAN ENGINEERING RESEARCH
E. C. Poulton Mar. 1974 8 p refs
(AD-A019318; OES-7/74) Avail: NTIS CSCL 05/5

In a within subject experimental design, each person receives a number of conditions in a balanced or random order. The design produces asymmetrical transfer and range effects. Yet practically all human engineering recommendations are based upon the results of experiments which use this kind of design. The recommendations need to be checked, using separate groups of people for each experimental condition. GRA

N76-25111 Brown, Boveri und Cie, A.G., Mannheim (West Germany). Zentralstelle fuer Technische Dokumentation.
INDUSTRY DOCUMENTATION: A NECESSARY EVIL
Werner Diers *In* AGARD The Probl. of Optimization of User Benefit in Sci. and Technol. Inform. Transfer Mar. 1976 10 p refs

Documentation of technical and scientific literature in industry in the Federal Republic of Germany is discussed in terms of user needs. The advantages of a centralized, computerized documentation center are reviewed. J.M.S.

N76-25648# National Oceanic and Atmospheric Administration, Rockville, Md. Office of Coastal Zone Management.
COASTAL MANAGEMENT ASPECTS OF OCS OIL AND GAS DEVELOPMENTS Technical Information Paper
Edward T. Laroe, Paul R. Stang, Katharine H. Conroy, David W. Laist, and Trevor Q. Neill Jan. 1975 90 p refs
(PB-249751/9; NOAA-76011504) Avail: NTIS HC$5.00 CSCL 08I

This report provides a brief overview of Outer Continental Shelf (OCS) petroleum activities and a description of: Federal OCS responsibilities and roles, offshore and onshore activities associated with OCS operations, socioeconomic and environmental impacts deriving from those activities and suggestions for planning and management for OCS developments. The annotated bibliography describes the OCS-related portions of the literature cited. A directory of agencies and organizations involved with OCS oil and gas related activities is included. GRA

N76-25675# Institute of Gas Technology, Chicago, Ill.
ASSESSMENT OF PRIVATE SECTOR FUNDING OF ENERGY R AND D Final Report
Nicholas Biederman, Peter Ketels, Kenneth Burnham, William Conaghan, and Daniel Barszcz 15 Mar. 1975 58 p refs
(Contract NSF C-924)
(PB-249136/3) Avail: NTIS HC $4.50 CSCL 10A

Information on energy R&D in the private sector (manufacturers and utilities) is provided to serve as an input for planning government programs. Information provided consists of reported funding levels in 1973 and 1974 for a sample of 130 manufacturers and in 1973 for interstate natural gas pipeline companies and electric utilities as reported to the Federal Power Commission. An estimate of total energy R and D funding in 1973 by the private sector based on this sample is also provided. Manpower expenditure is discussed. GRA

N76-25681# Ultrasystems, Inc., Phoenix, Ariz. Dynamic Science Div.
FEA/C AND E RD AND D FIVE YEAR MASTER PROGRAM PLAN
Washington FEA Oct. 1974 152 p Sponsored by FEA
(Contract DI-14-01-0001-1800)
(PB-249453/2; Rept-9999-75-3; FEA/D-76/015) Avail: NTIS HC $6.75 CSCL 10A

This Five Year Master Program Plan (MPP) was prepared to meet the overall conservation goals of project Independence. It constitutes a program for the creation, management, and execution of a systematic RD and D operations plan which will provide for continuous evaluation and development of optimum project achievement strategies. It strives after maximum, effective application of all resources bearing on energy conservation. GRA

N76-25745# Committee on Merchant Marine and Fisheries (U. S. House).
COASTAL ZONE MANAGEMENT
Washington GPO 1975 307 p refs Hearings on H.R. 1776, H.R. 2928, H.R. 3124, H.R. 3481, H.R. 3637, H.R. 3807, H.R. 3981, H.R. 4300, H.R. 4858, H.R. 5916, H.R. 6090, H.R. 6255, and S. 586 before Subcomm. on Oceanography of Comm. on Merchant Marine and Fisheries, 94th Congr., 1st Sess., 29-30 Apr., 11 and 14 Jul., 3 Sep. 1975
(GPO-60-091) Avail: Subcomm. on Oceanography

House bills which amend the Coastal Zone Management Act of 1972 are considered. The bills authorize financial assistance to coastal states to enable them to evaluate the effects on their coastal zones of offshore energy development in or on the Outer Continental Shelf and to provide for needed public facilities and services. The bills also provide assistance for coordinating coastal zone planning and for other purposes. The text of the legislation and related testimony are presented. D.M.L.

N76-25823# Stanford Univ., Calif. Dept. of Computer Science.
AN OVERVIEW OF PRODUCTION SYSTEMS
Randall Davis and Jonathan King Oct. 1975 43 p refs
(Contracts DAHC15-73-C-0435; PHS-HS-01544; ARPA Order 2494)
(AD-A019702; SU-STAN-CS-75-524; SU-AIM-271) Avail: NTIS CSCL 09/2

Since production systems were first proposed in 1943 as a general computational mechanism, the methodology has seen a great deal of development and has been applied to a diverse collection of problems. Despite the wide scope of goals and perspectives demonstrated by the various systems, there appear to be many recurrent themes. This paper is an attempt to provide an analysis and overview of those themes, as well as a conceptual framework by which many of the seemingly disparate efforts can be viewed, both in relation to each other, and to other methodologies. Accordingly, the authors use the term 'production system' in a broad sense, and attempt to show how most systems which have used the term can be fit into the framework. The comparison to other methodologies is intended to provide a view of PS characteristics in a broader context, with primary reference to procedurally-based techniques, but with reference also to some of the current developments in programming and the organization of data and knowledge bases. GRA

N76-25846# Army Construction Engineering Research Lab., Champaign, Ill.
ADP MANUAL FOR THE AUTOMATED MILITARY CONSTRUCTION PROGRESS REPORTING SYSTEM (AMPRS) Final Report
W. G. Guiar, J. E. Fitzpatrick, E. A. Rodd, R. Skarseth, and C. J. LeBlanc Nov. 1975 321 p
(DA Proj. 4A7-627A-AT-01)
(AD-A018437; CERL-TR-P-48) Avail: NTIS CSCL 09/2

This manual presents procedures for using the Automated Military Construction Progress Reporting System. The information is directed toward the operators in the Data Processing Center. More detailed user instructions for the project managers and for engineering, construction, and real estate personnel may be found in the companion manuals: Users Manual for the AMPRS, Reference Manual for the AMPRS, Executive Summary for the AMPRS, and Conversion Instructions for the AMPRS.
Author (GRA)

N76-25847# Army Construction Engineering Research Lab., Champaign, Ill.

CONVERSION INSTRUCTIONS FOR THE AUTOMATED MILITARY CONSTRUCTION PROGRESS REPORTING SYSTEMS (AMPRS) Final Report
W. G. Guiar, J. E. Fitzpatrick, E. A. Rood, R. Skarseth, and C. J. LeBlanc Nov 1975 227 p refs
(DA Proj. 4A7-62719-AT-01)
(AD-A018439; CERL-TR-P-51) Avail: NTIS CSCL 09/2

The Automated Military Construction Progress Reporting System (AMPRS) is a standard Corps system. The process of installing this system at a district or division must follow a specific set of instructions to avoid errors and the time wasted in correcting them. This report provides explicit guidance for converting any military design and construction progress reporting system within the Corps of Engineers to the AMPRS. The report is useful only before and during the conversion process. The Users Manual for the AMPRS, the ADP Manual for the AMPRS, the Reference Manual for the AMPRS, and the Executive Summary for the AMPRS are companion manuals that provide information about AMPRS, following conversion. Author (GRA)

N76-25885# Stanford Research Inst., Menlo Park, Calif.
A PRELIMINARY CHARACTERIZATION OF A DECISION STRUCTURING PROCESS FOR THE TASK FORCE COMMANDER AND HIS STAFF
M. W. Merkhofer, A. C. Miller, R. A. Howard, and S. N. Tani Dec. 1975 236 p refs
(Contract N00014-75-C-0623)
(AD-A019302; SRI-MSC-4030) Avail: NTIS CSCL 12/1

The specific objectives of the research described are (1) to determine whether decision analysis can be used to structure and analyze decisions of concern to task force commanders, (2) to identify those procedures that are most successful in developing structural decision models, and (3) to develop a protocol for using decision analysis procedures to structure task force decisions. Two experimental applications of decision analysis to a realistic task force decision environment are described. Problems with current task force decision-making methods are identified and suggestions for improvement are presented. A successful structuring process is described at three levels of detail. Implications of the research for the computer implementation of a decision aiding system for task force commanders are presented. Author (GRA)

N76-26030# George Washington Univ., Washington, D.C. School of Government and Business Administration.
THE ADMINISTRATION OF COST ACCOUNTING STANDARDS Ph.D. Thesis
David Vincent Lam Feb. 1976 411 p refs
(AD-A019581) Avail: NTIS CSCL 05/1

The study examined the administration of CAS (Cost Accounting Standards) by the relevant Federal agencies. Such aspects as the legislative history and intent of CAS or the research and development of standards were not emphasized. Due to the application of CAS to non-defense contracts through the Federal Procurement Regulations (FPR), non-defense agencies and contractors were also included in the study. GRA

N76-26031# Stanford Research Inst., Menlo Park, Calif. Center for the Study of Social Policy.
HANDBOOK OF FORECASTING TECHNIQUES Final Report
Arnold Mitchell, Burnham H. Dodge, Pamela G. Kruzic, David C. Miller, and Peter Schwartz Dec. 1975 316 p refs
(Contract DACW31-75-C-0027; DA Proj. 31117; SRI Proj. URU-3738)
(AD-A019280; IWR-CR-75-7) Avail: NTIS CSCL 05/1

The report is designed to help planners in the Army Corps of Engineers improve their expertise in long range forecasting. Twelve basic methods suitable for a wide range of technological, economic, social, and environmental forecasting are selected and discussed. Procedures for using each method are described and illustrated with examples. Some forecasting techniques are listed in the appendix. Author (GRA)

N76-26032# Cornell Univ., Ithaca, N.Y. Dept. of Operations Research.
NAVMET: A FOUR-ECHELON MODEL FOR DETERMINING THE OPTIMAL QUANTITY AND DISTRIBUTION OF NAVY SPARE AIRCRAFT ENGINES Final Report
John A. Muckstadt Dec. 1975 39 p refs Sponsored by Navy
(AD-A019642; TR-263; NAVWESA-R-7511) Avail: NTIS CSCL 21/5

During the past 20 years a number of mathematical models have been developed related to inventory management of recoverable items; that is, items subject to repair when they fail. This paper develops a four-echelon model called NAVMET for determining the optimal quantity and distribution of the Navy's spare aircraft engines. An algorithm is also presented for computing these optimal stocks for each base or depot. GRA

N76-26237 Rockwell International Corp., El Segundo, Calif.
EXOINDUSTRIALIZATION IN PERSPECTIVE
In its Space Ind. Productivity New Options for the Future Jul. 1975 p 14-27

The following points of view from which exoindustrialization may be considered were discussed: (1) historical perspective (incomplete industrialization), (2) socio-economic perspective (continuing exploitation of special raw materials), and (3) environmental perspective (incomplete socio-economic development and inability to look beyond the global resources picture to the vast primordial resources and processing potential available even in the geolunar system alone). The following areas were amplified: (1) space and the evolution of human productivity, (2) space and environment, (3) some consequence of exoindustrialization, (4) exoindustry and a profile of the relevant future, and (5) exoindustrialization and new space initiatives. Y.J.A.

N76-26238 Rockwell International Corp., El Segundo, Calif.
A TIME FOR DECISIONS
In its Space Ind. Productivity New Options for the Future Jul. 1975 p 28-50

The recognizable options for the U.S. space program were evaluated. It was shown that: (1) the government and the people of the United States should realize that they hold the key to one of the most valuable resources for now and the indefinite future: new environments and the resources and values they contain if properly manipulated, (2) the era in which the national space program is undertaken predominantly for prestige, feasibility demonstrations and exploration has drawn to a close. The era of extraterrestrial industrialization for the enhancement of productivity and economic utilization offers the logical central strategy of the next phase, while the thread of scientific space exploration should be continued, and (3) space industrialization offers a number of specific goals recognizable today. These goals offer nuclei around which new experiments and programs can be crystallized with the advent of the space shuttles. Author

N76-26243 Rockwell International Corp., El Segundo, Calif.
PRELIMINARY ESTIMATION OF FRONT END CAPITAL REQUIREMENTS (NON-RECURRING COSTS)
In its Space Ind. Productivity New Options for the Future Jul. 1975 p 157-166

A preliminary estimate of the non-recurring costs associated with the various projects related to the space industrial productivity was given in the form of charts with the ordinate as time (in years) and the abscissa in billions of 1975 dollars. For better

clarity, the main chart is divided into two parts: facilities above the center line, and transportation systems below. Each project is taken as a separate item, so that cost-reducing synergistic effects do not show. Author

N76-26357# National Bureau of Standards, Washington, D.C. Center for Fire Research.
ATTACKING THE FIRE PROBLEM: A PLAN FOR ACTION, 1976 EDITION Final Report
Fredric B. Clarke and Deborah Woolf Raisher Jan. 1976 46 p Supersedes COM-75-10520
(PB-249540/6; NBS-Special Pub-416-76; COM-75-10520; LC-75-600088) Avail: NTIS HC $4.00 CSCL 13L

The mission of the Center for Fire Research is to insure the development of the technical base for the standards and specifications needed in support of the National goal to reduce fire losses by 50% over the next generation. A systems approach to accomplish this mission is described. The Center consists of four basic programs in the area of Fire Science and five applied research programs in the area of Fire Safety Engineering. Active participation by staff members in voluntary standards organizations is the principal means of making this technology available for codes and standards needed to reduce the Nation's fire loss. GRA

N76-26529# White Sands Missile Range, N.Mex.
GIDEP: AN APPROACH TO COORDINATED DATA COLLECTION AND UTILIZATION
Francis M. Nelson 1976 17 p Presented at the European Space Prod. Assurance Symp., Frascati, Italy, 4-6 May 1976 Avail: NTIS HC $3.50

The concept, organization, content, and operation of the Government-Industry Data Exchange Program (GIDEP) is described. GIDEP is concerned with data bases in the fields of part, component or material engineering, failure rates, metrology, failure experience, and aircraft maintenance. Service provided by the program are distribution of alerts, urgent data requests, and electronic test equipment support information. ESA

N76-26536# Vereinigte Flugtechnische Werke-Fokker G.m.b.H., Bremen (West Germany). Space Div.
A PRODUCT ASSURANCE PROGRAM FOR A NATIONAL SATELLITE
E. Widdows and H. Rouws 1976 22 p Presented at the European Space Prod. Assurance Symp., Frascati, Italy, 4-6 May 1976
Avail: NTIS HC $3.50

The organization and working methods of the Industrial Consortium Astronomical Netherlands Satellite Product Assurance (PA) are described. The close working relationship between PA, systems design, and configuration control, is underlined, as are the considerable delegation of tasks to the local PA sections and the involvement of PA in the areas of parts, materials, and processes. ESA

N76-26545# Hawker Siddeley Dynamics Ltd., Stevenage (England).
IMPLEMENTATION OF A PRODUCT ASSURANCE PROGRAMME ON AN ESA SPACECRAFT
C. E. DeAth 1976 21 p *refs Presented at the European* Space Prod. Assurance Symp., Frascati, Italy, 4-6 May 1976 Avail: NTIS HC $3.50

The problems encountered and the possible solutions when implementing and controlling a product assurance program as a prime contractor for an ESA spacecraft are outlined. ESA

N76-26546# AEG-Telefunken, Backnang (West Germany).
IMPLEMENTATION OF CONFIGURATION MANAGEMENT REQUIREMENTS FOR THE OTS SPACECRAFT BY A CO-CONTRACTOR
Karl-Heinz Damm 1976 11 p Presented at the European Space Prod. Assurance Symp., Frascati, Italy, 4-6 May 1976 Avail: NTIS HC $3.50

An aspect of configuration management procedures for the OTS spacecraft is dealt with. This is a practical documentation *method (configuration status list) for the as designed and as* built status and the association to the hardware concerned. ESA

N76-26609# Northern Tier Regional Planning and Development Commission, Towanda, Pa.
FLOOD MANAGEMENT STUDY Final Report
Oct. 1974 134 p refs
(Grants HUD-CPA-1047; ARC-73-82/PA-2355)
(PB-249456/5; NTRPDC-52-0090) Avail: NTIS HC $6.00 CSCL 13B

Many potential approaches to land use and flood management within the Northern Tier Flood Management Study Area have been presented within this study. These approaches are reviewed in relation to two basic questions: upon what type of techniques should flood management activities within the study area be based; and what specific and non-structural techniques should be given a high priority for implementation. GRA

N76-26648* National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
INFORMATION NEEDS: PERCEIVED AND REAL FOR STATE DECISIONMAKERS
A. R. Schwartz (Tex. State Senate), Chris Spirou (New Hampshire House of Representatives), William Kier (Senate Off. of Res.), and Michele Tetley (NOAA) *In its* NASA Earth Resources Survey Symp., Vol. 2-B Jun. 1975 p 176-187

CSCL 05B

Remote sensing techniques provide important information for land and water use planning organizations in order to assess coastal developments and their impact on water resources, sediment transport, erosion, and marine biology. Political expediency requires pertinent data acquisition and data dissemination to local populations for coastal zone management decision making. G.G.

N76-26711# Dartmouth Coll., Hanover, N.H. Thayer School of Engineering.
MANAGING THE DISCOVERY LIFE CYCLE OF A FINITE RESOURCE: A CASE STUDY OF THE US NATURAL GAS INDUSTRY M.S. Thesis
Roger F. Naill Jun. 1972 146 p refs
(PB-248924/3; DSD-2; Dart-5) Avail: NTIS HC $6.00 CSCL 05C

A system dynamics model of discovery of U.S. natural gas is developed as an example of the dynamics of the natural resource discovery process. It is indicated that in the case of finite, nonrenewable resources such as the fossil fuels, the normal behavior mode of the exploitation system is an initial period of *exponential growth in consumption, then a period of rising prices* where growth in consumption is halted, and finally, a decline in consumption. The exact timing of the end of growth is determined by many factors, including the growth rate of potential usage,

the initial level of unproven reserves, the shape of the cost-of-exploration curve, and the impact of various policies such as subsidies or ceiling price regulations. GRA

N76-26784# National Oceanic and Atmospheric Administration, Rockville, Md. Office of Coastal Zone Management.
IT'S YOUR COAST; GET INVOLVED
Jun. 1975 16 p
(PB-249676/8; NOAA-76011501) Avail: NTIS HC $3.50 CSCL 13B

The problems of the coastal zone, the responsibilities of the Office of Coastal Zone management, the coastal zone management approach, and the individual's role in coastal zone management are discussed. The state's coastal management offices are listed. GRA

N76-27102*# National Aeronautics and Space Administration, Washington, D.C.
CONTRACTOR RELATIONSHIPS AND INTER-ORGANIZATIONAL STRATEGIES IN NASA'S R AND D ACQUISITION PROCESS
Joseph Guiltinan Jul. 1976 83 p refs
(NASA-TM-X-74314) Avail: NTIS HC $5.00 CSCL 05A

Interorganizational analysis of NASA's acquisition process for research and development systems is discussed. The importance of understanding the contractor environment, constraints, and motives in selecting an acquisition strategy is demonstrated. By articulating clear project goals, by utilizing information about the contractor and his needs at each stage in the acquisition process, and by thorough analysis of the inter-organizational relationship, improved selection of acquisition strategies and business practices is possible. Author

N76-27103*# National Materials Advisory Board, Washington, D.C.
AEROSPACE COST SAVINGS: IMPLICATIONS FOR NASA AND THE INDUSTRY Final Report
1975 132 p refs
(Contract NASw-2371)
(NASA-CR-148224; PB-249463/1; NMAB-326) Avail: NTIS HC $6.00 CSCL 15E

Factors that have a major influence on cost in airframe, engine, and helicopter procurement and operation are identified; current cost-reduction efforts are reviewed; and technical programs that offer potential for lowering costs are proposed for possible implementation by NASA. In view of the growing impact of increasing fuel costs on the life cycle cost of aircraft vehicles, major attention is given to operating and maintenance costs as well as to manufacturing costs. Seven general conclusions are reached, recommendations made, and thirty-two specific programs are proposed. GRA

N76-27104# West Virginia Univ., Morgantown. Dept. of Industrial Engineering.
OPTIMIZATION MODEL FOR PRODUCTION SCHEDULING AND SEQUENCING OVER MULTIPURPOSE PROCESSORS Final Report
Arup K. Mallik and Richard A. Jackson Mar. 1975 318 p
(Grant NSF GK-37379)
(PB-249023/3; WVU-IE-75-02) Avail: NTIS HC $9.75 CSCL 05A

The problem is that of scheduling many products on a single production facility so as to minimize total cost subject to the constraint that no two products can be produced concurrently. Scheduling is accomplished over a finite planning horizon during which time it is assumed that both production and demand rates are known and constant. The total cost of a schedule is computed by summing labor costs, including shift differential and overtime wages, raw material reorder and inventory costs, finished goods inventory and backorder cost, and sequence dependent setup cost. GRA

N76-27105# Office of Naval Research, Arlington, Va.
GOVERNMENT PATENT POLICY: TIME FOR COMPROMISE
William Otis Quesenberry 1975 61 p refs Repr. from IDEA, v. 17, no. 1, 1975 p 5-58
(PB-249188/4) Avail: NTIS HC $4.50 CSCL 05A

The results of research and development lead to processes and products which have potentially marketable use, but such use is often-times abrogated by governmental policy. The disparate patent policies applied to research programs are based both on legislative and executive action resulting in provisions with either no policy statement at all or one that is very specific and highly restrictive. Two schools of thought disagree as to title to invention derived from government funds: (1) that the government should acquire only those rights to invention which it needs for governmental purposes; or (2) that the government should acquire all rights to inventions conceived under governmment-sponsored research. GRA

N76-27106# National Conference of State Legislatures, Denver, Colo. Committee on Science and Technology.
MEETING THE CHALLENGE: SCIENTIFIC AND TECHNICAL STAFF IN STATES' LEGISLATURES
Edward L. Helminski, ed. and Ralph Marcelli, ed. Jul. 1975 164 p refs
(Grant NSF GT-39414)
(PB-249051/4; NSF/RA/G-75-22) Avail: NTIS MF $2.25; HC available from the Council of State Governments, Iron Works Pike, Lexington, Ky. 40511. HC $5.00 CSCL 05A

The National Conference of State Legislatures' Committee on Science and Technology actively stimulates state legislatures to develop their own scientific and technical resources for policy-making. Existing state legislative scientific and technical staff functions are reported. Descriptions of state efforts from 1970, when specifically designated legislative scientific staff functions existed only in California and New York, to the 11 states which presently have scientific staff functions are included. These mechanisms are described to serve as guides for establishing similar mechanisms, and to demonstrate how they were adapted to best serve individual state needs. GRA

N76-27320*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
DISASTER WARNING SATELLITE STUDY UPDATE
E. H. Davison, ed., E. F. Miller, G. Anzic, R. C. Braley, and Culp May 1976 37 p refs Revised
(NASA-TM-X-73407; E-8732) Avail: NTIS HC $4.00 CSCL 17B

Project planning and research and development by NASA's Lewis Research Center, on a NOAA satellite network system for surveillance of natural dareasters is reported. Topics discussed are: (1) number and type of warning channels for the satellite system, (2) number of antenna beams in the satellite system, (3) number of satellites needed for adequate coverage by the satellite system, (4) power requirements for the satellite system, (5) downlink and uplink frequencies, power requirements for the satellite system, and (6) costs and service life of the satellite system. J.R.T.

N76-27703# Federal Energy Administration, Washington, D.C. Office of Energy Conservation and Environment.
GUIDE TO ENERGY CONSERVATION FOR FOOD SERVICE
Oct. 1975 83 p
(PB-249462/3; FEA/D-75/411) Avail: NTIS HC $5.00 CSCL 06H

Energy-saving suggestions for all types of food service operations are provided. Energy conservation steps are identified for food preparation and storage, lighting, heating, ventilating, and air conditioning, and sanitation. The potential for savings are listed, with emphasis placed on increasing the efficiency of presently used equipment. Detailed steps to enable a food service manager to chart his fuel usage and monthly energy consumption, and to analyze the results of his conservation efforts are given. GRA

N76-28092# Dikewood Corp., Albuquerque, N.Mex.
A MANAGEMENT INFORMATION SURVEY OF THE TEST AND EVALUATION SYSTEMS PROGRAM OFFICE *Final* **Report**
C. A. Luff Kirtland AFB, N. Mex. AFSWC Feb. 1976 34 p refs
(Contract F29601-74-C-0022)
(AD-A020822; DC-TR-1242-6; AFSWC-TR-75-9) Avail. NTIS CSCL 05/1

A study was conducted to determine TESPO's needs for a management information system and to establish management's general information requirements. TESPO's mission, tasks and organizational plans were studied, interviews were conducted, and the literature was searched to complete the effort. It was concluded from the study that the current TESPO management systems and procedures be augmented by additional manual techniques to handle and process information and by automated network analysis as needed. It was concluded that TESPO's information requirements can be met, with minor modifications, by using contemporary project management principles and methods. A preliminary recommendation is made to design, develop and implement a manual management information system augmented as needed by automated analyses as the 'best' cost effective option in the short-term. Author (GRA)

N76-28093# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Engineering.
AIRCRAFT AIRFRAME COST ESTIMATION BY THE APPLICATION OF JOINT GENERALIZED LEAST SQUARES **M.S. Thesis**
Vernon Handel Nov. 1975 120 p refs
(AD-A020228; GOR/SM/75D-7) Avail: NTIS CSCL 05/1

Joint Generalized Least Squares is a statistical technique which allows for the interaction of a set of regression equations through correlated disturbances. Aircraft airframe cost estimation may be accomplished by disaggregation into elements of cost such as material, labor, tooling, and engineering. Data for various types of aircraft are used to demonstrate the effect of using Joint Generalized Least Squares in developing cost estimating relationships for the elements of airframe cost. A comparison is made to relationships developed using Ordinary Least Squares. Dependent on the number of observations, the number of relationships developed jointly, and the different explanatory variables used, the variance of the relationships may be reduced by using Joint Generalized Least Squares. The Joint Generalized Least Squares technique is extended to permit revision of predictions using the joint distribution of the elements of cost. GRA

N76-28094# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Engineering.
MICROECONOMIC THEORY APPLIED TO PARAMETRIC COST ESTIMATION OF AIRCRAFT AIRFRAMES **M.S. Thesis**
William E. Dunne Dec. 1975 86 p refs
(AD-A020210; GOR/SM/75D-3) Avail: NTIS CSCL 05/1

The theories of microeconomics and optimal control were used to formulate a parametric cost estimation model that provides an insight into the cost flow of an aircraft airframe production program. The model developed uses original total airframe quantity (volume) and initial total production contract time, as well as the traditional values of cumulative quantity, AMPR weight, and speed, as explanatory variables. A form of the model was solved by both a constrained least squares approach and by a nonlinear algorithm with similar results. In the analysis of the model the parameters of volume and time were not found to be statistically significant. The surrogate variables of actual contract volume and time do not explain a significant amount of the total program cost. Several reasons are offered in the thesis. Validation of the model indicates that it is a highly satisfactory estimator of total program cost. GRA

N76-28095# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Engineering.
A COMPUTER SIMULATION OF MAINTENANCE MANPOWER REQUIREMENTS FOR THE DC-130H, VOLUME 1 **M.S. Thesis**
Gerald A. Yates and Richard Fritz Oct 1975 145 p refs
(AD-A020229; GOR/SM/75D-5) Avail NTIS CSCL 05/9

This thesis develops a simulation program, using the Logistics COMposite (L-COM) Model, to represent the maintenance environment and associated manpower required to support the DC-130H aircraft. Data sources for this project included the TAC MET Study of DC-130 maintenance facilities, maintenance data collection tapes from Dyess, Langley, Little Rock and Pope Air Force Bases; Technical orders, and conversations with experienced maintenance personnel. The program is designed around a typical maintenance organization which provides scheduled maintenance, unscheduled maintenance and phase inspections in support of a basic flying operation. GRA

N76-28096# Mitre Corp., Bedford, Mass.
AN AIR FORCE GUIDE TO CONTRACTING FOR SOFTWARE ACQUISITION
N. E. Bolen Jan. 1976 45 p refs
(Contract F19628-76-C-0001; AF Proj. 572H)
(AD-A020444; MTR-3118; ESD-TR-75-365) Avail: NTIS CSCL 09/2

This document is one of a series of guidebooks for software acquisition management. The guidebooks are being prepared for use by Air Force Program Office personnel who are responsible for planning and managing the development of software. This guidebook covers contracting aspects from early procurement planning through the source selection process to the management of the contractor's work. GRA

N76-28097# Oregon Univ., Eugene Dept. of Management.
PROBLEMS IN THE MEASUREMENT OF ORGANIZATIONAL EFFECTIVENESS
Richard M. Steers Nov. 1975 32 p
(Contract N00014-76-C-0164; NR Proj. 170-812)
(AD-A018709; TR-1) Avail: NTIS CSCL 05/1

Multivariate models of organizational effectiveness are reviewed in terms of their primary evaluation criteria, their normative or descriptive nature, their generalizability, and their derivation. Little consistency was found in the evaluation criteria of the models. Problems of such models are discussed which appear to reduce their utility for the study or organizational effectiveness. Suggestions are given for future work to focus on operative goals and goal optimization to further understanding of the effectiveness construct in on-going organizations. GRA

N76-28104# Army Aviation Systems Command, St. Louis, Mo.
HISTORICAL INFLATION PROGRAM **Final Report**
Ralph W. Lilge Jan. 1976 37 p refs
(AD-A020669; USAAVSCOM-TR-76-1) Avail: NTIS CSCL 05/3

This report extends, revises, and summarizes previous efforts to develop the necessary rationale and methodology necessary to construct historical inflation indices relative to Army aircraft. In addition, a computerized Historical Inflation Program is presented and described. The program can be updated monthly, is easily revised for changes in Bureau of Labor Statistics methods, and capable of handling data through the transition year, FY 7T. Output is expressed as monthly, quarterly, calendar year inflation indices (in Calendar Year 1967 base) and inflation factors (in any Fiscal Year base). These indices and factors provide a means of accurately adjusting historical cost data to constant year dollars. Author (GRA)

N76-28614*# ECON, Inc., Princeton, N.J.
SEASAT ECONOMIC ASSESSMENT. VOLUME 1: SUMMARY AND CONCLUSIONS Final Report, Feb. 1974 - Aug. 1975
31 Aug. 1975 34 p refs 10 Vol.
(Contract NASw-2558)
(NASA-CR-148494; Rept-75-125-1B-Vol-1) Avail: NTIS HC $4.00 CSCL 05C

A summary is presented of the economic benefits that can be derived from using the SEASAT Satellite System. A statement of the major findings of case studies of the practical applications of the SEASAT program to the following areas is given: (1) offshore oil and natural gas industry, (2) ocean mining, (3) coastal zones, (4) oil exploration in Arctic regions, (5) ocean fishing, and (6) ports and harbors. Also given is a description of the SEASAT System and its performance. A computer program, used to optimize SEASAT System's costs and operational requirements, is also considered. Author

N76-28694# Environmental Protection Agency, Washington, D.C. Div. of Water Planning.
RESIDUAL WASTE MANAGEMENT RESEARCH AND PLANNING PROJECT
Sep. 1975 326 p
(PB-250954/5; EPA-440/9-76-003) Avail: NTIS HC $10.00 CSCL 13B

This book contains selected abstracts of projects that are underway or that have been completed and publications that are available on the subject of residual wastes and their impact of ground and surface waters. They are arranged by types of residual wastes and are further categorized into the various kinds. The abstracts are cross-referenced where necessary. The abstracts provide project or publication identification, a brief summary, the status of the project, point of contact and/or source of information, and acquisition details. GRA

N76-28696# Engineering-Science, Inc., McLean, Va.
DEMONSTRATION OF A PLANNING PERSPECTIVE FOR WASTE WATER SLUDGE DISPOSITION, KNOXVILLE/KNOX COUNTY.
Dean Neptune, Michael Wyatt, and Richard Heil Nov. 1975 191 p refs
(Contracts EPA-68-01-3225; EPA Proj. WA-75-R210)
(PB-250936/2; EPA-440/9-76-001-A) Avail: NTIS HC $7.50 CSCL 13B

The existing and future sludge disposal problem in Knoxville, Tenn. was investigated, and six major sludge management plans were developed. The plans were derived and evaluated by using a methodology previously developed by the EPA. The plans detail the processing, transportation, and ultimate disposal sub-systems necessary to meet environmental, operational, and institutional constraints found in the study area. In addition, costs of the various sub-systems and the overall costs of the plans were determined. GRA

N76-28740# Federal Aviation Administration, Washington, D.C.
WIND SHEAR PROGRAM DATA MANAGEMENT PLAN
Eric Mandel, Larry Goodwin, and Jim DeMattio Apr. 1976 36 p
(AD-A024543/1; FAA-RD-76-25) Avail: NTIS HC $4.00 CSCL 01/3

This plan outlines the data collection efforts of the Wind Shear Program. A set of standard data collection, processing, and analysis requirements are presented, which include: (1) an outline of the parameters to be recorded and the associated accuracies, resolutions, ranges, bandwidths, and timing requirements necessary to study the wind shear frequencies affecting aircraft; (2) the test site conditions for each of the ground-based data collection sites; (3) a listing of the type of sensors and their location for each data collection effort; and (4) the wind shear data base functional requirements. Author

N76-28828 California Univ., Berkeley.
STORAGE STRUCTURES FOR RELATIONAL DATA BASE MANAGEMENT SYSTEMS Ph.D. Thesis
Gerald David Held 1975 126 p
Avail: Univ. Microfilms Order No. 76-15211

Storage structures are examined which allow efficient access to information in a relational data base management system. The major areas investigated are: (1) storage structures for data relations, (2) storage structures for auxiliary information to speed access to data, and (3) a strategy for selecting structures based on query statistics. A generalized directory structure is defined and is shown to provide better performance than either normal directories or simple order preserving functions. Secondary indexes on functions of attributes are introduced and a method for reusing aggregation information is presented. A general strategy for making storage structure choices is presented. The query model is extended to provide more accurate choice of key domains. The strategy selects data relation storage structures, primary key domains, and auxiliary structures. Dissert. Abstr.

N76-29050 Texas Univ., Austin.
APPLICATION OF THE PARTITIVE ANALYTICAL FORECASTING(PAF) TECHNIQUE TO THE UNITED STATES CONTROLLED THERMONUCLEAR RESEARCH EFFORT Ph.D. Thesis
Steven Parks Nichols 1975 338 p
Avail: Univ. Microfilms Order No. 76-14500

The Partitive Analytical Forecasting (PAF) technique is applied to the overall long-term program plans for the Division of Controlled Thermonuclear Research (DCTR) of the United States Energy Research and Development Administration (ERDA). As part of the PAF technique, the Graphical Evaluation and Review Technique (GERTS) Z computer code is used to perform simulations on a logic network describing the DCTR long-term program plan. Logic networks describing the Tokamak, mirror, and theta-pinch developments are simulated individually and then together to form an overall DCTR program network. The results of the simulation of the overall network using various funding schemes and strategies are presented. An economic sensitivity analysis is provided for the Tokamak logic networks. An analysis is also performed of the fusion-fission hybrid concept in the context of the present DCTR goals. The results are evaluated, and recommendations for further research are discussed.
Dissert. Abstr.

N76-29051# Oak Ridge Associated Universities, Tenn. Inst. for Energy Analysis.
ALASKAN METHANOL CONCEPT, A PRE-FEASIBILITY STUDY
Carl O. Thomas Nov. 1975 235 p refs
(Contract DI-14-01-0001-1699)
(PB-249350/0; IEA(M)-75-5) Avail: NTIS HC $8.00 CSCL 21D

The results are presented of a six month pre-feasibility study on the Alaskan Methanol Concept. At present there are two proposals for an Alaskan natural gas transmission system pending before appropriate governmental agencies. The methanol concept is viewed as a potential alternative in the event that there should be long delays in permitting and constructing one or the other of the two gas lines, thus creating an unacceptable cost for energy receipt delay. GRA

N76-29209# Federal Aviation Administration, Washington, D.C.
INTEGRATED NATIONAL AIRSPACE COMMUNICATION SYSTEM (INACS) FOR THE SUPPORT OF AIR TRAFFIC CONTROL OPERATIONS IN THE 1980'S AND 1990'S. PROGRAM PLANNING AND FORMULATION, PHASE 1 PROGRAM PLAN
Oct. 1975 31 p
(AD-A015823; FAA-INACS-061-221-P1) Avail: NTIS CSCL

17/7

The state-of the-art in communications technology offers opportunities for a substantial reduction in total FAA communications recurring costs together with a significant improvement in overall communications operational flexibility, reliability and service. An integrated national system, which provides both voice and data communications for all FAA operational facilities and the attendant ATC support functions, can save an estimated 100 million dollars per year in the FAA annual communications budget. GRA

N76-29210# Federal Aviation Administration, Washington, D.C.
INTEGRATED NATIONAL AIRSPACE COMMUNICATION SYSTEM (INACS) FOR THE SUPPORT OF AIR TRAFFIC CONTROL OPERATIONS IN THE 1980'S AND 1990'S. SYSTEM CONCEPT
Sep. 1975 32 p
(AD-A015824; FAA-INACS-061-221-SC) Avail: NTIS CSCL 17/7

The document introduces the concept of an integrated communications approach to meet total FAA operational communications requirements projected for the 1980s and beyond. As a concept, this integrated approach differs from the historical method of satisfying FAA's communications needs by the acquisition or development of dedicated facilities and networks which are designed to serve specific categories of users and which perform specific and dedicated communications functions for these users. State-of-the art communications technology appropriately applied to an integrated system offers opportunities for a substantial reduction in projected total FAA communications recurring costs together with a significant improvement in overall communications operational capability, flexibility and reliability. GRA

N76-29279# Aeronautical Systems Div., Wright-Patterson AFB, Ohio. Deputy for Development Planning.
AIR FORCE MASTER PLAN - SIMULATORS FOR AIRCREW TRAINING Final Report
D. S. Dunlap and Richard E. Worthey Dec. 1975 55 p refs
(AD-A021576; ASC/XR-TR-75-25) Avail: NTIS CSCL 14/2

The application of simulators for aircrew training in the United States Air Force is addressed. Major operating commands provided current and projected requirements for aircrew training simulators for incorporation into formal training programs together with estimates of their impact on flight training. A simulator technology overview is provided and a technology research program is proposed to support future acquisitions. Estimates of program costs are made and the magnitude of potential direct operating costs and fuel savings are presented for each of the acquisition programs. Institutional and management problems are also addressed. GRA

N76-29339*# Lockheed Electronics Co., Houston, Tex. Aerospace Systems Div.
SCHEDULING ALGORITHM FOR MISSION PLANNING AND LOGISTICS EVALUATION USERS' GUIDE
H. Chang and J. M. Williams May 1976 50 p
(Contract NAS9-12200)
(NASA-CR-147836; LEC-8181; JSC-11023) Avail: NTIS HC $4.00 CSCL 22A

The scheduling algorithm for mission planning and logistics evaluation (SAMPLE) program is a mission planning tool composed of three subsystems; the mission payloads subsystem (MPLS), which generates a list of feasible combinations from a payload model for a given calendar year; GREEDY, which is a heuristic model used to find the best traffic model; and the operations simulation and resources scheduling subsystem (OSARS), which determines traffic model feasibility for available resources. The SAMPLE provides the user with options to allow the execution of MPLS, GREEDY, GREEDY-OSARS, or MPLS-GREEDY-OSARS. Author

N76-29461# Army War Coll., Carlisle Barracks, Pa.
THE IMPLICATIONS OF A CONSOLIDATION OF MANAGEMENT, CONTROL AND OPERATION OF THE DEFENSE COMMUNICATIONS SYSTEMS
Robert J. Donahue 25 May 1975 114 p refs
(AD-A021475) Avail: NTIS CSCL 17/2

The study addresses the implications to the Department of Defense in (1) the assignment of Defense Communications System (DCS) operation and maintenance responsibilities to a single military department, or (2) the establishment of a Defense Communications Command. The parallel organization of the military departments and the Defense Communications Agency (DCA) indicated that significant improvements in organization structure, managerial functions and resource allocation would be achieved by either of the two alternatives. Elements of the analysis support the establishment of a Communications Command while other more powerful factors mitigate against a change from the existing system. The primary factor weighing heavily against the transition is the residual military department non-DCS/nontactical telecommunication functions. Regardless of the organization structure and relationships involved, telecommunication functions significant in both scope and purpose remain outside the DCS and must be accomplished. GRA

N76-29521# USCC/CENTRALAB, Los Angeles, Calif.
MANUFACTURING METHODS AND TECHNOLOGY PROJECT TO ESTABLISH AND IMPROVE THE PRODUCIBILITY OF SILK SCREENING AND LAYERING OF CERAMIC DIELECTRIC CAPACITORS Quarterly Progress Report, Oct. 1975 - 1 Jan. 1976
Jack Floegel 1 Jan. 1976 26 p refs
(Contract DAAB07-75-C-0041)
(AD-A021430; Rept-76-01-02) Avail: NTIS CSCL 09/1

The chip capacitors are to be manufactured using .0005 inch dielectric rated at 50 volts at a production rate of 5000 units per day. Internal electrodes shall be of a basemetal or alloy that will provide for an objective of 80% cost reduction from the use of palladium. End terminations shall be of the same material and must be capable of immersion for 30 seconds at 5000F in 60/40 solder. GRA

N76-29697# Rutgers Univ., New Brunswick, N.J. Water Resources Research Inst.
REORIENTATION OF URBAN WATER RESOURCES RESEARCH Final Report
William Whipple, Jr., Maynard M. Hufschmidt (North Carolina Univ., Chapel Hill), Bernard B. Berger (Univ. of Mass.), David H. Howells (North Carolina Univ., Chapel Hill), L. Douglas James (Ga. Inst. of Tech.), and L. Scott Tucker (Urban Drainage and Flood Control District, Denver) Apr. 1976 58 p Workshop held at Quail Roost, N. C., 24-26 Jul. 1975
(Contract DI-14-31-0001-5134)
(PB-251907/2; W76-06553; OWRT-B-062-NJ(1)) Avail: NTIS HC $4.50 CSCL 13B

The consensus was that the Federal approach to water resources has generally neglected the problems of metropolitan areas. Hydrological, water quality and ecological data are insufficient. Technology to meet many problems is lacking, and existing institutions are ill adapted to the problems now being encountered. Particular emphasis in urban-related research needs to be given to fields of water quality, flood plain management, and interfaces with land-use planning and control. Strategies and basic objectives should be reexamined as well as the problems of planning to meet environmental objectives at reasonable cost. Programs of urban-related water resources research are recommended. Author (GRA)

N76-29698# Rutgers Univ., New Brunswick, N.J.
REORIENTATION OF URBAN WATER RESOURCES RESEARCH
William Whipple, Jr., Maynard M. Hufschmidt (N. Carolina Univ., Chapel Hill), Bernard B. Berger (Mass. Univ.), David H. Howells (N. Carolina Univ., Chapel Hill), L. Douglas James (Ga. Inst. of Tech.), and L. Scott Tucker (Urban Drainage and Flood Control District, Denver) Apr. 1976 19 p Workshop held at Quail Roost, N. C., 24-26 Jul. 1975
(Contract DI-14-31-0001-5134)
(PB-251908/0; W76-06554; OWRT-B-062-NJ(1)) Avail: NTIS HC $3.50 CSCL 13B

Recommendations for urban-related research related to water quality propose development of strategy and methodology to contribute to remedying the various deficiencies, including those in the basic planning goals and approaches, better methods of measuring and evaluating pollution from urban runoff, methods of determining the environmental effects of pollution, alternative water quality enhancement approaches (other than effluent treatment), and a better institutional framework for areawide planning. There is no unified national policy for flood plain management. Goals of economic efficiency, of avoidance of social disruption, of financial aid after a disaster, and of better land use of flood plains are expressed implicitly in various Federal programs. Much state legislation needs modernization to keep pace with new developments. Author (GRA)

N76-29759# Naval Postgraduate School, Monterey, Calif.
AN ANALYSIS OF THE MANAGEMENT INFORMATION SYSTEM FOR US COAST GUARD AIRCRAFT POLLUTION PATROLS M.S. Thesis
Jerald Howard Heinz Dec. 1975 144 p refs
(AD-A021785) Avail: NTIS CSCL 13/2

The purpose of this thesis is to examine the present data collected and to evaluate its usage in respect to water pollution detection by Coast Guard aircraft patrols. It was found that, in general, more detailed and specific information is needed about the patrols. A system for collecting this new data and linking it to the present Pollution Incident Reporting System data base is proposed. The proposed system would allow evaluation of patrols at more specific areas and levels instead of the present district, coast and nationwide levels. Policy decisions could then be more specifically oriented to an area and/or the individual air station. GRA

N76-29778# Indiana Univ., Bloomington.
WATER QUALITY GUIDANCE: DEVELOPMENT OF RESIDUALS MANAGEMENT STRATEGIES. AN EXECUTIVE SUMMARY Socioeconomic Environmental Studies Series
Charles N. Ehler, Richard S. Howe, and Nicholas L. White Jan. 1976 31 p
(Grant EPA-R-803313)
(PB-251011/3; EPA-600/1-76-01a) Avail: NTIS HC $4.00 CSCL 13B

Strategies for managing the residuals that result from human activity are examined. Residuals - leftovers that inevitably result from all human activity - are often referred to as wastes or pollutants. The idea of residuals management includes both the concept of waste management and pollution control. Step by step guidelines for identifying alternate residuals management strategies and then evaluating and selecting a strategy are given. The selected strategy will provide decision makers with an economical and effective means of solving their problem. GRA

N76-29779# Indiana Univ., Bloomington.
WATER QUALITY GUIDANCE: DEVELOPMENT OF RESIDUALS MANAGEMENT STRATEGIES Socioeconomic Environmental Studies Series
Charles N. Ehler, Richard S. Howe, and Nicholas L. White Jan. 1976 90 p refs
(Grant EPA-R-803313)
(PB-251012/1; EPA-600/1-76-01b) Avail: NTIS HC $5.00 CSCL 13B

The purpose of the report is to provide a comprehensive and systematic approach for developing and evaluating strategies for residuals management. It is based on the concept that wastes (material and energy residuals) which adversely affect the environment are generated as a result of all human activity. GRA

N76-29864# Federal Aviation Administration, Washington, D.C.
ENGINEERING AND DEVELOPMENT PROGRAM PLAN: WIND SHEAR
Mar. 1976 71 p
(AD-A025511/7; FAA-ED-15-2) Avail: NTIS HC $4.50 CSCL 01/1

A development plan is presented for solutions to the aviation hazards created by low-level wind shear in the terminal area. The 4-year development program to satisfy National Airspace System user needs for current and predicted information concerning wind shear at the Nation's airports is described. Included in the plan are: (1) efforts to better characterize low-level wind shear, (2) plans to define the hazards of wind shear for the aviation community, (3) tasks required to develop ground-based devices for hazardous wind shear detection and movement, (4) investigations into the use of airborne equipment to detect hazardous wind shear and then either warn the pilot of its presence and/or assist him in coping with it, (5) an outline of how the data collected on wind shear will be processed, analyzed and reported, and (6) provisions for integrating wind shear data into the NAS by developing data formats and displays suitable to users (air traffic control systems, pilots and the National Weather Service). Plans to improve low-level wind shear predictions are presented. The FAA groups and other Federal Government agencies participating in this effort are identified. Program management responsibilities are addressed. A program schedule with milestones is offered, and program funding requirements are part of the plan. Author

N76-29908# Federal Aviation Administration, Oklahoma City, Okla.
AN EVALUATION OF THE EFFECTIVENESS OF THE FAA MANAGEMENT TRAINING SCHOOL
Roger C. Smith, Barbara Rana, and Deborah K. Taylor Sep. 1975 46 p refs
(AD-A025254/4; FAA-AM-75-9) Avail: NTIS HC $4.00 CSCL 05/9

An assessment of the FAA Management Training School (MTS) program is presented. Questionnaires for evaluating the MTS experience in terms of the usefulness and the quality of specific and general aspects of the course were presented to graduates at various FAA field offices and facilities. It was found that supervisors and managers felt that the program had been useful in helping them to meet the demands of their positions. Areas in need of improvement are indicated. Questionnaires concerning specific types of behavior desired of supervisors and managers were completed by graduates of MTS, their immediate supervisors, and their employees and also by supervisors and managers not trained at MTS. It was found that MTS training resulted in an increase in desirable on-the-job activities of MTS graduates. Author

N76-29965# RAND Corp., Santa Monica, Calif.
THOUGHTS ON ESTABLISHING GUIDELINES AND RATIONALE FOR WORKSHOP OUTPUT
M. R. Davis Jan. 1975 6 p
(AD-A021711; P-5523) Avail: NTIS CSCL 09/2

A simple extrapolation of past trends suggests a considerable future expansion of the use of computers in the Department of Defense, both in military systems and in base and support operations. Any R and D program to increase software reliability must recognize this dynamic nature of the software problem and be directed at levels of complexity anticipated five years (plus) into the future. It must also recognize that software exists across all services and that solutions should be directed simultaneously at Tri-Service problems. A necessary first step in formulating programs to achieve software reliability is to have a

clear understanding of what the fundamental current and anticipated problems are. They certainly run the gamut from organizational structure and software management techniques to software technology and are sometimes difficult to distinguish from symptoms. GRA

N76-30098 General Electric Co., Philadelphia, Pa. Reentry and Environmental Systems Div.
EFFECTIVE GOAL DEVELOPMENT, ALLOCATION AND ACCOMPLISHMENT IN AN ENGINEERING ORGANIZATION M.S. Thesis - Drexel Univ.
J. J. Pettus Oct. 1975 55 p refs
(Doc-75SDR-027) Avail: General Electric, Philadelphia, Pennsylvania HC $10.00

The value and essential qualities of goal-setting are examined in relation to the management of a professionally-trained industrial organization of engineers and scientists. The importance of the motivational influence of the human relations factor, particularly as released by the goal-setting method of management, to the success of an engineering organization is emphasized. Author

N76-30099# Committee on the Budget (U.S. House).
NATIONAL SCIENCE FOUNDATION AND NATIONAL AERONAUTICS AND SPACE ADMINISTRATION PROGRAMS
Washington GPO 1976 101 p refs Hearing before Task Force on Physical Resources of Comm. on the Budget, 94th Congr., 2d Sess., 25 Feb. 1976
(GPO-74-001) Avail: Comm. on the Budget

The budget request for the major activities of general science, space, and technology is considered. The National Science Foundation and National Aeronautics and Space Administration Programs for FY 1977 are summarized and the role of the Federal budget in realizing program goals is discussed. J.M.S.

N76-30100# Little (Arthur D.), Inc., Cambridge, Mass.
FEDERAL FUNDING OF CIVILIAN RESEARCH AND DEVELOPMENT. VOLUME 2: CASE STUDIES Final Report
Feb. 1976 336 p
(Contract NBS-4-35956)
(PB-251683/9; NBS-GCR-ETIP-76-04-Vol-2) Avail: NTIS HC $10.00 CSCL 05A

Federal funding of civilian research and development is examined as an agent of technological change in the private sector. Results indicate that federal funding of civilian research and development should be formulated in the larger context of the complex process of technological innovation. Details of the case studies upon which the findings were based are presented. GRA

N76-30102# Naval Ship Engineering Center, Hyattsville, Md.
MANAGEMENT OF RESEARCH AND ENGINEERING SELECTED TOPICS
Jan Paul Hope Mar. 1976 43 p refs Presented at the 13th Ann. Tech. Symp., Arlington, Va., 12 Mar. 1976
(AD-A022310) Avail: NTIS CSCL 05/9

This compendium discusses three topics of interest to managers of scientists and engineers. These three topics are development of scientists and engineers for technical management, performance appraisal of personnel, and means to effectiveness for project managers. The discussion of development of technical personnel for management deals with such areas as candidate selection, problems, and development methods. The discussion of performance appraisal begins with a survey of the relevant literature. This survey also shows the chronological evolution of performance appraisal concepts as they have developed over this years. The discussion of means of effectiveness for project managers begins with the postulation of a knowledge model for the project manager. This knowledge model concept is further developed by identifying and discussion of means of effectiveness for project managers begins with the postulation of a knowledge model for the project manager. This knowledge model concept is further developed by identifying and discussing three categories of knowledge that the project manager should have. A selected bibliography for these three topics is included. GRA

N76-30104# Transportation Systems Center, Cambridge, Mass.
EVALUATION GUIDELINES FOR SERVICE AND METHODS DEMONSTRATION PROJECTS Final Report, Oct. 1974 - Nov. 1975
Carla Heaton, Chester McCall (CACI, Inc., Los Angeles, Calif.), and Robert Waksman Feb. 1976 187 p refs
(PB-251891/8; DOT-TSC-UMTA-76-8; UMTA-MA-06-0049-76-16) Avail: NTIS HC $7.50 CSCL 05A

Evaluation guidelines are given for planning, implementing, and reporting the findings of the evaluation of Service and Methods Demonstration (SMD) projects sponsored by the Urban Mass Transportation Administration (UMTA). The objective of these guidelines is to foster consistency of evaluation philosophy and techniques, and comparability of results so as to improve the output of the UMTA demonstration program. Although these guidelines were prepared specifically for use in evaluating SMD projects, their potential applicability covers the evaluation of any type of transit innovation. GRA

N76-30107# Office of the Director of Defense Research and Engineering, Washington, D.C.
AN ANALYSIS OF EXPORT CONTROL OF US TECHNOLOGY: A DOD PERSPECTIVE. A REPORT OF THE DEFENSE SCIENCE BOARD TASK FORCE ON EXPORT OF US TECHNOLOGY
4 Feb. 1976 59 p
(AD-A022029) Avail: NTIS CSCL 05/1

The assessment of selected technologies, their impact on U.S. strategic requirements, transfer mechanisms, and current effectiveness of export control restrictions reinforce the need for export controls and the CoCom agreement as a defense necessity. The effectiveness of these controls for the more critical technologies needs to be improved through definition of policy objectives, simplified criteria, and a more pragmatic approach to the review and approval of license applications. Products of technology not directly of significance to the Department of Defense should be eliminated from controls to enable more effective control of significant items. The findings and principal recommendations of the Task Force are discussed in this report. GRA

N76-30110# Defence Scientific Information Service, Ottawa (Ontario).
AN INFORMATION ANALYSIS CENTRE
Ross B. Harvey Jan. 1976 19 p refs
(AD-A021536; DSIS-TN-75-3) Avail: NTIS CSCL 05/2

The concept of the Information Analysis Centre is developed, in which a group of customer-users is provided with reliable and timely information in a limited subject area. The conditions which justify an information analysis center, some of its characteristics, some of the steps in organizing a center and the services provided by it to its customers are discussed. The costs of operating the center in terms of the user requirements for its services are considered. GRA

N76-30123# Pennsylvania Transportation Inst., University Park.
THE ROLE OF SUBSTATE REGIONS IN TRANSPORTATION

PLANNING, PROGRAMMING, AND BUDGETING Interim Report, 1 Jul. 1974 - 1 Jan. 1975
Thomas D. Larson, Irving Hand, and Theodore H. Poister Jan. 1975 295 p refs Sponsored in part by the Federal Highway Admin.
(Contract PENNDOT-52723)
(PB-251061/8; PTI-7501) Avail: NTIS HC $9.25; also available from NTIS $20.00/set of 3 reports as PB-251059-SET CSCL 13B

The project has two primary purposes: (1) the formulation of alternative concepts for substate regions and regional organizations as a basis for transportation planning, programming, and budgeting; (2) the preparation of draft legislation to implement substate regions and regional organizations in Pennsylvania.GRA

N76-30124# Pennsylvania Transportation Inst., University Park.
THE ROLE OF SUBSTATE REGIONS IN TRANSPORTATION PLANNING, PROGRAMMING, AND BUDGETING Final Report, 1 Jul. 1974 - 15 Dec. 1975
Thomas D. Larson, Irving Hand, and Theodore H. Poister Sep. 1975 270 p refs Sponsored in part by the Federal Highway Administration.
(Contract PENNDOT-52723)
(PB-251062/2; PTI-7521) Avail: NTIS HC $9.00; also available from NTIS $20.00/set of 3 reports as PB-251059-SET CSCL 13B

Contents: History and experience of substate regionalism; Overview of Pennsylvania's transportation planning, programming, and budgeting process; Proposed transportation planning, programming, and budgeting; Proposed organization structure; Implementation and draft legislation. GRA

N76-30244*# Aerospace Corp., El Segundo, Calif. Systems Engineering Operations.
ADVANCED SPACE SYSTEM CONCEPTS AND THEIR ORBITAL SUPPORT NEEDS (1980 - 2000). VOLUME 1: EXECUTIVE SUMMARY
I. Bekey, H. L. Mayer, and M. G. Wolfe Apr. 1976 53 p 4 Vol.
(Contract NASw-2727)
(NASA-CR-148704; ATR-76(7365)-1-Vol-1) Avail: NTIS HC $4.50 CSCL 22A

The likely system concepts which might be representative of NASA and DoD space programs in the 1980-2000 time period were studied along with the programs' likely needs for major space transportation vehicles, orbital support vehicles, and technology developments which could be shared by the military and civilian space establishments in that time period. Such needs could then be used by NASA as an input in determining the nature of its long-range development plan. The approach used was to develop a list of possible space system concepts (initiatives) in parallel with a list of needs based on consideration of the likely environments and goals of the future. The two lists thus obtained represented what could be done, regardless of need; and what should be done, regardless of capability, respectively. A set of developmei ' program plans for space application concepts was then assembled, matching needs against capabilities, and the requirements of the space concepts for support vehicles, transportation, and technology were extracted. The process was pursued in parallel for likely military and civilian programs, and the common support needs thus identified. Author

N76-30261*# Aerospace Corp., El Segundo, Calif. Systems Engineering Operations.
SHUTTLE USER ANALYSIS (STUDY 2.2). VOLUME 3: BUSINESS RISK AND VALUE OF OPERATIONS IN SPACE (BRAVO). PART 2: USER'S MANUAL Final Report
30 Sep. 1974 261 p refs 4 Vol.
(Contract NASw-2575)
(NASA-CR-148707; ATR-74(7342)-1-Vol-3-Pt-2) Avail: NTIS HC $9.00 CSCL 22B

The purpose of the BRAVO User's Manual is to describe the BRAVO methodology in terms of step-by-step procedures. The BRAVO methodology then becomes a tool which a team of analysts can utilize to perform cost effectiveness analyses on potential future space applications with a relatively general set of input information and a relatively small expenditure of resources. An overview of the BRAVO procedure is given by describing the complete procedure in a general form. Author

N76-30811*# Agnew Tech-Tran, Inc., Woodland Hills, Calif.
HUMAN FACTORS ENGINEERING AND TECHNICAL PROGRESS
V. F. Rubakhin Washington NASA Mar. 1976 18 p refs Transl. into ENGLISH from Vestnik AN SSSR (USSR), no. 11, Nov. 1975 p 59-66
(Contract NASw-2789)
(NASA-TT-F-16931) Avail: NTIS HC $3.50 CSCL 05E

The present state of human factors engineering and its basic theoretical foundations are reviewed. At present, it is concerned with elaborating the methodological foundations for developing control systems for complex industrial processes, optimizing the flow and structure of information within these systems, and determining the technical and practical feasibility of automating human production. Certain generally accepted principles of human factors engineering are discussed, and theoretical and practical work by a number of researchers is reviewed. A significant improvement in the effectiveness of research in aerospace technology is noted. The establishment is suggested of a Human Factors Engineering Service, which would have three divisions concerned with design of man machine systems, monitoring and control of work quality, and selection and training of specialists. Author

N76-31056 Michigan Univ., Ann Arbor.
A DECISION ANALYSIS APPROACH TO RESOURCE ALLOCATION PLANNING PROBLEMS WITH MULTIPLE OBJECTIVES Ph.D. Thesis
Donald Lee Keefer 1976 247 p
Avail: Univ. Microfilms Order No. 76-16946

A decision analysis approach to resource allocation planning problems having uncertainties, multiple competing objectives, organizational constraints, and continuous decision variables is developed. Applications of the approach to two industrial planning problems--one within a product engineering (design) department and the other within a research and engineering group--are reported in detail. The managers involved in these applications found the approach useful and worth incorporating into their planning activities. Dissert. Abstr.

N76-31057# Rockwell International Corp., Anaheim, Calif. Autonetics Group.
INNOVATIVE WORK MEASUREMENT PROGRAMS: AN ESSENTIAL LINK TO IMPROVED PRODUCTIVITY
J. D. Mitchell 19 Apr. 1976 28 p refs Presented at MTM Assoc. Spring Conf., Los Angeles, Apr. 1976
(X76-388/101) Avail: NTIS HC $4.00

A work measurement program is described, focusing on direct labor performance associated with relatively low production rate, high value hardware, and its relationship with other elements of the overall production management control systems. The new MIL STD 1567 on work measurement is also explored from the viewpoint of interaction and interpretation as related to on-going work measurement programs. Author

N76-31058# RAND Corp., Santa Monica, Calif.
EVALUATING POLICY STUDIES BY USING THE CASE SURVEY METHODS
Robert K. Yin and Karen A. Heald Mar. 1975 22 p refs
(AD-A022181; P-5349) Avail: NTIS CSCL 05/1

A common problem faced in evaluation research is the assessment of existing policy studies. For many reasons, an investigator may be interested in determining 'what the research says' before establishing a framework for testing new hypotheses. Similarly, policymakers often want to know what has already been learned before considering alternative public programs. And, because of the rapid expansion of public service programs during the 1960s and the concomitant policy research efforts, there are now indeed many published and unpublished studies worthy of secondary analysis: manpower and training studies, drug treatment and health care research, studies of educational achievement, research on urban innovations and the application of new technology to social problems, and numerous investigations focusing on public organizations and organizational behavior. GRA

N76-31059# Massachusetts Inst. of Tech., Cambridge. Operations Research Center.
ON THE DESIGN OF HIERARCHICAL PRODUCTION PLANNING SYSTEMS
Gabriel R. Bitran and Arnoldo C. Hax Feb. 1976 42 p refs
(Contracts N00014-75-C-0556; N00014-75-C-0661; NR Proj. 347-027)
(AD-A021912; TR-121) Avail: NTIS CSCL 12/2

To provide effective managerial support to the decisions related to the production planning and scheduling processes, it is useful to partition this set of decisions in a hierarchical framework. In the resulting system higher level decisions impose constraints to lower level actions, and lower level decisions provide the necessary feedback to reevaluate higher level actions. The purpose of this paper is to suggest optimum procedures to deal with the resulting subproblems, and to analyze the interaction mechanisms among the different hierarchical levels. Computational results are given. Author (GRA)

N76-31080# RAND Corp., Santa Monica, Calif.
A CRITIQUE OF COST-EFFECTIVENESS
E. S. Quade Nov. 1975 9 p refs Presented at the Session on Cost-effectiveness, ORSA/TIMS, Las Vegas, Nev., 17 Nov. 1975
(AD-A022195; P-5524) Avail: NTIS CSCL 14/1

It is important that a decision take into account all the relevant information whether or not this information lends itself to inclusion in formal analysis. All forms of analysis have their virtues and drawbacks. None can take into consideration or present all the information. A single cost-effectiveness calculation leaves out a great deal but it does emphasize the aspects that are usually the most important and of greatest interest to the decisionmaker. It gives excellent results provided the alternatives are reasonably similar and seek the ultimate goal through the same target so that their effectiveness in attaining that target can be measured on the same scale. Cost-benefit analysis can take into account many more aspects of a decision but it does so at the expense of emphasis and through a great deal of heroic quantification that is extremely arbitrary and, where values are concerned, is based on the judgment of the wrong people. Multiple cost-effectiveness calculations, including some that do not translate all costs into monetary units obviously go farther in taking things into account than the traditional single comparison that we often think of when we say cost-effectiveness analysis. It has the additional advantage that it not only forces the judgment on the right people but calls their attention to which judgments are needed. GRA

N76-31084# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Engineering.
A MONTE CARLO RISK ANALYSIS OF LIFE CYCLE COST PREDICTION M.S. Thesis
Samuel B. Graves Sep. 1975 188 p
(AD-A021677; GOR/SM/75D-6) Avail: NTIS CSCL 15/5

This study is an investigation of the uncertainties involved in the prediction and measurement of Life Cycle Costs. The particular treatment here analyzes Logistic Support Costs, which are a subset of the Life Cycle Costs. The Logistics Supportability Incentives which are embodied in the current General Dynamics F-16 contract are analyzed in the light of the stochastic uncertainties of prediction and measurement of Logistic Support Cost. A Monte Carlo Simulation model is developed which will approximate the uncertainties involved in obtaining a sample measurement of Logistic Support Cost in a fixed length test. The model output is applied to the problems of determining appropriate contractor rewards or penalties, investigating the feasibility of contractor strategies, and investigating the effect of various test lengths. GRA

N76-31097# Cambridge Systematics, Inc., Mass.
A STUDY DESIGN FOR DUAL MODE PLANNING CASE STUDY
E. R. Ruiter, G. A. Kocur, and D. G. Stuart 20 Mar. 1975 204 p refs Prepared in cooperation with Barton-Aschman Associates, Inc.
(Contract DOT-UT-40018)
(PB-250476/9; UMTA-MA-06-0056-75-1; UTP-CSI.75.1.4) Avail: NTIS HC $7.75 CSCL 13B

A detailed description of the individual project tasks and subtasks is given. The tasks emphasize both the need to represent dual mode as a new transportation technology with many uncertainties as to its characteristics; and the need to consider the goals, objectives, and socioeconomic and trip making characteristics of the local area. In addition, the document also contains cost allocations, time schedules, organizational arrangements and management control procedures for the conduct of the project. GRA

N76-31105# Metropolitan Transportation Commission, Berkeley, Calif.
BART IMPACT PROGRAM. PUBLIC POLICY PROJECT: RESEARCH PLAN
Henry Bain and Franceen Lyons Apr. 1976 49 p
(Contract DOT-OST-30176)
(PB-251697/9; PD-22-8-76) Avail: NTIS HC $4.00 CSCL 13B

The scope of the Public Policy Project, specific research issues, and methods for performing the work are given. A theoretical framework encompassing the various anticipated public policy impacts outlines the impact process and defines the basic concepts used in formulating the research approach. The Work Elements describing the specific work to be done are closely tied to the research issues identified in the theoretical framework. Details of data collection and analysis are contained in the Work Elements. The Research Plan outlines how the work will be performed by proposing a preliminary schedule, staffing requirements, and estimates of level of effort. GRA

N76-31662# Arizona Univ., Tucson. School of Renewable Natural Resources.
DECISION ANALYSIS FOR WATERSHED MANAGEMENT ALTERNATIVES Completion Report
M. M. Fogel, J. L. Thames, L. Duckstein, and D. R. Davis Jan. 1976 20 p refs
(Contract DI-14-31-0001-3858)
(PB-252189/6; OWRT-B-032-ARIZ(23)) Avail: NTIS

HC $3.50 CSCL 13B

A methodology for watershed managers to use in resource development and conservation decision making is reported. Stochastic event based precipitation models were derived to serve as inputs into deterministic watershed models with the result that a time series of hydrologic outputs could be obtained. These outputs, water and sediment yields and peak flow rates, could then be used to reflect the extent of man's activities in modifying the environment, as well as the optimal design and operation of water control facilities. GRA

N76-31862# Bureau of Reclamation, Denver, Colo. Engineering and Research Center.

PROJECT SKYWATER, ATMOSPHERIC WATER RESOURCES PROGRAM. A PROGRAM OF RESEARCH IN PRECIPITATION MANAGEMENT, VOLUME 1 Data Environmental Statement

5 Apr. 1976 304 p

(PB-251113/7; INT-DES-76-10-Vol-1) Avail: NTIS HC $9.75 CSCL 04B

The purpose, scope and environmental impacts of Project Skywater, a research program for the Great Plains area in cloud seeding for enhanced precipitation, are presented in the format of a draft programmatic environmental statement. Two numerical ratings are given for each potential impact, one applicable to the research program and the other applicable if the technology being developed by Project Skywater is applied in a long-term, continuous and widespread mode. The environmental effects of the research program generally are described as insignificant, if detectable. Research to date indicate effects of widespread application of the technology under development would be significant over agricultural lands and generally insignificant in mountainous regions. GRA

N76-32040*# Kanner (Leo) Associates, Redwood City, Calif.

TECHNICAL CAPACITY OF UNDERGROUND COAL MINING AND ITS MEASUREMENT

R. Tillessen Washington NASA Aug. 1976 39 p refs Transl. into ENGLISH from Bergabu-Archiv (Essen), vol. 24, no. 3/4, 1963 p 23-34

(Contract NASw-2790)

(NASA-TT-F-17179) Avail: NTIS HC $4.00 CSCL 05A

Determination of the technical capacity of existent mines is described. The effects on technical capacity of the various production factors are considered on the basis of general management principles. These factors are labor, the coal deposit, and operating resources, including facilities and equipment. The most important factor is found to be operating resources. Formulas are given for measuring component capacities, and a flow chart is used to determine overall capacity from them. Author

N76-32041*# Kanner (Leo) Associates, Redwood City, Calif.

VALUATING ENTIRE MINING OPERATIONS

S. VonWahl Washington NASA Aug. 1976 56 p refs Transl. into ENGLISH from Bergbau Arch. (West Germany), v. 24, no. 3/4, 1963 p 65-81

(Contract NASw-2790)

(NASA-TT-F-17180) Avail: NTIS HC $4.50 CSCL 05A

Algorithms are derived for calculating the values of businesses with limited lives (specifically, mines) and businesses with interminate lives on the basis of investment and conventional methods. A hypothetical mining operation is used as a model to which the methods can be applied; the results are compared in the form of total value curves and curves for future profit value and replacement value. Author

N76-32042*# Scientific Translation Service, Santa Barbara, Calif.

THE NATURE OF COST FUNCTION STRUCTURE IN MINING INDUSTRY AND ITS IMPORTANCE FOR RAISING PRODUCTION

D. Graner Washington NASA Aug. 1976 41 p refs Transl. into ENGLISH from Bergbau Arch. (West Germany), v. 24, no. 3/4, 1963 p 35-39

(Contract NASw-2791)

(NASA-TT-F-17182) Avail: NTIS HC $4.00 CSCL 08I

The cost dependent structure of mining industries is considered. The problem was to split the plant operations to the point where elementary combinations only of production factors were left; for these basic units the dependence between costs and production speed was described. The immediate task in this context is to arrive at statements on the total cost behavior of a mining industry; the plant political behavior schemes in the face of different sales situations then can be based on this knowledge. Author

N76-32043*# National Aeronautics and Space Administration, Washington, D.C.

MANAGING ORGANIZATION VITALITY M.S. Thesis - MIT, Cambridge

George P. Chandler, Jr. Jun. 1976 125 p refs Sponsored by NASA

(NASA-TM-X-74144) Avail: NTIS HC $5.50 CSCL 05A

The three major objectives are: (1) to measure the extent to which the organization renewal techniques have been adopted by organizations in both the private and public sectors; (2) to determine the overall results of these applications; and (3) to test a number of specific hypotheses regarding situational determinants of the success of this approach. It appears that top management involvement is the single most crucial determinant of the success of organization renewal. Organization renewal has considerable potential for increasing the commitment of individuals, and can have a significant positive influence on the results of the organization. Author

N76-32045# Signals Research and Development Establishment, Christchurch (England).

INTERFACING A DATABASE MANAGEMENT SYSTEM TO CORAL

H. K. Nichols Jul. 1975 16 p ref

(SRDE-75015; BR49042) Avail: NTIS HC $3.50

A Database Management System (DBMS) is described in which the data is held in packed format, and consists of a number of record occurrences, each occurrence containing several data fields and indexed via a unique field value The DBMS provides a number of functions which can operate on the data These functions provide the means by which applications programs, which are written in CORAL, gain access to the data on the backing store. A considerable amount of protection is afforded by the DBMS, in that an applications program may only use those functions that it needs and may only reference those fields with which it is directly concerned. In addition, the access to any permitted field can be further constrained, to, for example 'Read only'. The data structures, defined within the CORAL applications program, through which the DBMS provides and accepts actual data values, are discussed, and the mapping between these and the backing store structures together with the implementation of the protection mechanism described. Possible advantages offered by enhancements to the CORAL 66 compiler are discussed. Author (ESA)

N76-32046# Institute for Defense Analyses, Arlington, Va.

OPPORTUNITIES FOR R AND D ACTION TO REDUCE ACQUISITION AND SUPPORT COSTS OF TACTICAL AIRCRAFT. VOLUME 1: SUMMARY Final Report, Nov. 1974 - Nov. 1975

Donald M. Dix and John Metzko Nov. 1975 66 p refs

(Contract DAHC15-73-C-0200)

(AD-A023038; IDA/HQ-75-17904-Vol-1; P-1141-Vol-1) Avail:

NTIS CSCL 15/5

The objectives of this study are to relate capabilities of tactical aircraft to their acquisition and support costs, and to identify opportunities for R and D action which appear to offer substantial cost-reduction potential--with particular emphasis on support costs. The capabilities of tactical aircraft are defined in terms of force capability parameters: unit performance (range, specific vehicle thrust, payload, etc.), number of units, inventory value, availability, utilization, and age. A model is developed which relates these parameters to total force costs as a function of performance-related design-technology characteristics (vehicle structural weight fraction, lift/drag ratio, engine specific fuel consumption, engine specific thrust). Opportunities for R and D action are defined in terms of three decision levels: alternative implementation policies, given a design; alternative designs, given a system concept; and alternative concepts. The potential downstream impact on force costs and capability of R and D actions at these levels is assessed using associated parameters of the model--alternative implementation policies, by means of potential changes in elements of cost; alternative designs, by means of potential changes in design-technology characteristics; alternative concepts, by means of potential changes in force capability parameters. The study is limited; data are largely confined to USAF fighter and attack aircraft; although a broad range of data is used, the data are unrefined; the rationale used as the basis for the model appears to explain the data, but alternative explanations are not explored. GRA

N76-32047# Pennsylvania Univ., Philadelphia. Dept. of Decision Sciences.

DECISION AIDING INFORMATION SYSTEM (DAISY) USER'S GUIDE Interim Report

E. G. Hurst, Jr., H. L. Morgan, and D. N. Ness 22 Jan. 1975 19 p refs

(Contract N00014-67-A-0216-0035; NR Proj. 049-331; NR Proj. 049-360)

(AD-A020646; Rept-75-01-02) Avail: NTIS CSCL 12/1

This paper describes the use of the system 'DAISY' which allows the user to access and manipulate decision structure files. Author (GRA)

N76-32048# Pennsylvania Univ., Philadelphia.

DAISY: A DECISION-AIDING INFORMATION SYSTEM Interim Report

E. G. Hurst, Jr., H. L. Morgan, and D. N. Ness 22 Jan. 1975 21 p refs

(Contract N00014-67-A-0216-0035; NR Proj. 049-331; NR Proj. 049-360)

(AD-A020647; Rept-75-01-05) Avail: NTIS CSCL 12/1

DAISY is an information and modelling system designed to aid persons making complex interconnected sequences of decisions. Decision processes such as tactical planning, military planning, or organizational planning and control are all examples of situations where DAISY can aid the decision maker. A few of its main features include the following: (a) dynamic check-list of decisions which need to be made at a given time; (b) access to a large data base of information; (c) ability to run management science models using current information to support decision making; and (d) the ability to specify conditions about which the decision maker wishes notification (e.g., ship within range of weaponry). All of these are embedded in a powerful interactive computer system. This system integrates the many functions often performed by several computer or manual systems and puts all of the power of these systems at the decision maker's fingertips. DAISY can be used in the following operating modes: (1) for training individuals in a particular complex decision process; (2) for aiding in the planning of a decision process which may have to take place (such as military scenarios); or (3) actually operating in the complex decision environment. GRA

N76-32054# National Oceanic and Atmospheric Administration, Washington, D.C. Environmental Data Service.

USER'S GUIDE TO ENDEX/OASIS: ENVIRONMENTAL DATA INDEX AND THE OCEANIC AND ATMOSPHERIC SCIENTIFIC INFORMATION SYSTEM

Jan. 1976 79 p

(PB-252471/8; KOAIS-1; NOAA-76030204) Avail: NTIS HC $5.00 CSCL 05B

The ENDEX (Environmental Data Index) and OASIS (Oceanic and Atmospheric Scientific Information System) provide to users rapid, computerized referral to available environmental data files and published literature in the environmental sciences and marine and coastal resources, respectively. This publication describes the services offered from both ENDEX and OASIS, and how to use them. It gives their data bases for referral to various types of desired information. Sample search results and descriptions of subject index to the ENDEX/OASIS data bases are included. GRA

N76-32055# Computer Sciences Corp., San Diego, Calif.

THE LIBRARY MANAGEMENT AND RETRIEVAL SYSTEM (LMARS) Research and Development Report, 1969 - 1976

Kathleen Youel and Theresa Clowes Feb 1976 86 p refs

(Contract N000123-74-C-0312)

(AD-A022878; NUC-TP-499) Avail: NTIS CSCL 05/2

The Library Management and Retrieval System (LMARS) is an automated retrieval system developed jointly by personnel from the Naval Undersea Center's Technical Library and from Computer Sciences Corporation to provide bibliographic control of the Library's technical reports collection. LMARS generates a computer-produced catalog consisting of indexes by corporate author, personal author, title, report number, subject, and accession number. In addition to the printed indexes, the LMARS Program also generates the Library's list of new publications, recall notices for technical reports, custom bibliographies, and Current Alert notices of new acquisitions in specific areas. Several improvements to LMARS are currently in progress, including conversion of the indexes from paper copy to Computer Output Microfiche and the addition of an on-line retrieval capability. GRA

N76-32076# Charles River Associates, Inc., Cambridge, Mass.

ESTIMATING THE EFFECTS OF URBAN TRAVEL POLICIES Final Report, Feb. 1975 - Mar. 1976

Frederick C. Dunbar Apr. 1976 196 p refs Sponsored in part by Office of the Assistant Secretary for Policy, Plans and Intern. Affairs (DOT), Washington, D. C.

(Contract DOT-TSC-964)

(PB-253208/3; DOT-TSC-OST-76-10) Avail: NTIS HC $7.50 CSCL 13B

Models and procedures are presented for quick evaluation of transportation policy options on urban travel behavior. The methods described can be used to estimate the travel demand effects of a wide variety of transportation policy instruments with currently available data in a matter of hours, or minutes, with the aid of a calculator. To evaluate the effects of a transportation policy, travel is separated into work and nonwork purposes. Both the work and nonwork trip demand models and procedures are exercised on sets of policy issues which are of current interest, including gasoline taxes, parking restrictions, transit service improvements and the introduction of new modes. GRA

N76-32712# Office of Technology Assessment, Washington, D.C.

AN ANALYSIS OF THE ERDA PLAN AND PROGRAM

Oct. 1975 328 p

(PB-250636/8; OTA-E-12) Avail: NTIS HC $10.00 CSCL 10A

This report is an analysis of the energy research and development programs of the Energy Research and Development Administration (ERDA). The analysis was performed primarily by task groups assembled to cover each of ERDA's major programmatic areas: (1) fossil energy; (2) nuclear energy; (3) solar geothermal, and advanced technologies; (4) conservation; and (5) environment and health. Since the ERDA plans reflect the President's view of national energy R and D policy, they will in large measure determine the broader options for our

future national energy policy; this assessment is intended to provide the Congress with much of the background information necessary for an effective analysis of the ERDA programs. GRA

N76-33077 Texas A&M Univ., College Station.
A STATISTICAL PROCEDURE FOR OPTIMIZATION OF PERT NETWORK SCHEDULING SYSTEMS Ph.D. Thesis
Randall Keith Spoeri 1976 190 p
Avail: Univ. Microfilms Order No. 76-20627

Statistical analysis and optimization of Program Evaluation and Review Technique (PERT) network scheduling systems are described. A technique to allow for network simplification based upon blocks of activity configurations is discussed. Approximation of network completion time distribution and moments based on two points from each activity's completion time distribution is studied, and extended to allow for unequal probability at each percentile. Also, a procedure for optimum allocation of time to project activities when network completion time is to be reduced or compressed is presented. Existing computer programs are modified, tested, and documented. New codes have been prepared as required and combined with the others to facilitate implementation of the total program package. The integrated system incorporating all areas is explained, so as to provide for statistical and optimization analysis of PERT networks. Dissert. Abstr.

N76-33078# Community Development Services, Inc., Seattle, Wash.
GUIDELINES FOR TEAM SCHEDULING AND MANAGEMENT Final Report, 1 Oct. 1972 - 30 Jun. 1976
Robert Jacobson and Roger Parker Oct. 1975 38 p Sponsored by the Wash. State Dept. of Highways, Olympia
(PB-252293/6; RPR-25.5) Avail: NTIS HC $4.00 CSCL 13B

The purpose of this document is to present an effective method by which the scheduling and coordination of the activities of interdisciplinary teams can be carried out. A number of more traditional techniques of project control have not met the unique requirements of scheduling and managing the activities of an interdisciplinary team since the basic logic of task ordering is time sequentiality. Quite a number of the activities of an interdisciplinary team can be carried on simultaneously or at any given time within the projects' period. The system developed uses the principle of 'nested' descriptions of program activities and then proceeds to develop operational procedures. The role of the individual team members as well as the overall project development is described. GRA

N76-33091# Transportation Research Board, Washington, D.C.
TRANSIT PLANNING
1976 140 p refs
(PB-252853/7; TRB/TRR-559) Avail: NTIS HC $10.00 CSCL 13B

Various aspects of transit planning and development are discussed. The application of demand responsive transportation systems, taxi systems, interactive systems, and various evaluation studies of transit are included. Author

N76-33130# Advisory Group for Aerospace Research and Development, Paris (France).
AGARD BULLETIN: TECHNICAL PROGRAM, 1977
Jul. 1976 37 p
(AGARD-Bull-76-2) Avail: NTIS HC $4.00

The AGARD technical program for 1977 approved by the national delegates board was presented. The following information is given: chronological listing of meetings tentatively scheduled to take place, detailed description of the individual panel programs, consultant and exchange program, and military committee studies program, total budget required, and publications summary.
Author

N76-33131# Committee on Science and Technology (U. S. House).
THE FUTURE OF AVIATION, VOLUME 1
Washington GPO 1976 110 p refs Rept. for Comm. on Sci. and Technol., 94th Congr., 2d Sess., Oct. 1976
(GPO-72-600) Avail: SOD HC $1.40

A number of findings and recommendations relative to the future of the aviation industry in the United States are presented. These are primarily focussed on the following points, oriented on the need to: (1) maintain the U.S. preeminence in aeronautics, (2) set-up a national civil R and D policy, (3) restructure and reorient government sponsored R and D and demonstration programs and activities with those related to other modes of transportation, (4) accelerate application of new technology, (5) expand federally-sponsored civil R and D and demonstration efforts to compensate for reduced military fall-out, (6) improve ability of U.S. air carriers to purchase new equipment, (7) have the Department of Transportation act as a focus for civil aviation R and D, (8) setting-up a strong centralized policy-level authority, (9) assist the U.S. aircraft industry in developing new generation aircraft, (10) reduce the recent emphasis on joint ventures with foreign manufacturers through some form of government assistance, (11) increase operating efficiency of aircraft. Y.J.A.

N76-33132# Committee on Science and Technology (U. S. House).
THE FUTURE OF AVIATION, VOLUME 2
Washington GPO 1976 105 p refs Compilation of papers for Comm. on Sci. and Technol., 94th Congr., 2d Sess., Oct. 1976
(GPO-77-667) Avail: SOD HC $1.35

A number of papers intended to support 'The future of aviation, Volume 1', are presented. These deal with the organization for aviation and a description of the R & D facilities of FAA and NASA. Y.J.A.

N76-33531# Aeronautical Systems Div., Wright-Patterson AFB, Ohio.
REDUCING SUPPORT COSTS AND IMPROVING RELIABILITIES/AVAILABILITIES OF AIR FORCE AIRCRAFT EQUIPMENT Final Report
Russell M. Genet, S. Woodrow Hall, Jr., and Gordon W. Spray 7 Apr. 1976 28 p
(AD-A023835; ASD/RAXA-76-4) Avail: NTIS CSCL 01/3

Common statements and opinions about the 'high support costs and poor reliabilities' of items of equipment are discussed. A distinction is made between statements that are objectively confirmable, at least in theory, and those that must, by their nature, remain forever subjective. For those statements where objective confirmation is possible, an analytic approach aimed towards reaching such objectivity is outlined. Logical remedies for severe cases are suggested. A program for analysis and subsequent actions is outlined. Specific program tasks are delineated. GRA

N76-33532# Aeronautical Systems Div., Wright-Patterson AFB, Ohio.
ON THE REDUCTION OF OPERATING AND SUPPORT COSTS OF AIR FORCE AIRCRAFT Final Report
Russell M. Genet 10 Mar. 1976 20 p
(AD-A023834; ASD/RAXA-76-3) Avail: NTIS CSCL 01/3

Conceptual approaches and difficulties involved in reducing the operating and support costs of Air Force aircraft are discussed. GRA

N76-33608# Colorado State Univ., Fort Collins. Environmental Resources Center.
MANUAL FOR TRAINING IN THE APPLICATION OF THE PRINCIPLES AND STANDARDS OF THE WATER RESOURCES COUNCIL
Dec. 1974 528 p refs
(Contracts DI-14-31-0001-4260; DI-14-31-0001-4242; Proj. X-143; Proj. C-5345)
(PB-250959/4; W76-05348; OWRT-C-5345(4242)) Avail:

NTIS HC $13.00 CSCL 05I

Materials for the conduct of training courses are set forth. Principles and Standards relate directly to Federal water resources planning but state and local agencies and private firms need to understand their application to Federal and Federally assisted projects. Levels of planning are identified: Framework studies and assessment which deal with major policy decisions; regional or river basin plans; and implementation studies. The Principles apply at all levels but the components of objectives will be specified differently though in a manner providing insights about tradeoffs among alternatives. The planning process is visualized in 5 steps. GRA

N76-33609# Pennsylvania State Univ., University Park. Inst. for Research on Land and Water Resources.

PROCEEDINGS OF CONFERENCE ON WATER CONSERVATION AND SEWAGE FLOW REDUCTION WITH WATER-SAVING DEVICES

William E. Sharpe and Peter W. Fletcher Jul. 1975 212 p refs Held at Pa. State Univ., 8-10 Apr. 1975

(Contract DI-14-31-0001-4038)

(PB-250999/0; Information-74; W76-05602; OWRT-A-038-PA(1)) Avail: NTIS HC $7.75 CSCL 13B

These proceedings are a current state-of-the-art assessment of water-saving device technology in the United States. The papers address themselves to the major questions associated with water-saving device development and use. The gaps in current knowledge are enumerated and the information necessary to fill these gaps is identifed. The information contained in these included. Design of seawater deaerators, liquid-liquid spray towers, and seawater chemistry are discussed. GRA

N76-33629# Midwest Research Inst., Kansas City, Mo.

PROGRAM FOR REGIONAL ENERGY ANALYSIS, VOLUME 1 Final Report

W. R. Benson Dec. 1975 141 p refs

(Contract AT(49-1)-3755; MRI Proj. 4046-E)

(ERDA-107-Vol-1) Avail: NTIS HC $5.45

A program of action was designed for the participation of local, state, or regional organizations with crucial roles in energy policy and energy research and development. The regional energy analysis program provides a uniform procedure for analysis of the regional impacts and the consequences of policy decisions relative to research and development leading to new energy sources. It is also applicable to the analysis of the impacts of significant expansion of existing supply sources. Tasks that formed the basis for the program design were: definition of regions, identification of data sources, inventory of models, public participation strategy, and development of candidate programs. As the regional energy analysis program evolved, elements of the program were selectively tested or validated using data from a new energy production technology. An oil shale plant and a solar thermal electric power plant were used in the tests because of the availability of data. ERA

N76-33630# Midwest Research Inst., Kansas City, Mo.

PROGRAM FOR REGIONAL ENERGY ANALYSIS: APPENDICES TO THE FINAL REPORT, VOLUME 2

Nov. 1975 293 p refs

(Contract AT(49-1)-3755; MRI Proj. 4046-E)

(ERDA-107-Vol-2) Avail: NTIS HC $7.60

considered technical, economic, social, and institutional factors pertinent to a thorough review of alternatives. Residual wastes generated in municipal wastewater treatment plants were characterized. Handling and treatment processes for the residual wastes were discussed and evaluated in light of qualitative and quantitative changes to the residual wastes. Liquid, gaseous, and solid sidestreams produced in residual waste treatment were evaluated. GRA

N76-33699# Massachusetts Inst. of Tech., Cambridge. Energy Lab.

AN APPLICATION OF A GENERALIZED MANAGEMENT INFORMATION SYSTEM TO ENERGY POLICY AND DECISION MAKING: THE USER'S VIEW

John J. Donovan, Louis M. Gutentag, Stewart E. Madnick, and Grant N. Smith May 1975 25 p refs Submitted for publication Sponsored by New England Regional Commission, Boston

(PB-252980/8; MIT-EL-75-008) Avail: NTIS HC $3.50 CSCL 10A

An approach to the development and use of management information systems is presented. This approach is particularly applicable to systems that: have several types of users with varying degrees of sophistication; have complex or changing security requirements; exhibit complex and changing interrelationships in data; must be built quickly and inexpensively; have complex data validation requirements; and/or must meet changing needs. The type of system described is hierarchical because it may be accessed at distinct levels: A casual user has high level primitives to work with, while an experienced user has more flexible but more detailed low-level primitives. Hierarchical systems also provide for ease of debugging, independence of hardware, and a basis for investigating properties of completeness, integrity, correctness, and performance. GRA

N76-33738# Engineering-Science, Inc., McLean, Va.

SLUDGE PROCESSING, TRANSPORTATION AND DISPOSAL/RESOURCE RECOVERY: A PLANNING PERSPECTIVE

J. Michael Wyatt and Paul E. White, Jr. Dec. 1975 205 p refs

(Contract EPA-68-01-3104)

(PB-251013/9; EPA-440/9-76-002) Avail: NTIS HC $7.75 CSCL 13B

A methodology was developed for use in the evaluation of alternatives for the ultimate disposal of residual wastes generated in municipal wastewater treatment plants. This methodology considered technical, economic, social, and institutional factors pertinent to a thorough review of alternatives. Residual wastes generated in municipal wastewater treatment plants were characterized. Handling and treatment processes for the residual wastes were discussed and evaluated in light of qualitative and quantitative changes to the residual wastes. Liquid, gaseous, and solid sidestreams produced in residual waste treatment were evaluated. GRA

N76-34038# Office of Technology Assessment, Washington, D.C.

PROCEEDINGS OF AN ENGINEERING CONFERENCE ON REQUIREMENTS FOR FULFILLING A NATIONAL MATERIALS POLICY

Franklin P. Huddle, ed. Aug. 1974 202 p refs Conf. held at Henniker, New Hampshire, 11-16 Aug. 1974 Prepared in cooperation with Federation of Mater. Soc., Washington, D. C.

(PB-250631/9; OTA-M-4) Avail: NTIS HC $7.75 CSCL 05A

Options for implementing a national materials policy were examined. The following points were stressed (1) the need for reliable and accessible information on all aspects of materials management, (2) the symbiotic relationship of technology economics institutions in implementing national policy, and (3) the interdependence of nations with respect to the production, exchange, and use of materials. Author (GRA)

N76-34041# American National Standards Inst., New York.

PROCEEDINGS OF A SYMPOSIUM ON MANAGEMENT OF

DATA ELEMENTS IN INFORMATION PROCESSING (2ND) Final Report
Apr. 1976 263 p refs Held at Gaithersburg, Md., 23-24 Oct. 1975
(PB-249530/7; NBSIR-76-1015) Avail: NTIS HC $9.25 CSCL 09B

Twenty-nine speakers discussed the role of the data manager, communications needs for data standards, data element directories, standard codes for character and control, use of check characters, data elements in bibliographic data bases, product coding, coding for clinical medicine, human factors, data resource management, data base management systems, and other subjects related to data standardization and data management efforts.
Author (GRA)

N76-34046# Environmental Protection Agency, Washington, D.C. Management Information and Data Systems Div.
ENVIRONMENTAL INFORMATION SYSTEMS DIRECTORY. AN INVENTORY OF ENVIRONMENTAL SYSTEMS
Leonard Libster Jan. 1976 86 p
(PB-251170/7) Avail: NTIS HC $5.00 CSCL 13B

Profile descriptions are given of major automated systems supporting the administrative and environmental-mission operations of the U.S. Environmental Protection Agency. This directory was planned to facilitate such important management objectives as systems planning and coordination, reduction in system costs, and elimination of duplicative systems. It includes all systems for which computer costs are generally greater than $20,000 in FY 1975. GRA

N76-34048# British Library Lending Div., Boston Spa (England).
MANAGEMENT AND ASSESSMENT OF STOCK CONTROL IN ACADEMIC LIBRARIES
C. Taylor and N. C. Urquhart 1976 156 p refs
(BLL-BLRDR-5263-(2113.56F)) Avail: British Library Lending Div., Boston Spa, Engl.

Large-scale relegation of books from academic libraries was examined and indicators of use and nonuse were developed for general application. It is shown that the relegation of periodicals is considerably less expensive both in terms of investment of effort and space released than the relegation of monographs. A critical approach to current methods of relegating monographs was adopted. Low use theory indicated the economic advantage of block relegation in relation to particular subject areas, followed by selective retrieval where necessary. Closer examination of relegation of individual monographs by past use records revealed that such methods, besides being more expensive, are also misleading. The impact of both overcrowding and the cost of continuous relegation on academic library services was investigated. Author

N76-34055# National Science Foundation, Washington, D.C. Office of National Research and Development Assessment.
FEDERAL TECHNOLOGY TRANSFER. AN ANALYSIS OF CURRENT PROGRAM CHARACTERISTICS AND PRACTICES
J. David Roessner Dec. 1975 10 p refs 3 Vol.
(PB-253105/1; NSF/RDA-76-401) Avail: NTIS HC$3.50 CSCL 05A

The results of an analysis of the technology transfer and research utilization activities of 25 Federal departments and agencies were summarized. This information is addressed to Federal policymakers responsible for designing, developing, operating, or assessing formal technology transfer and research utilization programs. GRA

N76-34059# RAND Corp., Santa Monica, Calif.
ASSESSING TECHNOLOGY ASSESSMENT
William F. Hederman, Jr. Feb. 1975 41 p refs
(AD-A022224; P-5391) Avail: NTIS CSCL 05/1

Technology assessment is being proposed as a tool for the policymaker, so it must address real policy issues with any available data and theory, in time to be considered when the policy decision is made. This paper evaluates some examined assessments.GRA

N76-34065# Transportation Research Board, Washington, D.C.
PUBLIC TRANSPORTATION PLANNING
1976 101 p refs
(PB-253714/0; TRB/TRR-563; ISBN-0-309-02473-0) Avail: NTIS HC $5.50 CSCL 13B

Research and development efforts are reported for the following topics: (1) urban public transportation goal determination a research approach; (2) legislative perspectives on the state transportation planning process and transit planning in California; (3) consumer attitudes toward public transit; (4) characteristics, attitudes, and perceptions of transit nonusers in the Atlanta region; (5) travel patterns on a new regional rapid transit system--clues from the early stages of operations on BART; (6) forecasting dial-a-bus ridership in small urban areas; (7) forecasting demand for peripheral park-and-ride service; (8) public policy and transit services for handicapped persons; (9) evaluating the relevance of specialized university courses in public transportation; and (10) operational planning of fixed route and demand responsive bus systems in the greater Lafayette, Indiana, area. GRA

N76-34066# Nassau County Multi-Municipal Productivity Project, Mineola, N. Y.
AN APPROACH TO PRODUCTIVITY IMPROVEMENT IN THE PUBLIC SECTOR: A PROCEDURAL MANUAL Final Report, Nov. 1972 - Jul. 1975
Jul. 1975 110 p refs
(Contract L-74-74)
(PB-253645/6; ASPER/CON-74/0074/A) Avail: NTIS HC $5.50 CSCL 05A

The major premise of the approach contained in this procedural manual is that productivity of municipal services is measurable and can be improved through systems analysis by trained analysts. The approach assumes that productivity improvement must have the support of the elected public and union officials and can best be achieved through employee participation. Objective data on employee attitudes for productivity improvements are required, and the process of gathering the data is described. The public should be made aware of the benefits of productivity improvement. A program for communication of program goals and objectives to all participants, which is considered essential, is described.
GRA

N76-34067# Pennsylvania Transportation Inst., University Park.
THE ROLE OF SUBSTATE REGIONS IN TRANSPORTATION PLANNING, PROGRAMMING, AND BUDGETING Summary Report, 1 Jul. 1974 - 15 Dec. 1975
Thomas D. Larson, I. Hand, and T. H. Poister Sep. 1975 55 p Sponsored by the Pa. State Dept. of Transportation and FHA, Washington, D.C.
(PB-251060/0; PTI-7517) Avail: NTIS HC $4.50; HC also available in set of 3 reports as PB-251059-SET, HC $20.00 CSCL 13B

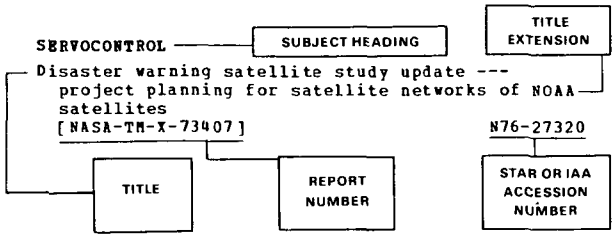
Alternative concepts for substate regions and regional organizations in Pennsylvania as a basis for transportation planning, programming, and budgeting were formulated, and the preparation of draft legislation dealing with substate regionalism in Pennsylvania was discussed. Major recommendations of the research indicated that: (1) a Regional Planning and Development Council (RPDC) should be established in each substate region; (2) legislation implementing the RPDCs should be of a general comprehensive nature; and (3) certain transportation planning functions should be delegated to an RPDC by PennDOT through a cooperative agreement. Author (GRA)

N76-34070# Public Technology, Inc., Washington, D.C.
URBAN TECHNOLOGY SYSTEM (UTS)

16 Jan. 1976 75 p refs
(Contract NSF C-834)
(PB-252984/0; NSF/RA-760034) Avail: NTIS HC $4.50 CSCL 13B

The Urban Technology System (UTS) is a nationwide experiment to test methods of overcoming barriers to local government technological innovation. The UTS has assigned engineers and scientists called 'technology agents' to 27 local governments, and provided them with technical support from major research and development organizations. The technology agents work directly with their respective local government chief administrative officers and are exploring solutions to a wide range of local problems. After 29 months of operation, nearly $6.3 million in annual/anticipated savings was demonstrated. Specific quantitative and qualitative benefits of the program achieved to date are discussed. GRA

Typical Subject Index Listing



The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of *Management*. If applicable, a report number is also included as an aid in identifying the document.

A

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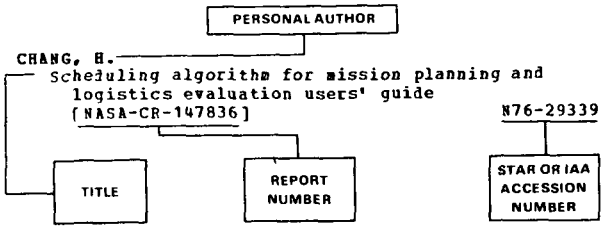

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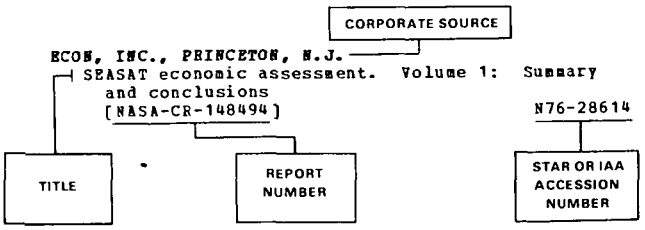

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